Research on Innovation of E-commerce Logistics Service Based on Big Data

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Abstract: With the rapid development of big data era, e-commerce is closely related to people's life. Only through the innovation of e-commerce logistics services can enterprises continuously meet customer needs. In the era of Internet big data, how to better acquire, integrate and use data information has become the top priority of e-commerce logistics service innovation. This paper first analyzes the impact of big data on the development of e-commerce, and then analyzes e-commerce logistics service innovation from two aspects. The research focuses on the innovation of e-commerce logistics service mode under the background of big data, realizes the differentiation of logistics service through innovation, and finally gains competitive advantage.

1. Introduction

As the information network and people's lives become increasingly close, the demand for e-commerce logistics will continue to maintain a high-speed development trend. In 2014, China's e-commerce transaction volume reached 13 trillion yuan, close to half of the total retail sales of consumer goods. Among them, the online retail sales amounted to 2.8 trillion yuan. It is conservatively estimated that by 2020, the domestic online retail market will reach 10 trillion yuan, the annual express parcels generated by e-commerce will reach 30 billion, and the daily express delivery volume generated by e-commerce will reach 80 million pieces [1]. Economic development has entered the era of big data. The scale and types of data have increased in number, the logistics distribution tasks have become more and more arduous, and logistics information has exploded. Big data technology can mine and analyze massive logistics information, better help logistics enterprises make decisions, reduce distribution costs, and improve the level of e-commerce logistics services. Providing new development momentum for the modernization and intelligence of the logistics industry. Therefore, the service innovation model of logistics enterprises has become the necessary path for logistics enterprises to seize the competitive market resources in response to the new Internet environment. The innovation of e-commerce logistics service based on big data has become the focus of attention in the business community and academic circles.

2. The impact of big data on the development of e-commerce

The huge opportunities brought by big data to the development of e-commerce, the mining and analysis of big data enables enterprises to achieve personalized marketing and improve market competitiveness. However, with the continuous upgrading of information technology, the e-commerce model in the context of big data era needs continuous improvement and innovation [2].

2.1 Creating Internet Thinking

The e-commerce industry is developing rapidly, and the amount of data has increased dramatically. For example, users' registration and browsing, logistics information, product evaluation and transaction records have led to an increase in the demand for real-time and accuracy of data. Big data can take advantage of cloud computing technology and data processing to help e-commerce companies fully understand and grasp consumer demand preferences and daily

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behaviors, and provide better services to consumers. The analysis of the obtained results can be carried out by adopting different business models and optimizing logistics service modes, such as preferential activities, to promote better sales of goods and bring economic benefits to enterprises.

2.2 Industrialization of data information

The generation of a large amount of data information will promote the industrialization of data information, and the differentiation of consumer information, etc., will be collated and analyzed by enterprises, and scientifically utilized, enabling e-commerce companies to optimize their service models and carry out new innovations and specialized information. The organization will also benefit from it, providing strong backing support for the entire data and information industry chain.

2.3 Innovation in data management work

Analysis of consumer demand preferences, the overall grasp of the market environment and the innovation of the production management process are inseparable from the management of data and information, and have a positive effect on the development of enterprises. Only by using the Internet big data, logistics companies can grasp the pulse of the market and provide thoughtful services to shippers according to the laws of the market.

3. Big data-based e-commerce logistics service product innovation

In recent years, there are many research literatures on the types of logistics service innovation. Zhou Guohua [3] divided the process of service innovation of logistics enterprises into concept stage, design stage and test stage based on learning and learning the research results of related scholars. Three dimensions. Yuan Xiaojuan [4] believes that service innovation is divided into two categories, namely, service concept innovation and service delivery innovation. The relevant principles of service innovation can be applied to the service innovation process of logistics enterprises. This paper draws on the research of Liu Dan [5], from the service product innovation and service process innovation analysis of e-commerce logistics service innovation under the background of big data.

3.1 New logistics service products

Service product innovation is essentially an e-commerce company that solves the customer's existing logistics problems and meets the needs of customers. Focus on the core service content, extend the scope of services, add new service content and functions, and provide new service products. The development and introduction of new service products is the product innovation of logistics companies. It mainly includes multi-stream integrated innovation and specialized innovation. The e-commerce platform uses big data to improve or innovate logistics service products, showing diverse characteristics, as shown in Table 1:

Table 1. Classification of e-commerce logistics service product innovation n

E-commerce logistics service product innovation type	Subtype	Innovation direction (according to the supply chain)
New logistics service products	Multi-stream integration innovation	Innovate horizontally from the supply chain
	Specialized innovation	Innovate horizontally or vertically from the supply chain
Combined or improved logistics service products	Standard service portfolio innovation	Innovate horizontally or vertically from the supply chain
	Logistics link combination innovation	Innovate vertically from the supply chain
	Logistics service improvement and innovation	Innovate vertically from the supply chain

3.1.1 Multi-stream integration innovation

In the era of big data, the e-commerce logistics service product innovation extends the service content in the core business of the original e-commerce logistics such as warehousing and distribution, integrates the capital flow and information flow, and realizes multi-stream collection innovation. E-commerce logistics enterprises will carry out product service innovation according to their own resource advantages. E-commerce logistics will analyze and integrate relevant data, screen out valuable information, re-optimize enterprise service level and mode, and generate innovative logistics services. For example, the express delivery service is the core of the home delivery company [6], which integrates the flow of information flow, collects payment and insurance quotation, and extends the service product innovation to meet the needs of customers.

3.1.2 Specialized innovation

Specialized innovations are delivered to specific single customers or industry-specific customers with specific extended service offerings. This kind of specialized service innovation is more personalized. When providing certain core service products, e-commerce logistics establishes long-term trust with customers to meet the customized needs of customers. For example, Fujian Zhongyou Logistics Co., Ltd. has specially improved the transportation and packaging of spare parts in order to reduce the cargo damage rate during the process of spare parts distribution of Southeast Auto.

3.2 Restructuring or improved logistics service products

3.2.1 Standard service portfolio innovation.

In the context of big data, e-commerce logistics services are divided according to functions, and standardized service products are combined and innovated, and multi-module reorganization or improvement according to customer needs, resulting in more specialized integrated logistics services, such as Jingdong’s mobile store. All are logistics services reorganization using big data analysis.

3.2.2 Combination of logistics links.

Massive data can enable e-commerce platform to have strong control and coordination, integrate social logistics resources, improve or reorganize multiple links of logistics, provide customers with better service, and satisfy customers' entire logistics demand. For example, Jingdong proposed a new model of crowdsourcing logistics. “Jingdong Crowdsourcing” [7] is an extension and expansion of the “Jingdong Home” business, integrating social vehicles and human resources distribution resources to serve more consumers.

3.2.3 Logistics service improvement and innovation.

According to the needs of customers, e-commerce logistics services have improved some service contents and functions through data analysis. For example, Jingdong has developed a distribution-based product based on big data, that is, Jingdong to the home, and through the community image technology to achieve the unsold first-hand precision marketing [8], one-hour delivery.

4. Based on big data e-commerce logistics service process innovation

The innovation of e-commerce logistics service process is divided into two aspects: service production and service delivery innovation. The innovation of the production process includes: In the context of big data, first, the content of the service product remains unchanged, and only the innovation of the production process, such as the operation mode and the optimization process, can reduce the logistics cost and increase the enterprise efficiency. Second, the logistics service products and production processes are simultaneously innovating, reorganizing the organizational structure, optimizing or improving business processes, and realizing the innovation of service

products. The innovation of the service delivery process is generally directly oriented to the customer. After the data is integrated, the interaction between the enterprise and the customer is improved, and the customer can directly feel the change. In short, the e-commerce logistics service process innovation includes an interface that interacts with customers and production innovations that cooperate with the company. As shown in table 2:

Table 2. E-commerce logistics service process innovation classification

E-commerce logistics service process innovation type	Subtype	Innovation direction (logistics)
E-commerce logistics service production process innovation	Service product content remains unchanged, innovative production process	Innovate from within the company
	Service products and production process innovation at the same time	
E-commerce logistics service Transfer process innovation	Service product content remains unchanged, innovation delivery process	Innovate with customer involvement
	Innovation in service products and delivery processes	

This paper draws on Gao Yuan's research [9], taking the rookie network as an example to analyze the e-commerce logistics service process innovation under the background of big data, see the following figure. As can be seen from the figure, the rookie network analyzes the historical sales data. Before the customer places an order, the e-commerce platform predicts the products and quantities to be sold in the future according to the big data, and predicts the customer's purchase demand within a smaller error range to achieve accurate marketing. According to the analysis results of big data, the merchants will reach the logistics outlets close to the customers in advance, and realize the early delivery and the nearest delivery. After the customer places an order, the Tmall store submits the information to the rookie data platform. The platform reaches each warehouse according to the instructions, and then picks up the goods through the logistics company with which it cooperates and delivers it to the customer. It can be seen that without the support of logistics big data, it is difficult for rookie to subdivide various logistics links, which is not conducive to building a platform for direct matching of specialized logistics. The prediction of big data is the premise of e-commerce logistics service. It is very important for e-commerce platform, which can reduce unnecessary cost waste, and achieve precise marketing with customer demand preference as the core.

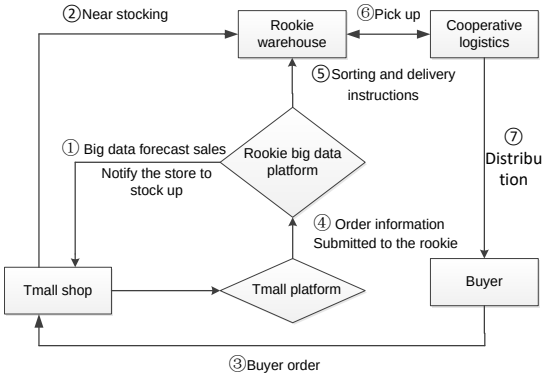

Fig.1 the rookie network based on big data e-commerce logistics service process

5. Big data-based e-commerce logistics service innovation model

Based on big data analysis, the essence of e-commerce logistics service innovation is to realize

the differentiation of logistics services and gain competitive advantage. According to the research of Zhang Xiaoqin [10], as shown in Table 3, this paper analyzes the e-commerce logistics service innovation model under the background of big data from four aspects.

Table 3. Classification, content, advantages and disadvantages of e-commerce logistics service innovation model

E-commerce logistics service innovation model based on big data	Main content	Advantages and Disadvantages
Customer demand oriented innovation model	Innovative e-commerce logistics services based on customer demand preferences and customer participation as innovation drivers.	It can meet the differentiated needs of customers, with high success rate of innovation; high cost and difficulty.
E-commerce logistics technology innovation model	Use big data technology and logistics technology to improve service efficiency.	Has a clear competitive advantage; single investment is large, lack of flexibility.
Follow the competition Innovation mode	Identify benchmarks and innovate based on competitors' e-commerce logistics services.	Post-production, the risk is small; innovation lags behind, it is difficult to obtain the initiative of competition.
E-commerce logistics network innovation mode	Reconstruct the relationship network and value chain to realize network organization service innovation.	Conducive to resource integration and sharing, to achieve overall advantages; difficult, need to coordinate with all parties, may sacrifice corporate interests.

5.1 Customer demand oriented innovation model

The customer's demand is the fundamental driving force of e-commerce logistics service innovation. The innovation is to meet the individual needs of customers. Therefore, the logistics service innovation with customer participation is more practical [11]. The company uses its own data advantages to fully understand the market logistics. On the basis of demand, innovations in the content and methods of logistics services can lead to more creative ideas.

5.2 E-commerce logistics technology innovation model

In the era of big data, e-commerce logistics service innovation is inseparable from technological innovation. Logistics technology and big data technology are very important for logistics service innovation. E-commerce enterprises can realize logistics services through innovation of these technologies. Logistics technology is conducive to the creation of efficient services, such as intelligent equipment to capture logistics data; forecasting technology in big data technology can provide better options for e-commerce logistics, etc., which can enhance competitive advantage.

5.3 Follow the competition innovation model

Big data-based e-commerce logistics services not only require intelligent logistics equipment, but also the ability to capture and analyze big data. For many e-commerce companies that do not have original ability, they can imitate and innovate according to the service model of the competitors, and imitate the content and methods of logistics service innovation. For example, e-commerce companies can choose Jingdong as an imitation object and learn its innovation in logistics services.

5.4 E-commerce logistics network innovation model

The e-commerce logistics network is more flexible in the context of big data. E-commerce

companies have analyzed data, optimized business processes, and reconstructed logistics services by refactoring relational networks and value chains. At the same time, the e-commerce platform utilizes data integration resources to realize information transmission and sharing among all links of the supply chain, and realize network organization innovation.

6. Conclusion

The biggest challenge for logistics companies in the era of big data is how to improve their logistics service level through big data analysis, and the improvement of logistics service level is inseparable from continuous logistics service innovation. The logistics demand in the market has become so complicated and diversified. The logistics service innovation based on big data is the key to the position of e-commerce enterprises in the market. After understanding the impact of big data on the development of e-commerce, this paper first analyzes the e-commerce logistics service innovation under the background of big data from the aspects of logistics products and logistics processes. The rookie network is a good example to explain the big data to electricity. The impact of business logistics service process innovation, and finally explored the content, advantages and disadvantages of the four e-commerce logistics service innovation model. Therefore, through data analysis of customer needs and daily behavior habits, we can better carry out logistics service innovation and provide customers with innovative e-commerce logistics services, which adapts to market demand, improve service content and improve customer satisfaction. Degree is important.

References

[1] Zhao Xueqin, Zhang Jun, Forecast of Tmall “Double Eleven” Logistics Demand Based on Interval Grey Number Forecasting Model[J].Journal of Chongqing Technology and Business University(Natural Science Edition),2018,35(06):40- 45.

[2] Yan Haifeng, Bi Yujie, The impact of big data on the development of e-commerce [J]. Taxation, 2018 (20): 216.

[3] Zhou Guohua, Research on the influencing factors of logistics enterprise service innovation [D]. Huazhong University of Science and Technology, 2012.

[4] Yuan Xiaojuan, Research on Service Innovation of Small and Medium-sized Logistics Enterprises [D]. Chang'an University, 2015.

[5] Liu Dan, Characteristics and types of service innovation in logistics enterprises [J]. China's circulation economy, 2013, 27 (05): 28-34.

[6] Chen Lei, Research on the Optimization of Express Network Distribution in the Same City–Taking the Homepage of Beijing Express as an Example [D]. Jilin University, 2016.

[7] Shi Yuehong, Yin Yannan, Analysis of crowdsourcing model and risk management–Taking Jingdong crowdsourcing as an example [J].Market Weekly (theoretical research), 2015(08):32-33.

[8] Xia Wen, Research on the Strategy of E-commerce Enterprises Based on Big Data Precision Marketing [J]. Value Engineering, 2018, 37(32): 86-88.

[9] Gao Yuan, Research on improvement and improvement of distribution mode of rookie station [D]. Hebei University of Economics and Business, 2018.

[10] Zhang Xiaoqin, Innovation of e-commerce logistics service based on big data [J]. China's circulation economy, 2018, 32 (08): 15-22.

[11] Wei Hanqing, Research on Logistics Service Innovation Based on Customer Demand Orientation [D]. Henan University of Technology, 2016.