UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Research on Return Logistics in Online Shopping Environment

A case study of Taobao

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YU Sijia 19970813
ZHAO Wantong19970825

Supervisor: Sharon Cullinane

Abstract

With the rapid development of information industry, the global information process is constantly changing people's way of life, the world has stepped into a new era of network economy. The online shopping, as a new form of shopping is accepted by more and more people and has developed quickly, influencing the development of economy heavily. The scale of online shopping transactions is getting higher and higher, and the proportion of online shopping in the total amount of retail products continues to increase. However, with the rapid growth of online shopping business, the absolute value of its resource loss will also increase synchronously. With the increasing return events, the proportion of returned goods in the sales volume keeps increasing. The return process is a non-value-added service for enterprises, but this kind of service has a great impact on customers' shopping satisfaction.

The paper studies on the online shopping reverse logistics problems, focusing on the comparative analysis of the causes, characteristics and existing problems of the returned goods flow model in the existing online shopping environment by studying the return logistics in the online shopping environment, combined with the theories and methods of e-commerce, reverse logistics. In view of this problem, the optimization plan and specific measures to be taken for the management of returned goods flow were proposed, which caused the industry to think about the return logistics. Reduce the generation of return goods flow from the source, effectively reduce the cost of return goods flow, improve the service quality of return goods flow, improve the entire return goods flow system, and accelerate the good and fast development of e-commerce industry.

Keywords: E-commerce environment; Return Logistics; Logistics model

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1. Introduction

1.1 Background

In the 21st century, the global information process is constantly changing people's way of life, the world has stepped into a new era of network economy. At the same time, along with the widespread application of computer, network popularization and the improvement of electronic security trading platform and the expansion of government support, the way of people's consumption has had a huge change. The network shopping, as a new form of shopping is accepted by more and more people and developed quickly, which influence the development of economy. According to the 44th statistical report on the development of China's Internet released by the China Internet network information centre, by June 2019, the number of online shopping users in China had reached 639 million, with an increase of 28.71 million over the end of 2018, accounting for 74.8% of the total online users. The number of mobile Internet shopping users reached 622 million, with an increase of 29.89 million from the end of 2018, accounting for 73.4 percent of mobile internet users. In 2019, China's online shopping industry continued the momentum of rapid development in 2018. The scale of online shopping transactions is getting higher and higher, and the proportion of online shopping in the total amount of retail products continues to increase. With the support of the policy environment, the economic environment, the social environment and the policy environment, the online shopping market has a huge potential for development and will maintain the trend of rapid development in the future.

However, with the rapid growth of online shopping business, the absolute value of its resource loss will also increase synchronously. With the increasing return events, the proportion of returned goods in the sales volume keeps increasing. According to statistical report on the development of China's Internet, the return rate of general retailers is 5%-10%, while the return rate of products sold through the Internet is as high as 35%. The return rate of online shopping in China is about 25% to 35%. Although the situation of developed countries such as the United States is slightly better than that of China, the return rate of e-commerce is far higher than that of traditional commerce, and the related return processing cost is also high. The problem of returning goods will not only increase the operation cost of e-commerce platform, but also bring unprecedented challenges to the service in the process of returning goods. The return process is a non-value-added service for enterprises, but this kind of service has a great impact on

customers' shopping satisfaction. In the environment of e-commerce online shopping, the quantity of returned goods is measured in several pieces or even one piece, and they come from all parts of the world, which leads to a very complex environment for logistics management of returned goods.

On the one hand, good return service can attract more customers and improve the loyalty of existing customers. On the other hand, the timely and reasonable handling of the return problem can improve the overall operation efficiency of the merchants and improve the product quality and distribution process. The problem of returning goods is bound to become the problem that the network retailer should pay close attention to. However, at present, the vast majority of enterprises and individual merchants engaged in online shopping do not pay enough attention to the management of reverse logistics. The logistics mode of return is quite chaotic, resulting in unreasonable return process and decreased customer satisfaction. Therefore, the problem of reverse logistics of online shopping will be an important field of future development and research in the field of e-commerce. Therefore, the research on the problem of reverse logistics should be strengthened.

Network retailers in developed countries have summarized and explored some theoretical and practical experience in solving the problem of reverse logistics under the mode of e-commerce. However, China's research on this aspect started relatively late and has not yet formed a systematic theoretical basis and practical experience. How to further accelerate the development of the online shopping industry? In this paper, the author studies on the network shopping the enterprise reverse logistics problems, for the network shopping stores to choose the most suitable for their own return logistics model, provide a scientific basis for reasonable optimization of its distribution network system, improve the credibility of merchants, improve the quality of products and services, enhance core competitiveness of enterprises, establish a good image, then to promote the sustainable development of the e-commerce industry has important practical significance.

1.2 Research purpose

This article focuses on the comparative analysis of the causes, characteristics and existing problems of the return logistics model in the existing online shopping environment by studying the returned goods flow in the online shopping environment, combined with the theories and methods of e-commerce, reverse logistics, and return logistics management. In view of this

problem, the optimization plan and specific measures to be taken for the management of return logistics were proposed, which caused the industry to think about the return logistics. Reduce the generation of return goods flow from the source, effectively reduce the cost of return logistics, improve the service quality of return logistics, improve the entire return logistics system, and accelerate the good and fast development of e-commerce industry.

1.3 Research questions

1. What are the causes and problems of return logistics in the e-commerce environment?
2. What are the return logistics models in China, and the influencing factors of choice?
3. How to optimize return logistics management and specific measures to be taken?

2. Literature review

2.1 Overview of reverse logistics

2.1.1 The concept and driving factors of reverse logistics

The research on reverse logistics mainly started after the 1990s. The Council of Logistics Management (CLM) put it in 1992: it is a logistics activity that includes processes such as product return, material replacement, item reuse, waste disposal, reprocessing, repair and remanufacturing, etc. This definition is put forward from the perspective of waste management and is relatively simple.

Pohlen and Farris (1992) believe that reverse logistics is the opposite of traditional logistics.

On the basis of the two definitions above, Kopicky et al. (1993) defined reverse logistics as movement of goods from a consumer towards a producer in a channel of distribution.

Later, Carter (1998), Stock (1998), Rogers and Tibben-Lembke (1999), Mortiz Fleischmanna (2000), Dekker et al. (2003) explained the concept of reverse logistics from different perspectives, among which Dekker (2003) reviewed the concept and development of reverse logistics in detail.

In 2003, The European Working Group on Reverse Logistics defined reverse logistics as: planning, implementation and control of raw materials, intermediate inventory, and end products from manufacturing, distribution or use points to recovery points or appropriate disposal points process.

In China, Cai Linning (2003), Da Qingli (2004), Sun Linyan (2005) and other scholars also elaborated and studied the concept of reverse logistics.

In general, reverse logistics is proposed relative to forward logistics, and it is a system opposite to the direction of forward logistics. Reverse logistics in a broad sense includes all logistics activities in the entire process from waste products that are no longer required by consumers to usable goods that are re-released on the market. Its role is to transport waste that consumers no longer need back to production and manufacturing, and to become a new commodity or part of a new commodity. Reverse logistics and forward logistics together constitute a channel for the circulation of resources and products, and from beginning to end, and resources are utilized to

the maximum extent. Reverse logistics in a narrow sense refers to the process of remanufacturing, reusing or recycling products that have been discarded.

There are many reasons for reverse logistics, which can be roughly divided into return logistics and recovery reverse logistics. Return logistics is generally due to various reasons for the return of goods from consumers back to retailers, and the return of goods from retailers to manufacturers and it can be divided into normal returns and immediate returns. The former refers to commodities returned due to contract expiration, such as unsold returned commodities returned from retailers or distribution centers; the latter refers to returns resulting from sales and service processes, often from end consumers, and is purchased by consumers. Returning the product to the merchant shortly afterwards does not generally have much to do with environmental legislation. Recycling reverse logistics generally refers to the process of recycling waste items held by final consumers to various node enterprises in the supply chain for classification processing and reuse.

Regarding the driving factors for the formation of reverse logistics, Carter and Ellram (1998) believe that the reverse logistics activities of enterprises come from four aspects: government legislation, suppliers, customers and competitors. Dekker (2003) believes that there are three driving factors: economy, legislation and corporate relations. Sun Linyan (2005) believes that enterprise management of reverse logistics mainly comes from the pressure of environmental laws and regulations and is driven by economic interests. Da Qingli (2004) comprehensively summarized the driving factors of reverse logistics from an enterprise perspective, including four aspects: laws and regulations, economic benefits, ecological benefits and social benefits.

(1) Laws and regulations. In the industrialized world, the government's environmental legislation has effectively promoted companies to be responsible for the entire life cycle of the products they manufacture, requiring them to recycle and dispose of the products or packaging items they produce. For example, the regulations on packaging materials promulgated by Germany in 1991 require manufacturers to recycle the packaging materials of all sales items; the Netherlands requires auto manufacturers to recycle all used cars. In 1997, the Japanese Parliament passed a bill for compulsory recycling of certain materials. In January 2003, the European Union promulgated the Waste Electrical and Electronic Equipment Directive and The Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment (the RoHS Directive), stipulating that from August 13, 2005, producers are responsible for recycling and disposing of used equipment.

(2) Economic benefits. Logistics is regarded as a "third source of profit" and "a dark continent in the economic world." Although many companies regard reverse logistics management activities as an annoying thing with increased costs, there are still many management practices that prove that reverse logistics can also bring huge economic benefits. Through the recycling and reuse of waste items, on the one hand, enterprises can reduce production costs, reduce the consumption of materials, and excavate the residual value in the waste items, and directly increase economic benefits; on the other hand, they can enhance the company's "environmental protection" in a fierce competitive environment. In this way, enterprises can promote the image, improve the relationship with consumers, and indirectly improve the economic benefits of enterprises.

(3) Ecological benefits. Many products contain harmful substances to the environment. Direct landfill and incineration will not only cause resource loss, but also cause environmental pollution, which is not conducive to the healthy and sustainable development of the ecological environment. The manufacturer is responsible for the entire life cycle of the product. After the product is scrapped, it can be recycled in an appropriate way to produce good ecological benefits.

(4) Social benefits. With the increasing scale of production and the improvement of the degree of mechanization, the energy problem has become a bottleneck for the social and economic development in countries around the world, so people have turned their attention to energy to renewable energy with great development prospects. The recycling of the products produced by production enterprises is in line with the "green" thinking of social development, which is conducive to the establishment of a good public image in the society and produces huge social benefits.

2.1.2 Characteristics of reverse logistics

Reverse logistics management is different from forward logistics management and has the following significant features(Fleischmann M, 2001):

(1) Uncertainty. The forward logistics system generally only involves the uncertainty of market demand, while the uncertainty in the reverse logistics system is much higher, not only to consider the uncertainty of the market's demand for recycled products, but also to consider the recycling supply and treatment of waste products of uncertainty. The uncertainty of returned goods can be roughly divided into two aspects: internal uncertainty and external uncertainty.

Internal uncertainties are product quality level, remanufacturing delivery time, processing output rate, etc.; external uncertainties are factors outside the processing process, including the time, quantity and quality of returned products, and the time and level of demand. These will lead to uncertainties such as unstable inventory, inaccurate production plans, and lack of market competitiveness.

(2) More "suppliers" and less "demands". Contrary to the forward supply chain, reverse logistics is a multi-to-less structure. The used products are the beginning of the reverse logistics supply chain, and consumers of many products are suppliers of the reverse supply chain. The locations of reverse logistics are scattered, without certain rules and small in number, and cannot be transferred to the receiving place at once.

(3) Value decline in reverse logistics process. For returned or recalled products, a series of transportation, warehousing, processing and other expenses incurred during the flow from consumers to distributors will offset the value of the returned products. For example, if high-tech products such as recycled mobile phones are not used again in time, there is a risk of obsolescence.

(4) Diversity of input. The supply of raw materials for forward logistics is mainly realized by suppliers, while the recycled products as the source of raw materials for reverse logistics come from many parties: manufacturers, mainly inferior products and waste products produced in the production process; distributors, mainly including excess inventory and over-season inventory and products with quality defects; consumers, mainly refers to the EOU (End of use) and EOL (End of life).

2.1.3 Recycling methods of reverse logistics

According to Thierry' s point of view in 1995, he believes that there are four main ways to recycle:

(1) Direct reuse: The recovered items can be reused without any repair or only need to be cleaned and maintained at a relatively low cost, such as packaging containers such as containers and bottles;

(2) Repair: Restore the damaged product to a working state through repair, but the quality may be reduced, such as household appliances, factory machinery, etc.;

(3) Recycling: Just for the recycling of material resources and no longer retain any structure of recycled items, such as recycling metal from scraps, paper recycling, etc.;

(4) Remanufacturing: Compared with recycling, remanufacturing maintains the original characteristics of the product, and the recovered items are restored to the state of "new product" through the processes of disassembly, maintenance, and replacement, such as the remanufacturing of aircraft engines, remanufacturing of copiers, etc.

Marisa and Dekker (2003) divided the recycling methods of reverse logistics into two types. One is direct recycling. The recovered products have the same performance as the new products, and can be used and re-sold directly without any treatment. One is processing and reuse, which is accompanied by certain processing activities, such as product reuse level repair, module reuse level refurbishment, component reuse level remanufacturing, raw material reuse level recycling and incineration energy reuse.

2.2 Review of research on reverse logistics recycling model

There are many driving factors for reverse logistics management of enterprises, such as government legislative restrictions, enterprises reducing costs and satisfying customers' green consumption concepts. Regardless of the reason why the enterprise engages in reverse logistics processing activities, it is a complicated task to choose and decide which reverse logistics recycling mode to complete the reverse logistics recycling process.

Regarding the types and characteristics of recycling models, Bert Bras (1999) summarizes the research status of reverse logistics model design under the conditions of remanufacturing from three aspects: product, design and organization. Thierry (1995) and Jayaraman (1999) discussed the reverse logistics recycling process and model in detail from the aspects of reverse logistics membership and product recovery strategy. Guide (2000) take the product recycling of Xerox and Kodak as an example to describe how producers are responsible for management. Li-Hsing (2001) describes the recycling model of e-waste in Taiwan, China. Under this model, the government leads the recovery, processing and reuse of reverse logistics. Manufacturers may need to pay a certain amount of product waste costs, but there is no need to care about the specific issues of reverse logistics. Morrell (2001), Meade (2002), Spicer (2004), etc. describe third-party reverse logistics management methods in the literature. In this reverse logistics management mode, a third-party reverse logistics company performs the extended producer responsibility on behalf of the manufacturer and manages waste products. Manufacturers need

to pay a certain fee to the third-party reverse logistics providers to ensure that their products can be processed under the conditions of environmental protection and legislative requirements. Lieb (1996) believes that the use of third parties to handle reverse logistics will become more and more popular. This method will allow original product manufacturers (OEM) to have more opportunities to focus on their core capabilities. In recent years, the use of third parties to complete reverse logistics management has gradually become the most important strategic management option for enterprises. Fan Jianghua (2004) discussed the four modes of operation of reverse logistics: the public welfare social structure is responsible for the reverse flow model, the production enterprise jointly establishes the reverse logistics system model, the production enterprise independently builds the reverse logistics system model, and the production enterprise reverse logistics outsourcing Model, and gave the characteristics of each of the four reverse logistics models. Deng Yunxia (2004) discussed the three operating modes of reverse logistics: self-operated, joint-venture and outsourcing, and qualitatively discussed the characteristics of each operating mode. Qian Yong (2004) used typical cases such as Kodak to analyze the impact of policies on market structure and corporate behavior under the sharing and special product recycling system using industrial organization theory. Chang Xiangyun (2006) based on the "Extended producer responsibility" system, analyzed in detail the characteristics of the three types of reverse logistics management models of government responsibility system, producer responsibility system and third party responsibility system and the characteristics of applicable products.

When an organization manages reverse logistics, it must decide which reverse logistics management model to choose to complete the reverse logistics activities. Is it a self-built logistics system to complete these activities? Or does it work through cooperation with other organizations or through complete outsourcing? Decision-making on these issues is also largely a traditional "outsourcing or self-management" decision-making problem.

The traditional decision is based on whether the enterprise has the ability to self-operate logistics. If the enterprise has facilities and technology, it will be self-operated. This can be easily controlled. If a certain logistics function has certain difficulties, it is outsourced. In this decision-making model, the consideration of total logistics cost and customer service level is placed second, and the usual logistics outsourcing is to purchase transportation services from transportation companies or warehousing services from warehousing enterprises. These services are only limited to one or a series of decentralized logistics functions. The demand is temporary, and logistics companies cannot provide unique logistics services in accordance with

the company's unique business processes, that is, logistics services are loosely linked to the enterprise value chain. Enterprises are faced with a series of uncertain factors, unknown technology, uncontrollable economic environment and volatility in the provision of third-party logistics services. Ballou(1999) proposed a two-dimensional decision-making standard, thinking that logistics decision-making is mainly based on two factors: the degree of impact of logistics on the success of enterprises and the ability of enterprises to manage logistics. If the impact of logistics to the success of the enterprise is high, and the ability of the enterprise to handle logistics is relatively low, third-party logistics is used; the importance of logistics to the success of the enterprise is low, and the ability of the enterprise to handle logistics is also low, then outsource public logistics Service; logistics is very important to the success of enterprises, and the ability of enterprises to handle logistics is also very high, so use self-operated methods. Centering on the enterprise's strategic objectives, seeking the strategic balance of the logistics subsystem itself is the biggest feature of this decision-making standard. But this decision criterion has a fatal flaw: it does not consider the impact of cost. The total cost of logistics system is composed of total transportation cost, inventory maintenance cost, batch cost, total fixed storage cost, total variable storage cost, order processing and information cost, and customer service cost. These costs are inversely proportional. Generally speaking, each specific logistics system includes a set of decisions consisting of the number of warehouses, location, scale, transportation policy, inventory policy and customer service level.

With the increasing attention of reverse logistics, based on these theories, academia has also done some research on the choice of reverse logistics recycling management model.

Stock (2001) discussed the decision-making problem of reverse logistics outsourcing. It is considered that when outsourcing reverse logistics, it is not enough to only consider one factor of the company's core capabilities to make outsourcing decisions. It needs to be comprehensively considered from the aspects of employees, products, transportation, warehousing and inventory control, and other factors. But there is no discussion on how these factors affect and determine strategic decisions. Meade (2002) explained three ways to deal with reverse logistics: do nothing, self-operated, and cooperate with third-party reverse logistics providers. This paper proposes a model for selecting and evaluating third-party reverse logistics providers, but it does not discuss the decision-making problem of "outsourcing or self-operated" at the strategic level. Marco(2004) believes that the selection of the operation mode should be comprehensively considered from the influencing factors such as the number of returned products, the characteristics of the returned products, the company's core competitiveness,

customer service, and the company's control over the reverse supply logistics chain. The paper proposed a qualitative decision model, but the model is too simple and not very instructive. Deng Yunxia (2004) believes that when choosing the operation mode of reverse logistics, the particularity of reverse logistics needs to be considered, and the impact of different operation modes on the cost, quality, flexibility, and environment of the enterprise needs to be considered, and the reverse logistics mode of the enterprise is selected and evaluated with the aid of analytic hierarchy process. Yue Hui et al. (2004) believed that the company's strategic choices should be considered in terms of strategic importance, company's technical equipment capabilities, supplier management capabilities, costs, and benefits, and proposed a qualitative decision map. Similarly, Xu Jian (2006) believed that when choosing a reverse logistics method, it should be considered comprehensively from the perspectives of economy, management, and technology, and a qualitative decision three-dimensional model is given. When studying the problems of reverse logistics in these Chinese literatures, more traditional decision-making methods and theories are applied in the field of reverse logistics, but the characteristics of reverse logistics are not fully considered.

Most of these documents discuss and determine qualitatively from the perspectives of management importance such as strategic importance, core competitiveness, company logistics capabilities, customer service, and professional division of labor when discussing the choice of recycling processing models. The selection process and research results are generally qualitative description. Some scholars believe that the choice of the reverse logistics recycling model by enterprises is a matter of economic benefits. No matter what form the enterprise uses to recycle the product, its ultimate goal is to maximize the enterprise's benefit. It is believed that the enterprise's choice of reverse logistics recovery model can be abstracted as an economics issue.

2.3 The development of reverse logistics

Return logistics refers to the flow of goods resulting from the return of customers who do not meet the order requirements and problematic products to upstream suppliers in the middle and downstream of the supply chain. It is the opposite of the flow of forward logistics and can be basically divided into two Category: One is the return of goods from consumers to retailers, and the other is the return of goods from retailers to manufacturers (Zhao Jing & Li Xinchun, 2007).

The return logistics is an important branch of reverse logistics, which occupies a large proportion. In recent years, with the development of e-commerce, the increasingly fierce market competition and the continuous improvement of consumer requirements, there have been more and more return incidents, and the return rate has become higher and higher. The problem of returns is becoming a common problem faced by various industries. Academics and business people also pay more and more attention to the study of return logistics management. The traditional business philosophy only focuses on the product development, production and promotion stages, concentrating on these key forward logistics aspects, neglecting the benefits of the reverse logistics link, not dealing with returns in a timely manner, and there is no special process of return logistics management. However, since the return of goods is an unavoidable phenomenon, if we can scientifically understand and manage the problem of return of goods, we can save a lot of costs for the enterprise and bring considerable benefits. Convenient and fast return policy and return procedures can better attract new customers and stabilize existing customers. On the contrary, if there is no good return service, it will cause customer satisfaction to decline, affect customer enthusiasm and even lead to the loss of customers. According to a survey and research, more than 80% of customers believe that in the face of the same product, when choosing a business, they will definitely choose a business with a fast and convenient return process and reject those who have a cumbersome return process and low return efficiency. Especially in an e-commerce shopping environment, whether the return problem can be handled properly is an important factor in determining whether a customer purchases. Therefore, return logistics has become a powerful weapon for competition between enterprises, another source of profits for enterprises, and a very important part of the entire logistics system.

3. Methodology

3.1 Literature research method

Zhang Mingkang (2002) believed that Literature research method is a method to obtain data by investigating literature according to a certain research purpose or topic, so as to comprehensively and correctly understand and master the research problem. Literature research quilt is widely used in various subjects. Its function has: (1) can understand the history and current situation of the problem, help determine the research topic. Can form a general impression about the object of study, conducive to observation and interview. (3) can get the comparison of the actual data. It helps to know the whole picture.

Based on the theories of economics and management to carry out research. This article applies economic theories such as supply and demand theory, transaction cost economics and management theories such as supply chain management and integrated logistics management to the supply chain management environment. We'd like to classify the e-retailer's selection of reverse logistics. Through literature collection and collation, we will research the theoretical results related to this article, digest and absorb based on reading the literature. We will master the theories and practical operations of domestic and foreign companies in this field, and propose that there are sufficient questions supported by theory: Through the analysis of reverse logistics and related environmental policies in the context of supply chain management, the overall ideas, goals achieved and ways to achieve them are proposed. Through reading a large amount of literature, this paper studies the reverse logistics mode in the environment of e-commerce and the system optimization model of reverse satisfaction, and finally chooses the reverse logistics mode suitable for the environment of online shopping.

3.2 Qualitative analysis

Qualitative analysis is the analysis of the "nature" of the research object. To be specific, it uses the methods of induction and deduction, analysis and synthesis as well as abstraction and generalization to process all kinds of materials, so as to realize the essence of things and reveal the internal laws. (Zhang Yan,2011)

This paper focuses on the study of reverse logistics in the e-commerce environment, combining the theories and methods of e-commerce, reverse logistics and return logistics management, so

as to lay a foundation for us to put forward opinions and improve the scheme. We use comparative analysis method to analyze the typical network reverse logistics model.

3.3 Case study method

Case study method is a research method that identifies a specific object in the research object, conducts investigation and analysis, and makes clear its characteristics and formation process.(Liang Liping, 2004)

Combined with the specific case of taobao to analyze the paper put forward to improve the return logistics process. According to the theory of e-commerce, this paper puts forward some countermeasures to solve the problem of reverse logistics in China's online shopping enterprises, and demonstrates them through practical cases.

Through the above research methods, we compared and analyzed the causes, characteristics and existing problems of reverse logistics mode.

In view of this, this paper puts forward the optimization scheme of reverse logistics management and the concrete measures to be taken, thus causing the industry to think about reverse logistics. From the source to reduce the production of reverse logistics, effectively reduce the cost of reverse logistics, improve the service quality of reverse logistics, improve the whole reverse logistics system, accelerate the sound and rapid development of the e-commerce industry.

4. Empirical findings and analysis

All findings presented in this chapter is presented in order following the research questions. The chapter is initiated in 4.1 with the overview of e-commerce. In chapter 4.2, we summarized five main factors in causing the return logistics, there are the product itself, consumer, merchant, network market and forward logistics. And five problems are stated in chapter 4.3, including the return process is cumbersome and the processing cycle is long; the return policy and return insurance service increase the return rate; the standard of return is different and the cost is high; the development of third-party logistics enterprises is not perfect; misunderstandings about the return logistics. In chapter 4.4, we divide the nowadays return logistics models into dour categories: self-operated return logistics model, third-party return logistics model, joint return logistics model and integrated solution provider model (ISP). In chapter 4.5, we talk about five factors in influencing the choice of return logistics model: economic, commodity, customer, market competition and internal factors. Then a caparison between above four models by the Balanced Score Card from the dimensions of finance, customers, internal operations, learning and growth is presented in chapter 4.6.

4.1 The concept of e-commerce

As a new form of business activity, e-commerce has brought an unprecedented revolution to the world, and it has a huge impact on the fields of economy, society, employment, law, culture and education, and will enable humanity to truly enter the information society.

The definition given by the World E-Commerce Conference is: Electronic Commerce, which refers to the realization of electronic trade activities.

The narrow sense of e-commerce is also called electronic transaction, which mainly refers to the use of communication methods provided by the Internet to conduct electronic transactions on the Internet, which is the electronization of all aspects of traditional business activities.

E-commerce in a broad sense is also called electronic business, which refers to various business activities including electronic transactions that are carried out using the network environment. Including market analysis, customer management, commodity management, supply chain management, electronic data exchange, electronic currency exchange, inventory management, corporate decision-making, etc.

In layman's terms, e-commerce refers to the use of electronic technology and networks to conduct business and transaction activities. By browsing the commodity information on the Internet, the transportation of the logistics distribution system and the secure online electronic payment system, the whole process of business activities is paperless, and it is efficient, electronic, digital and networked.

The conceptual model of e-commerce is a general abstract description of e-commerce activities. It consists of transaction subjects, transactions, electronic markets and logistics, business flow, capital flow, information flow and other elements, as shown in figure 1.

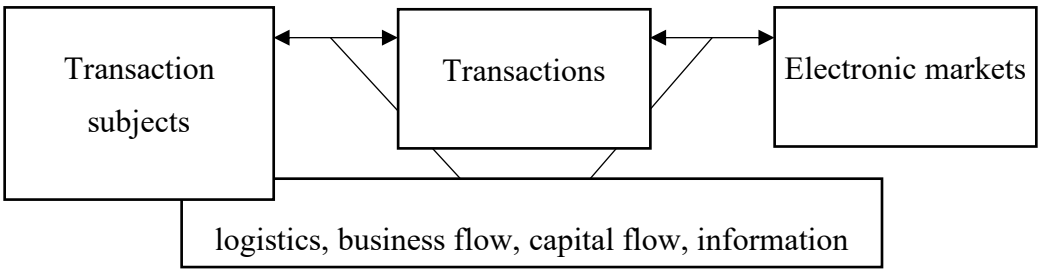

Figure 1: The conceptual model of e-commerce

4.2 Causes of return logistics in the e-commerce environment

According to the *China Online Shopping Market Research Report*, the most unsatisfactory aspect of users' online shopping is the long delivery time, which accounts for 61.6%. Besides, 59% of users feel that the product is inconsistent with the website promotion. 25.3% of users said they bought counterfeit and shoddy products. 18.1% of users encountered a situation where they cannot return or exchange goods.

Based on the above survey, this article further analyzes the reasons for the return of goods under the online shopping environment. There are mainly the following factors: the product itself, consumer, merchant, network market and forward logistics (Wang Xiaoyu, 2009).

(1) The product itself

Because the product itself may have defects in the design, production, and manufacturing processes, or due to the missing inspection of the defective product, the quality of the product received by the consumer may have problems. Besides, the size, color, specifications, etc. do not meet the requirements, will also cause the return of goods.

(2) Consumer

In the online shopping environment, many consumers often have impulsive buying behaviors, which are affected by various promotional price reduction activities or advertisements on the Internet. It is easy for customers to impulsively purchase goods that they do not need at all, or buy too much at once. After receiving the goods, they find that the goods cannot reach the level of their expectations and can’t meet their own needs, so this irrational consumption behavior leads to more and more returns.

(3) Merchant

With the increasingly fierce competition in the e-commerce transaction market, in order to attract more consumers, merchants have launched a variety of return policies in favor of consumers, such as "seven days without reason to return", "return if you are not satisfied" and other strategies. The introduction of these policies has further stimulated consumers to make impulsive purchases, so that consumers have no worries when shopping, and they directly return the goods after they feel dissatisfied. These strategies have greatly increased the rate of returns while facilitating consumers.

(4) Network market

Compared with the traditional shopping model, online shopping is carried out in a virtual network environment, consumers can not feel the real goods, they can only choose the desired goods through the merchant's text description and picture information on the web page, while these commodity information are provided by the merchants themselves, which means consumers cannot know the actual accuracy. The introduction of text and pictures does not allow consumers to understand the comprehensive information of the commodity, and may also mislead consumers. Often there is a certain error between the picture information and the real product, which does not meet the consumer's expectations, or the goods received are not consistent with the online description. The fictitious nature of the online market has led to a serious asymmetry of information between consumers and merchants, which in turn has led to the creation of a large number of returns.

(5) Forward logistics factors

In the process of forward logistics, the order may not match due to operational reasons, the product or quantity may be wrong, and the same order may be repeatedly delivered; in the

process of product distribution, brutal loading and unloading may occur, causing a certain degree of damage to the product, and the distribution path is not reasonable and too long, causing some products to exceed the shelf life or incorrect storage methods, causing the goods to deteriorate, increasing the number of returns.

4.3 Problems of return logistics in the e-commerce environment

According to the survey results released by the China Customer Service Commission, while online shopping is convenient for consumers, it also has many problems such as many disputes about returns and exchange, long waiting time for returns and exchange, and the difficulty for consumers to protect their rights. In particular, the problems of long processing time and low efficiency of return are more serious, and the level of after-sales service of the entire online shopping needs to be improved urgently.

(1) The return process is cumbersome and the processing cycle is long

For example, women's clothing and cosmetics products operated by Taobao Mall, especially clothing products, often produce returns because they fail to meet the psychological expectations of consumers. According to a survey and research, about 15% of all products sold by merchants may need to be coordinated after-sales due to consumer dissatisfaction. The final return rate reaches about 7% and the exchange rate is about 5 %. It takes a lot of time to process returns and exchanges, and consumers have a long waiting time. The current e-commerce return and exchange process is mainly: apply for return; reach a return and exchange agreement; express pickup-return and storage acceptance; merchant confirmation; merchant re-shipment / merchant refund. You can see the entire return processing process is cumbersome, the average time to process returns is at least more than a week, and some even up to a month. Especially after holidays or after merchants hold promotional activities, more return goods may occur. Restricted by the logistics and distribution capabilities of the merchants, the phenomenon of delayed returns is exacerbated, and the corresponding return processing time is also longer, which is likely to cause consumers dissatisfaction, these all contradict the speed of online shopping.

(2) The return policy and return insurance service increase the return rate

At present, most of the online shopping merchants in China have set a minimum 7 days return policy to attract consumers, some up to 30 days. Basically, except for some special commodities

and other stipulated commodities, the goods and packaging in good condition all can be returned. By comparing relevant data, an online merchant said that since joining the "7-day unreasonable return" service system, the store's return rate has greatly increased, from the original 20% to 60%. On the one hand, the policy of unconditional returns stimulated consumer demand and increased sales, but on the other hand, it increased a large number of returns, which caused more disputes about returns and exchanges, which forced merchants to invest more costs in handling the problem of return goods. The cost of return management and logistics costs have increased significantly, so that resources have not been effectively allocated.

In online shopping, there have always been disputes or concerns about which party should bear the freight when returning the goods. In the current refund transaction disputes, 42% are caused by inconsistent negotiations between the buyer and the seller on the return postage problem. The special insurance product launched for online transactions-return freight insurance, provides insurance for one-way freight due to returns, reducing consumer concerns about return costs, thereby increasing the possibility of returns to a certain extent.

(3) The standard of return is different and the cost is high

In order to attract consumers, merchants have launched a variety of return policies, there is no unified return standard, and the country has not issued formal and uniform related policies and laws and regulations to clarify the return standard, the responsibility for returning, and the settlement of return payments, leading to some chaotic situations with unclear rights and responsibilities during the return process.

In the online shopping environment, the market entry barrier is low, and the merchant may be an enterprise or an individual. When the quality of online shopping products has problems, merchants generally require consumers to provide pictures and video files of the problematic products to prove that there are quality problems, as a basis for return. However, some special products, such as electronic products, digital products, etc., because they cannot directly determine the cause of their quality problems, the merchant will require consumers to issue a quality test report from a third-party organization. If the product is identified as having quality problems, the relevant appraisal costs are borne by the merchant; if it is determined that the product does not have quality problems, the consumer will bear the costs. The average consumer, considering the high testing cost and time cost, often chooses to abandon the return of goods and give up rights protection after comparing the value of the goods. Therefore, at present, the management of online merchants in judging whether there are quality problems in

online shopping products and whether they can meet the return standard is relatively confusing. The problem of returning goods has become a dilemma in online shopping.

(4) The development of third-party logistics enterprises is not perfect

In addition to the self-operated logistics system to manage the flow of returned goods, most online shopping merchants choose to cooperate with third-party logistics companies to manage the flow of returned goods. However, the concentration of third-party logistics market in China is still relatively low, the scale is not large, the location is scattered and the level of logistics information technology is not high. There is a lack of cooperation with online shopping merchants, the quality of logistics services and service prices are uneven, causing consumption dissatisfaction, such as the service promised to deliver to the door, actually only deliver the goods to the customer downstairs or the property management centre; the quality of the courier service personnel is not high, the service attitude is poor; the goods are damaged during transportation and customers cannot be compensated timely, etc., resulting in great differences in the service level of the return logistics, which adds a certain degree of difficulty to the scientific and standardized management of the return logistics.

(5) Misunderstandings about the return logistics

In the reverse logistics consulting council's survey on obstacles to the implementation of reverse logistics, it was found that 40% of logistics managers believe that reverse logistics is relatively unimportant, and more than 30% of managers believe that their companies have not formulated reverse logistics-related strategies or systems. The merchants do not pay enough attention to or even ignore the return logistics, only aiming at the increase in the sales volume of goods, do not make the necessary investment and management of the reverse return logistics, regard the return logistics as a burden, and fail to realize the important role of the return logistics, causing low efficiency. In fact, the rate of returned goods is constantly rising. We must face the existence of the returned goods flow and manage the returned goods flow scientifically, so that consumers can be satisfied with services and improve the competitiveness of businesses.

4.4 Return logistics models in e-commerce environment

In the online shopping environment, the operation mode of the return logistics can be divided into the following categories: self-operated return logistics model, third-party return logistics model, joint return logistics model and integrated solution provider model (Liu Tian & Mou

Yuanchao, 2006). Enterprises need to choose the appropriate return model based on their actual situation and background.

4.4.1 Self-operated return logistics model

(1) The meaning of self-operated return logistics model

The self-operated return logistics model refers to the manufacturer enterprise using its own resources to establish an independent return logistics system and manage the return process and handle the recovered items by itself. As figure 2 shows.

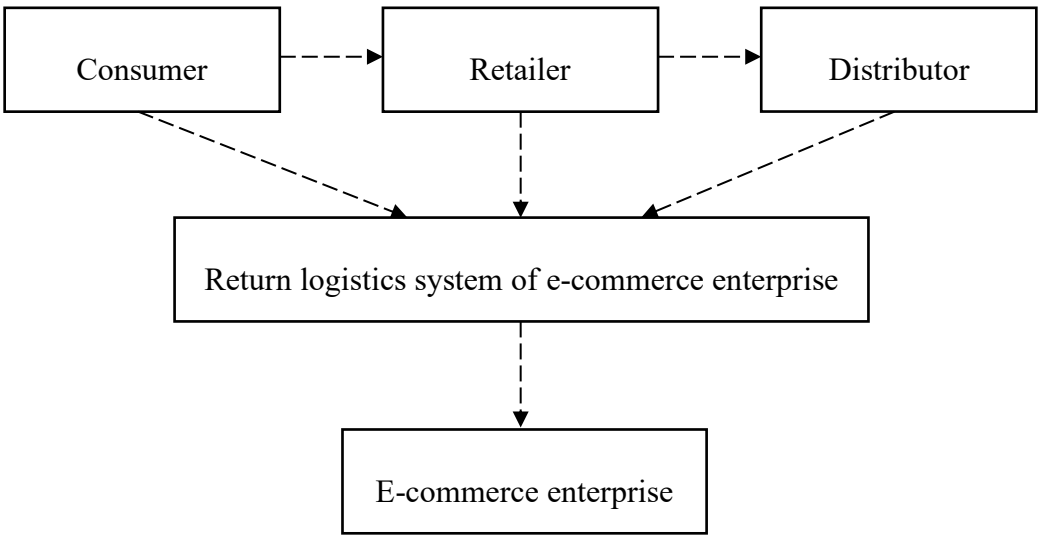

Figure 2: The self-operated return logistics model

(2) Advantages of self-operated return logistics model

Firstly, e-commerce companies can master the operation process of the entire return cargo flow system, strictly control all processes, and strengthen the effective control of companies in the supply chain. The enterprise completes the return business by coordinating the resources of various departments. The return cargo flow business is easy to cooperate closely with other business process, which can greatly improve the logistics efficiency, and can be resolved in time when problems occur, maintaining the stability of the system.

Secondly, the company handles the return problem itself, and directly contacts the consumer, so it can accurately and quickly obtain first-hand feedback on customer and product quality. This information is helpful for companies to discover product problems in a timely manner,

improve product design and production processes, improve product quality, adjust development strategies based on customers' changing needs, and improve the competitiveness of enterprises.

Thirdly, through the self-operated return logistics system, information can be transmitted more quickly, accurately, and flexibly within the enterprise, and the response time is shorter. Because the flow return process and return procedures are relatively simple, the customer’s return needs can be processed in time, thus stabilizing old customers and also conducive to attracting new customers, improving customer satisfaction, and shaping a good corporate image.

Fourthly, the return logistics system can make full use of the original forward logistics system resources of the enterprise and build a return logistics network on the basis of the original forward logistics network, which not only reduces costs, but also facilitates the coordinated operation of the two systems. And effectively improve the utilization rate of resources (Zhang Fen, 2011).

(3) Disadvantages of self-operated return logistics model

The self-operated return logistics model has higher requirements on the degree of specialization. Its shortcomings are manifested in:

First, the enterprise manages the return problem through the self-operated return logistics system, which involves multiple processes such as transportation, warehousing, packaging, and reprocessing. It needs to invest a lot of capital and occupy various human, financial and material resources. Costs and the enterprise operating risks have also increased. For small companies with limited strength, self-operated return logistics systems are costly and risky, which are not suitable.

Second, the self-operated return logistics system requires not only the investment of good hardware facilities, but also professional logistics management, and the introduction and training of a group of high-quality logistics management personnel. On the one hand, this increases the expenditure of the enterprise; on the other hand, if the enterprise invests too much time and energy in the construction of the return logistics system, and ignores other processes such as production and sales, it will affect the healthy development of the enterprise.

Third, from the perspective of the allocation of the entire social resources, self-operated return logistics systems are repeated construction, which is not conducive to the optimal allocation of the entire social resources.

(4) Application scope of self-operated return logistics model

At present, the self-operated return logistics model is mainly used by e-commerce companies with strong financial strength and large business scale, and e-commerce websites operated by traditional large-scale manufacturing companies or large-scale wholesale companies. They have certain capabilities and corresponding resources. A large amount of capital is used to build a logistics system, so the overall cost is relatively high and the management is relatively difficult.

4.4.2 Third-party return logistics model

(1) The meaning of the third-party return logistics model

The third-party return logistics model refers to E-commerce companies outsource the return of goods to professional third-party logistics companies, who will complete the entire return and processing process. Third-party logistics is a product of the development of the logistics industry to a certain stage. The company outsources some non-core businesses to specialized companies engaged in the business and concentrates limited resources on the core business, which further highlights the company's core competitiveness. At the same time, all processes of the system are completed by more professional enterprises, and the competitiveness of the entire supply chain is greatly improved.

The comparative cost theory proposed by the British economist Ricardo, the core competitiveness theory proposed by Prahalad and Hamer, all reveals that companies will outsource business that does not have advantages or have the greatest disadvantages to other companies with advantages. Concentrating limited resources on core business, which will help both parties expand their advantages in the fierce market competition. For example, FedEx launched the return of goods service for e-commerce companies. E-commerce enterprise customers who accept this service can go to any FedEx service center to return the goods and get a refund immediately. FedEx will classify all returns and ship them back to various locations designated by e-commerce companies. At the same time, FedEx has also carried out information tracking processing on returns, and companies can track the return information on the website at any time. With the success of more and more third-party return logistics model, more companies will be attracted to choose this model to manage the return cargo flow. As figure 3 shows.

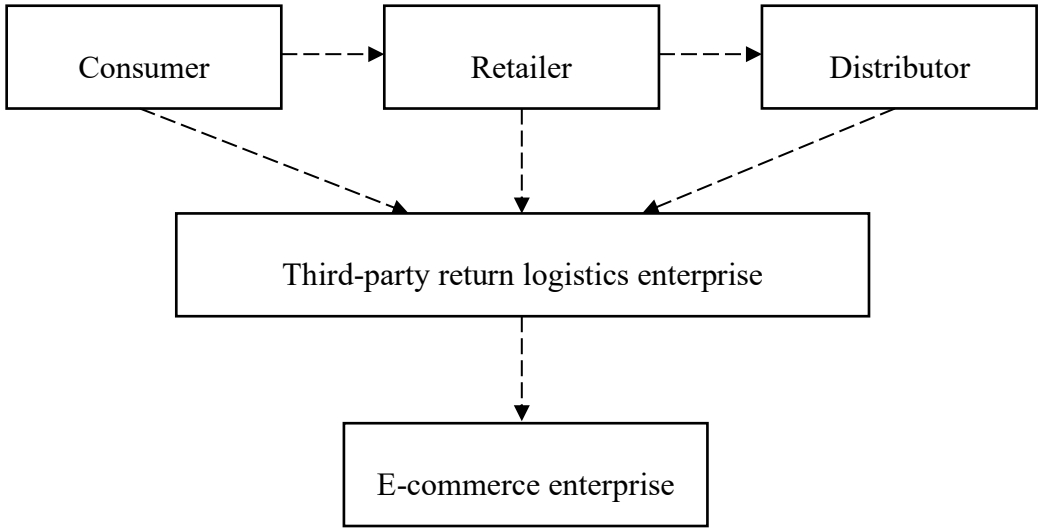

Figure 3: The third-party return logistics model

(2) Advantages of the third-party return logistics model

Compared with other models, the third-party return logistics model has many advantages, mainly reflected in:

First, e-commerce companies outsource the return shipment flow, and can focus their main energy and resources on developing their core businesses and businesses with competitive advantages. The types of returned goods are not concentrated and wide, and have high requirements for the returned goods flow system. If these businesses are outsourced to third-party logistics companies, they will use their more professional logistics systems, facilities and personnel to integrate various logistics resources to provide efficient logistics services and will inevitably reduce the burden on enterprises and give play to their respective business advantages.

Second, the third-party return logistics model has a strong cost advantage. The enterprise does not need to invest a lot of money in the construction and maintenance of the return logistics system, which saves investment in fixed assets and management costs, reduces the business risk of the enterprise, and the enterprise can invest more resources to develop new advantageous projects. Third-party logistics companies also use centralized logistics services to classify the return logistics in a centralized manner to achieve economies of scale and reduce operating costs.

Third, the third-party return logistics company has a more professional advantage. With its advanced logistics equipment and technology, better logistics network, richer logistics experience, higher level of management personnel and management technology, it can solve various problems in the process of returning goods better and faster, guarantee the service quality of returning goods flow, and provide customers with stable, reliable and high-level services. Especially in today's technological progress, changing customer needs, and increasingly high requirements for service quality, third-party logistics companies can update logistics equipment, information and technology more quickly, and can better adapt to changing customer requirements, better meet these needs.

(3) Disadvantages of the third-party return logistics model

However, outsourcing the return of goods flow services to third-party logistics companies still poses certain risks to e-commerce companies, mainly reflected in:

First, because e-commerce companies cannot obtain first-hand information about customers and returned products, there is a certain lag in the information, which is likely to cause large information deviation between the two parties. The company does not directly control the return of goods flow business and cannot guarantee the accuracy and timeliness of the return information delays the company's timely improvement of technology and reduces losses, and affects the company's improvement of product and service quality.

Second, when outsourcing the flow of returned goods, it is possible to leak out the company's patented technology, product internal information or business secrets, and there are certain risks. At the same time, if the enterprise relies too much on the third-party logistics enterprise, when the return problem occurs, the customer will attribute the responsibility to the e-commerce enterprise instead of the third-party logistics enterprise. This is not only detrimental to the reputation of the enterprise, but also detrimental to the benign development of the enterprise.

Third, the cost of the returned goods flow mainly includes the costs and expenses for the recovery, inspection, classification, maintenance, distribution, processing, re-use and re-sale of the reprocessed products, and e-commerce companies pay to third-party logistics Enterprise logistics costs also include entrusted management costs, etc. Due to the uncertainty of the returned products, it also brings certain difficulties to accurately calculate the cost of outsourcing returns.

Fourth, at present, the flow of third-party returns is not yet mature, has not reached a certain degree of specialization and scale, and lacks selection criteria and criteria for evaluating the service level of third-party logistics enterprises. The relationship between the company and the third-party logistics company is consigner and consignee, based on mutual trust. There may also be information asymmetry and moral hazard issues. As for the choice of third-party logistics providers, there is no past business information to refer to, which brings certain difficulties to the company's business decisions. The development of the logistics industry started late, and the laws and regulations are not perfect. Some third-party logistics companies have backward technology, non-standard operation, low service quality, and low personnel quality. The overall logistics service level needs to be further improved.

(4) Application scope of the third-party return logistics model

The third-party return logistics model is suitable for most online shopping merchants. Large-scale and powerful enterprises can outsource all return cargo flow business to third-party logistics enterprises, concentrate resources to improve the core competitiveness of the enterprise, or they can outsource part of the return cargo flow business and cooperate with third-party logistics enterprises to manage the return cargo flow, saving costs while also strengthening the control of the enterprise. For weaker SMEs and individual merchants, the third-party return logistics model is the best choice, and can achieve higher quality services at a lower cost.

4.4.3 Joint return logistics model

(1) The meaning of the joint return logistics model

The joint return logistics model means that e-commerce companies that produce the same or similar products cooperate for better efficiency, establishing a common return logistics system in the form of joint ventures. They share risks, share revenue, and share resources and complement each other through advantages, and provide related return flow services for participating enterprises and even non-cooperative enterprises. As shown in Figure 4.

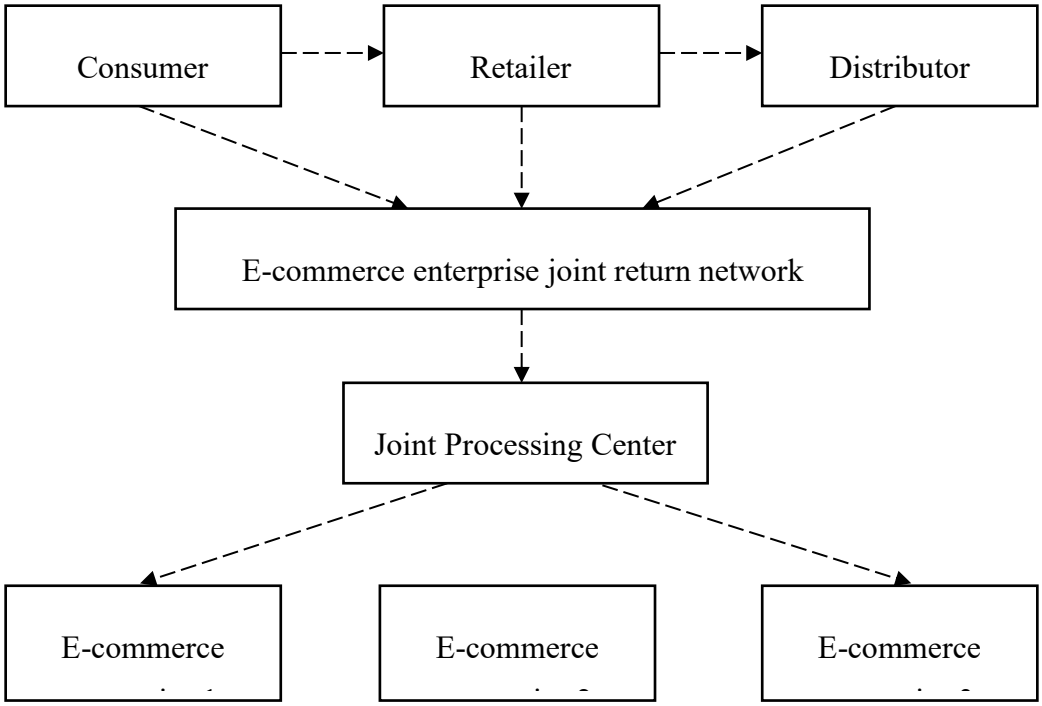

Figure 4: The joint return logistics model

(2) Advantages of the joint return logistics model

The joint return logistics model is a model between self-operated and third-party return logistics, so it has both advantages and disadvantages. It has advantages in logistics cost, professional technology, economies of scale, and social benefits, and the combination will produce an effect of one plus one greater than two (Chen Yao, 2003). Specifically reflected in:

First, in terms of cost savings, through the establishment of a joint return of goods flow system, the information exchange and cooperation between the cooperative enterprises have been strengthened, and the trust between each other is also higher, which can effectively reduce all kinds of expenses incurred during the transaction process and reduce transactions. Risks and problems in cooperation can be resolved in a more timely manner. Due to the joint use of a joint return logistics system, a large amount of system construction costs are saved to reduce the cost. The joint return processing center handles the return of joint enterprises in a unified manner, which can reduce transportation costs and labor costs, and large-scale operations bring about improved benefits.

Second, under the joint model, enterprises can directly realize the sharing of resources, learn from each other, complement each other, promote strengths and avoid weaknesses, and give

full play to their advantages in technology and talents. For small and medium-sized e-commerce companies, the joint model has advantages over the self-operated model, because through cooperation, it can not only effectively reduce costs, improve product quality, and optimize product design, but also achieve risk sharing and reduce operating risks to achieve win-win.

Third, the joint processing model is more professional and reliable. The joint processing center has advantages in terms of facilities, technical strength and professionals. It can concentrate its efforts on professional management of the return logistics, and it has more timely, accurate and understanding of the information. The development trend of the entire logistics industry, and make timely strategic and tactical adjustments.

Fourth, in terms of economies of scale, the joint model is conducive to overcoming the shortage of resources in a single enterprise, giving full play to the advantages of economies of scale, while maintaining the agility of suppliers. For a single enterprise, economies of scale will cause the overlapping of departmental institutions and the increase of management, which will affect the flexibility of its operation. However, the scale benefits generated under the joint model are agile and flexible, which cannot be achieved by a single enterprise.

Fifth, without repeated construction of the return logistics network, the optimized allocation of resources between joint enterprises and enterprises can effectively avoid the waste of social resources.

(3) Disadvantages of the joint return logistics model

Although the joint return logistics model is very good in theory, it is not so easy in the actual operation process, and there are certain difficulties. The main problem is that the joint model is aimed at maximizing the overall benefits, but specific to each process may not be able to achieve the maximum benefit, so it may cause some companies to withdraw from the union in the middle of the cooperation process and break the stability of the joint. When looking for partners, there will be a crisis of trust between companies, which will affect the establishment of the consortium. In the process of cooperation, it is also a very difficult task to coordinate the resources between various enterprises and take into account the interests of all parties. During the cooperation, there will inevitably be some conflicts of interest. When the overall resources are limited and cannot meet the needs of multiple enterprises at the same time, how to operate, these issues must be considered when establishing a joint model. After the establishment of the corporate consortium, there will be certain obstacles in the integration of corporate culture and

personnel among various enterprises, which need to be well coordinated. In the consortium, the scale, ability, technical level, and management level of each enterprise are different. Some companies with insufficient experience and weak capabilities may cause a certain effect on the realization of logistics scale and improve the level of logistics management. limits. In the process of cooperation, important information leaked inside the enterprise may be used by competitors in the same industry, which may affect the stability of cooperation.

(4) Application scope of the joint return logistics model

The joint return logistics model is suitable for the same type of e-commerce enterprises with a higher concentration. They have certain financial and technical advantages. They can jointly establish a return logistics management center to form a scale effect, thereby improving logistics technology and reducing logistics cost and improving logistics efficiency.

4.4.4 Integrated solution provider (ISP) model

(1) The meaning of the integrated solution provider model

The "Integrated Solution Provider" (ISP) model refers to: enterprises with expertise in a certain industry or several industries. They combine professional technology with Web technology to provide customers with personalization, customization and value-added services. Under this model, service providers have to undertake the business of designing the entire return process, logistics process, and handling returned goods (Xie Lili, 2006).

(2) The processing flow of the integrated solution provider model

Return Logistics of the United States is a relatively mature comprehensive solution provider, specializing in the reverse logistics of the pharmaceutical industry, taking it as an example to illustrate the operation process of this model. It provides contracted pharmaceutical manufacturers with returns, product recalls, expired drug disposal, etc., and provides comprehensive solutions for authorization, certification, packaging, and transportation. The customer who applies for product return can be a consumer or medical institution, or a pharmaceutical retailer. Its business process is shown in Figure 5.

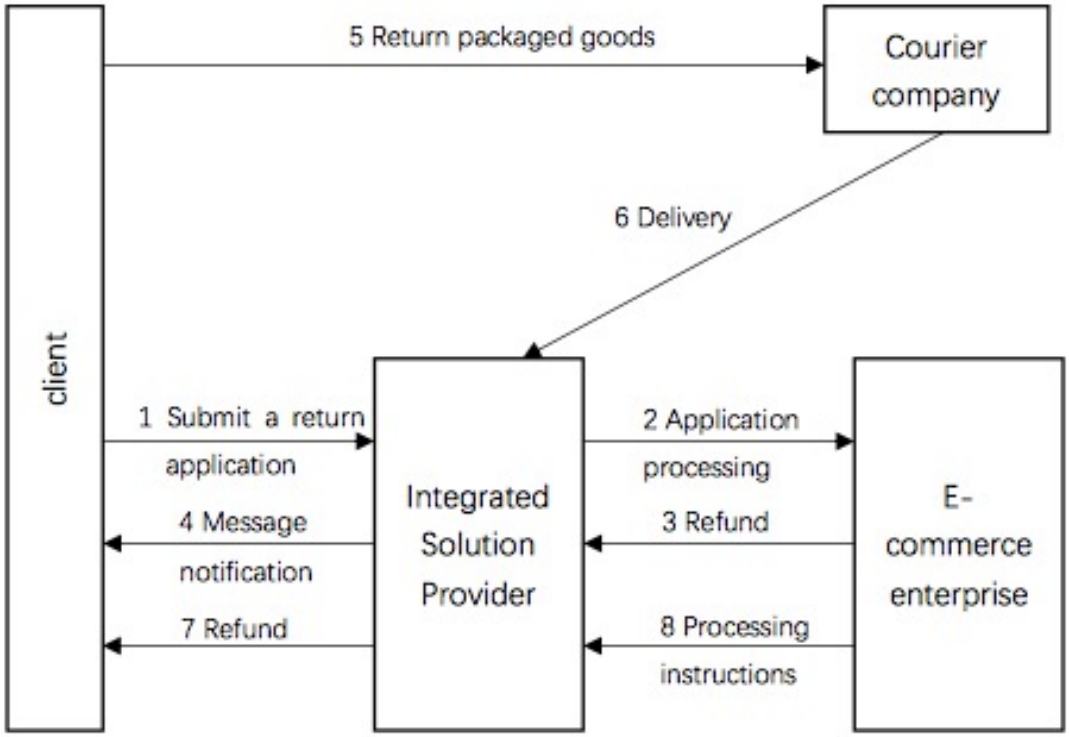

Figure 5: The processing flow of the integrated solution provider model

1 The customer logs on the ISP server of the integrated solution provider on the Internet, submits a return or return application for the goods, and the application is then sent by the ISP server to the corresponding e-commerce enterprise.

2 After the e-commerce company accepts, agrees to return the goods or returns the application, it will promptly return all relevant costs (such as payment, processing fees, etc.) arising from the returned goods to the comprehensive solution provider.

3 After the integrated solution provider receives the refunded money, it informs the customer that the return was successful. At the same time, the courier company will immediately contact the customer and retrieve the returned goods to the integrated solution provider's processing center.

4 The processing center will check and accept the returned goods, confirm that they are correct, and meet the return conditions, and will inform the customer and the e-commerce company of the results of the return process; If the return does not comply with the relevant regulations, the

processing center will send a discrepancy report to the customer and the e-commerce company, waiting for the e-commerce company's further processing plan.

5 After the e-commerce company finalizes the return processing plan, the integrated solution provider will use specialized technical means to process these returns. Finally, the integrated solution provider sends the returned payment and processing report to the customer, and the e-commerce company pays the corresponding solution fee to the integrated solution provider.

(3) Application scope of the integrated solution provider model

Under the model of an integrated solution provider, e-commerce companies basically hand over the entire reverse logistics business to third parties. They only need to select a suitable comprehensive solution provider, reach a cooperation agreement, and outsource all business activities and specific operations related to reverse logistics to the ISP. Therefore, the business scope of the integrated solution provider is wide and complex, the corresponding investment and risk are also large, and the professional requirements are very high. Therefore, generally, an integrated solution provider can only focus on a certain industry.

The integrated solution provider model is the latest reverse logistics model and is at the initial stage of development. Since this model is built entirely on the basis of e-commerce, it is based on the development of the e-commerce market to a certain scale and the reverse logistics industry to a certain level. It is a brand-new operating model, instead of transplanting and applying previously established reverse logistics practices and services to e-commerce, so there are still relatively few companies that use this model. At present, the development of e-commerce is not yet mature, the development of reverse logistics is still in its infancy, and various technologies are not mature enough. Therefore, if the model of integrated solution providers needs to be developed on a large scale, it needs continuous hard work, waiting for the time to mature.

4.5 Main factors in influencing the choice of return logistics model

(1) Economic factor

First of all, the scale and strength of the enterprise are important factors affecting the choice of return logistics model. Generally, only large-scale and powerful large-scale e-commerce companies have the ability to build reverse logistics systems by themselves, fully control the return process, and ensure that the quality of its logistics services; small and medium-sized e-

commerce companies are generally limited by resources, and it is generally difficult to establish their own logistics system. It is suitable to choose a joint or third-party return logistics model; merchants on online shopping platforms can basically only use third-party returns logistics model.

Factors such as investment cost, management cost, transaction cost, logistics cost, information cost, and financial risk are also important factors that cannot be ignored when choosing a return logistics model.

(2) Commodity factor

Different types of products vary greatly in price, quality, shape, size, durability, shelf life, etc., so when choosing a return logistics model, companies should also distinguish the characteristics of the goods they sell, taking into account the return shipping method, transportation cost, and make reasonable return policies for maintenance costs, profit margins, market competition factors, etc.

(3) Customer factor

For enterprises, meeting the needs of customers is the top priority. Customers have their own requirements for the amount of refund, the quality of the return service, and the cost of the return. In general, we must first formulate a convenient and fast return policy, make a quick response after the customer submits the return request, and let the customer receive the refund or return the goods in time after reaching the return agreement. At the same time provide customers with high-quality services, improve flexible service capabilities and value-added service capabilities, improve customer satisfaction and loyalty.

(4) Market competition factor

Today, with more and more online shopping and increasingly fierce competition, if e-commerce companies want to gain an advantage in the competition, they must compare and analyze each competitor and various return models and choose a return logistics model that suits them to manage the flow of returned goods. Different models can bring different competitive advantages for enterprises. It is necessary to consider whether these different competitive advantages can bring long-term benefits to enterprises and meet the changing market environment.

(5) Internal factor

The internal factors of the enterprise include the controllability, stability, and timeliness of the information return process. Controllability refers to whether the e-commerce company can participate in the entire process of controlling the entire flow of returned goods and accurately grasp the specific information of the returned goods. Stability refers to whether various return cargo flow models can maintain the stability of enterprises, whether they can choose good cooperative enterprises, and whether partners can reach agreement and maintain long-term stable cooperation. The timeliness of information feedback includes timely feedback on information such as the reason of return, product quality, quantity, location, customers and processing methods. Different return logistics modes have different speeds and quality of information feedback. Accurate and fast information feedback will bring more substantial benefits for the enterprise.

4.6 Comparison of return logistics models

Compared with the traditional forward logistics, the return logistics has its particularity. Different enterprises will choose different modes according to the actual situation, and different modes will have different effects on all aspects of enterprise logistics activities.

Balanced Score Card is an effective performance management tool, which can divide the strategic goals of enterprises into specific measurement index values (Robert Kaplan, 1996). According to the principle of the Balanced Score Card, this article also compares and scores the four return logistics models from the four dimensions of finance, customers, internal operations, learning and growth.

Table 1: Comparison of return logistics models

Evaluation index		Self-operated	Third-party	Joint	ISP
financial indicator	Investment cost	High	Average	Relatively low	Low
	Management cost	High	Relatively high	Relatively low	Relatively low
	Transaction cost	Low	Low	High	Average

	Economies of scale	Lack	Average	Significant	Significant
	Risk-taking	By self	Third party	Joint	Hardly
Customer	professional	Relatively weak	Relatively strong	Strong	Very strong
	Service quality	Good	Relatively good	Average	Good
Internal operating	Controllability	Strong	Average	Relatively weak	Weak
	Information feedback	Timely and accurate	Relatively timely	Delayed	Delayed
	Stability	High	Relatively high	Relatively low	High
Learning and growth	Competitive advantages	Control of the business	Resource concentration	Convenient service	Integrated services
	Strategic Alliance	／	Complicated	Simple	Highly

It can be seen from the above table that different e-commerce companies can choose different return logistics models. For enterprises with a certain scale and few product types but large batches, it is suitable to choose the self-operated return logistics model; For small and medium-sized e-commerce companies with a large variety but small sales volume, the choice of joint return logistics model or third-party return logistics model is more advantageous, which can not only reduce costs and avoid risks, but also improve the quality of logistics services.

The several return logistics models discussed in this article are carried out in a relatively ideal state, but in the actual logistics process the situation will be more complicated. Enterprises can choose a mode according to the needs of a certain process or a business, can also integrate several models to implement the management of the return of goods flow.

5.Analysis and optimization of reverse logistics management

E-commerce emerged from the C2C platform represented by taobao, mainly through three stages. From 2003 to 2008, price became the biggest driving force of the industry development. From 2008 to 2015, with the launch of Tmall, more and more brands began to expand e-commerce channels. After 2015, e-commerce began to pay attention to quality and user experience, and paid attention to the development of new technologies, and gradually changed from a simple mode of labor and labor export to a standard model and a talent and technology-intensive mode. (Zuo Qi,2019).

Alibaba, didi and Meituan are the top three e-commerce enterprises, according to a list of the top 100 Chinese e-commerce companies in the first half of 2019 released by the China e-commerce research center. It is reported that the top 100 e-commerce enterprises list is based on the valuation of China's listed e-commerce companies and e-commerce "unicorns" companies, and carries out data statistics and analysis research, comprehensively covering the four major fields of retail e-commerce, B2B e-commerce, cross-border e-commerce and life service e-commerce. From the perspective of company value (market value or valuation), the minimum threshold for a company to be included in the "top 100 e-commerce companies" is 2 billion yuan. The total value of the top 100 e-commerce companies in the first half of 2019 is 5.82 trillion yuan, accounting for 12.92% of China's GDP in the first half of 2019.The overall scale of e-commerce is on the rise. It has gradually become a new engine of China's economic development and an important engine of the digital economy.

According to China's top 100 e-commerce enterprises list (2020), more than 80 percent of e-commerce enterprises are integrated platform. Only a few single-brand e-retailers with small scale. Most of them rely on integrated e-commerce platforms such as Taobao, jingdong and pinduoduo. According to Alibaba annual report, Taobao.com (www.taobao.com) is a leading and popular online shopping and retail platform in China. Founded in 2003 by alibaba group, the world's best B2B company, it is committed to becoming the world's largest personal transaction website. Currently, its business spans C2C and B2C. With the expansion of the scale and the increase of the number of users, taobao has changed from a single C2C online marketplace to a comprehensive retail circle including C2C, group purchase, distribution,

auction and other e-commerce models, and has now become one of the e-commerce trading platforms in the world.

Therefore, taobao is very representative in China's e-commerce, including its return channels and reverse logistics. We hope to take taobao.com as an example, specifically analyze its return process, find out the problems, and propose the corresponding optimization scheme, which can also provide experience for other e-commerce platforms in China

5.1 Taobao's reverse logistics policy

Consumer protection service is a service system launched by taobao.com to protect the legitimate rights and interests of consumers. As for the security service of return and exchange, taobao has launched the "seven-day no reason to return and exchange" service, which refers to one of the special services that sellers voluntarily choose to provide to buyers on the basis of the promise of consumer protection service. Specifically, buyers use alipay guaranteed transaction services to purchase support. Goods with "7-day no reason to return or replace" can be applied for without reason within 7 days after receiving the goods and without affecting the sales of two times. If the seller fails to perform the service, the buyer can apply for compensation from taobao according to this page and taobao rules. After verification by taobao, the buyer will first pay to protect the rights and interests of the buyer. Goods that do not support "7 days no reason to return" service include: Custom goods, travel category, lottery category, online game virtual commodity trading area category(Zhang Haixia,2010).

Taobao.com has also made corresponding specific instructions on the different return and replacement conditions of various categories of commodities, and the detailed contents can refer to the instructions on the relevant webpage. In terms of freight charges for return and replacement: if it is the buyer's fault (not the quality of the goods), the buyer shall bear all the freight charges for return and replacement. Among them, if the merchant delivers the goods free of charge, both parties shall bear the shipping freight respectively; If the goods are not delivered free of charge, all return and replacement postage will be borne by the buyer. If it is due to the quality of the goods and the goods received do not match the online description, the return fee shall be borne by the seller.

5.2 Taobao's reverse logistics process

When the consumer confirms receipt of the purchased goods and finds that there is a problem, it is necessary to apply for a refund in time before the transaction is automatically processed. The specific operation procedures are as follows: (1) log in to Taobao, click on "my Taobao" - "I am the buyer" - "bought the treasure", and find the order that needs to be returned on the page. Click on the "refund " on the page. (2) choose the "received goods" and "return" option, choose the refund reason accordingly, enter the amount of refund and refund instruction, upload the voucher when the consumer takes advantage of the merchandise picture as the evidence of return, submit the refund application. The processing time is 5 working days. (3) after the refund is successful, the system will automatically prompt: you have successfully applied for a refund, waiting for the seller to process the refund application. (4) enter the "purchased goods" page, buyers can click on the "refund processing" to see the details of the refund and the seller's reply (Zhang yue,2013). The seller has 5 days to check whether the return is in line with the specified conditions. If the Seller agrees to return the agreement, the seller's return address will appear on the page. Buyers can return the goods according to this address. After return, please return to the refund page to fill in the return information. Buyers must send the returned goods within 7 days. Overdue refund will close the refund. (5) choose the third-party logistics company that returns the goods and fill in the corresponding waybill code. Click the "return information" button to remind you that you have returned the goods to the seller. Wait for the courier company to deliver the goods to the seller. The seller confirms receipt and refund. If the seller fails to confirm the processing within 10 days, the system will automatically refund the buyer.

5.3 The problem existing in the reverse process of taobao

Nowadays, Jingdong, Amazon and other large online retailers have established their own logistics system, which can do a good job of goods return and door-to-door service. Door-to-door replacement is one of the best ways to attract consumers and the best way. However, limited by cost and resources, the coverage of home service is limited. Many consumers in remote or underdeveloped areas still can't enjoy the return service. Taobao does not build its own logistics system. It adopts the way of recommending logistics. The third-party logistics enterprises have signed relevant agreements with Taobao to clarify the rights and obligations of both parties, and supervise the services of logistics enterprises by Taobao network. However, it does not bear any joint and several liability for the services of the third-party logistics enterprises. When consumers need to return the goods, Taobao is not responsible for the related logistics services, but consumers choose the third-party logistics enterprises to mail the returned goods. This way of return not only increases the cost of transportation, but also delays the

consumers' time. It is also not conducive to the improvement of Taobao's service satisfaction. The third-party express method is used to return goods. On the one hand, the service quality of various express enterprises is uneven, and the cooperation with the online shopping businesses lacks stability. On the other hand, the response time of the whole return process is prolonged, and the information cannot be timely feedback, so that the speed and quality of the returned logistics service cannot be guaranteed. It is necessary to improve the unreasonable part of the existing return process, improve the efficiency of return logistics, shorten the waiting time for goods to be returned, and improve the satisfaction of consumers(Zhang Guangjing,2018).

(1) a customer's application for return can only be contacted by Taobao customer service through Ali Wang Wang, which will inevitably generate unnecessary waiting time. Many times, customer service is unable to deal with customers' return requests in a timely manner because of not online or business consulting volume, resulting in too long waiting time. Customers will have to wait 2 to 3 days on average from the request for return to the return agreement. Efficiency is greatly reduced.

(2) there is a lack of uniform inspection standards for determining whether the returned products are in conformity with the relevant return standards. Generally, the consumers take pictures of their own products, return them to the after-sale customer service through the network, and submit the after-sale customer service to the quality management personnel for verification. The process is cumbersome and there are unreliable human factors. It is easy for consumers to send goods directly to the merchant after they are not satisfied with the return conditions, and then they are sent back to them by the merchants.

(3) customers choose the third-party logistics companies designated by the merchants or the free courier companies to mail the returned goods, and there is an extension of waiting processing time. The average time division for waiting for the delivery of the express company is 1 to 2 days, while the different express enterprises are different in terms of service quality, price and staff quality, for example, there may be two times of damage to the goods in the transportation process. Responsibility is difficult to distinguish, affecting the seamless process of return process.

(4) after the goods are returned to the merchant's storage center, the quantity of the returned goods will be checked and accepted after checking, and then the special quality inspectors will check the goods that have been put in storage to determine whether they meet the return standards. This process adds a lot of waiting time and labor costs, resulting in unnecessary

duplication of labor. From the return of goods to the whole process of return. The average need for at least 7 working days, the customer's waiting time is too long, resulting in a reduction in customer satisfaction.

5.4 Improve the reverse logistics process of taobao.com

In view of the above problems in taobao's reverse logistics process, this paper proposes the following improvement measures:

(1) appropriately increase the number of customer service personnel in charge of the return and replacement service, strengthen business training, improve the service level, use a variety of communication means to timely contact customers, reduce the waiting time, and ensure the smooth flow of information.

(2) to formulate more scientific and standardized standards for returning goods. Special quality inspection staff can be employed to consult customer service for returning goods and shorten the processing weeks for returning goods

(3) taobao.com can cooperate with third-party logistics enterprises to jointly establish a regional centralized return processing center. They centralize all kinds of returned goods to the same place for processing. Scattered orders can be centrally managed to reduce repeated transportation and cross-transportation, reduce the transportation cost, save the processing time of returned goods and shorten the return period. The return processing center classifies the returned goods: the goods that can be resold directly are returned to the merchants; Goods in need of repair are returned to the manufacturer; Items that are not for sale but can be recycled are returned to the manufacturer; Scrapped goods are disposed of as scrap. By transporting the classified goods to different locations, the economies of scale can be achieved. Cheng Qingchun(2011) believed that after reaching the return agreement with the customer, the merchant will transmit the information to the reverse processing center, which will send the staff to handle the reverse service at the door. All the information will be transmitted in time through the established information platform of the return center, which is not only convenient for the customers, but also convenient for the online shopping merchants.

By improving the reverse logistics process and establishing a more standardized reverse logistics process, the company can shorten the waiting time in the reverse logistics process as much as possible and simplify some unnecessary processes. Thus, the cost of the whole reverse

logistics process is reduced and the efficiency is improved. At the same time, customers can get higher quality after-sales service, the competitiveness of merchants is effectively improved, and the resources of the whole supply chain are more optimized.

5.5 Suggestions on strengthening reverse logistics management of Taobao

The logistics partners that taobao can choose are mainly third-party logistics enterprises of taobao. However, due to the different levels and limited capabilities of different third-party logistics enterprises, there are certain differences in each link of packaging, storage, transportation and distribution for different types of products, so the existing third-party logistics enterprises cannot solve the problem of return logistics in a unified way. Li Mingfang (2011) believed that, at present, taobao.com is cooperating by providing a systematic platform to attract third-party logistics enterprises, professional logistics companies and brand companies to jointly solve the problem of insufficient service capacity of taobao.com third-party logistics companies.Taobao.com assesses the logistics service quality of third-party logistics enterprises through qualification verification and analysis of their credibility, such as the arrival rate of goods, loss rate and user satisfaction, etc., tracking and recording, and relies on statistical data to manage and supervise these logistics enterprises. By referring to the "online cargo flow recommendation index", taobao.com cooperates with shentong express, yto express, zto express, yunda express, China post EMS and other companies. However, these logistics companies are different in terms of service quality and price, so consumers tend to attribute the fault of third-party logistics companies to taobao. Although taobao is committed to providing better logistics services to its customers, it is struggling to change that.

The main problems in reverse logistics of taobao.com are the lack of logistics system, incomplete business management system and imperfect after-sales service system. Compared with the B2C online shopping platform with its own logistics system, taobao has a certain gap in the efficiency and quality of logistics distribution. Taobao launched the "seven days without reason return" service policy, in fact, there is also the difficulty of implementation, consumers often because of return policy or freight is too high, and choose to give up return, especially some large or special goods, some businesses is a do not accept the return policy, defects in reaction after sale service system. Taobao can improve from the following four aspects to strengthen the reverse logistics management.

5.5.1 Improve the online shopping platform

First of all, it should be managed from the source to prevent the occurrence of return logistics.

(1) improve commodity information and solve the problem of asymmetric information between merchants and consumers. Li Xiaoling (2008) believed businesses on the web page to provide true and commodity information in as much detail as possible to ensure that the product description picture clarity, avoid physical and describe the gap of returns , pass the evaluation of other consumer feedback information to every customer, to fully understand the information of goods, convenient for consumers to make the choice of whether to buy.

(2) the consumer advice about commodity information, online customer service personnel of a detailed and comprehensive solutions, to strengthen the real-time communication with customer, understand the needs of the consumers, to help consumers make buying decisions.

(3) set a time limit, giving consumers more time to consider the order. Whether to meet the needs of their goods, allow consumers to change within the time required to purchase goods or cancel the deal, consumers can directly on the web page to apply for change or cancel the transaction, contact the relevant customer service process, avoid consumers' impulse to buy due to the return of companies.(Li ying,2010)

(4) strengthen the merchants strict audit and control of product quality, guarantee the quality of the network shopping goods, the reliability of strengthening business credit evaluation system, frequent quality problems of merchants to punish, reduce caused by return due to quality problem.

5.5.2 Formulate more reasonable reverse logistics policies and procedures

For different categories of goods of different reverse logistics policy, must carry out detailed instructions, ensure that consumers can quickly and clearly to read on the web page to the return policy, sure which goods could return, which is not to return, let consumers understand the expiration date of a return, regional restriction, the costs of return bear the question and reimbursement process for a refund, so that it can reduce caused by the goods cannot return and return of the repetition of transportation. Wang Hongyan (2009) believed that different return policies can be adopted for different customers. For example, jingdong mall has adopted different return freight bearing system for customers of different levels. According to different

levels, it can enjoy two-way free return freight or one-way free service, which to some extent alleviated consumers' concerns and increased the purchase probability.

At the same time, the process of reverse logistics is reasonably simplified to respond to the application for return of goods submitted by consumers in the first time, so as to reduce the waiting time of consumers. Merchants choose the appropriate reverse logistics channel to ensure the safety of returned goods. Consumers can track the timely reverse logistics information and thus shorten the whole processing cycle.

Many merchants have now sent the return rules and process instructions together with the goods to consumers, so that when consumers need to return the goods after receiving them, they can quickly apply for return, saving time and making consumers feel more secure when buying. Therefore, the establishment of a reasonable return policy and process, to improve consumer satisfaction and enterprise credibility is crucial.

5.5.3 To strengthen cooperation with third-party logistics enterprises

Taobao.com does not build its own logistics system, but adopts the form of recommended logistics to cooperate with third-party logistics enterprises recommended by taobao.com for logistics management. Third-party logistics enterprises can make use of professional technology, equipment and network advantages to ensure the integrity of the goods in the process of forward logistics and avoid the loss of the final goods due to the mistakes of forward logistics in the process of distribution and transportation.

Third party logistics enterprises can provide door-to-door return services for consumers more conveniently and quickly due to their wide coverage and numerous outlets. The scale effect of the third party logistics enterprises brings about the reduction of return logistics cost, the improvement of return distribution efficiency and the improvement of return logistics service level.

While strengthening cooperation with third-party logistics enterprises and clarifying the responsibilities, rights and obligations of both parties, taobao should also strengthen the supervision and assessment of cooperative logistics enterprises. May be through the establishment of logistics management association, set up comprehensive evaluation index system of performance appraisal, statistical out each assessment of logistics enterprises in a certain period of overall service quality level, for example, the return of the goods delivery timely rate, distribution pipe, customer waiting time, cost, return order processing speed, error

rate, and merchant's cooperation degree index, when consumer is the statistical results can be assumed to be shopping choice judgment of logistics company. The management association urges enterprises with low level to make timely improvements to improve the quality of logistics service. For those enterprises whose service level has not been up to the requirements, taobao can stop its cooperation with them, choose better logistics enterprises for cooperation, and encourage third-party logistics enterprises to provide better services to consumers. (Ding Jing & Du Xiying,2009).

5.5.4 To establish a reverse logistics management information system

Bao Yinglong (2004) believed that through the construction of the return logistics management information system, all the information in the return process can be transmitted through the network information platform in a timely and transparent manner, and the return process can be tracked comprehensively and the return cost can be recorded, so as to realize the return logistics information sharing among manufacturers, online retailers, consumers and logistics companies.

By establishing a centralized central database, merchants can connect with the databases of suppliers and third-party logistics enterprises to collect, store and analyze the historical data of return logistics.

In the system, cooperative members can obtain all kinds of information such as the reason for the return logistics, the information of returned goods, the information of returned customers, the number of returned goods, the cost of returned goods and the way of handling returned goods, etc, and find and solve the existing problems, so as to make each link of the return processing more seamless. Businesses according to the feedback information of commodity, for example, see what kind of goods return ratio is higher, the return of the amount of more customers, the description of the goods are consistent, return logistics distribution in whether there is a problem, can be better to return reason take measures to adjust the goods online information, improve the quality of goods or service quality, change the return policy, strengthen logistics management, so as to reduce the proportion of return goods, improve the competitiveness of businesses.

As the information sources of return logistics are more dispersed and the data collection is more complex, various advanced information technologies must be used to improve the return logistics information system. (Wu Xiaozhao,2011). For example, electronic data interchange

(EDI), radio frequency identification (RFID) technology, global positioning system (GPS), geographic information system (GIS), network and communication technology and intelligent management technology. Through the continuous innovation of technology, the information problem in the logistics management of returns can be solved better, and the level of logistics management of returns can be promoted continuously.

6. Conclusion

With the advent of the era of network economy, online shopping has been more and more deeply into people's life. The diversified and customized products provided by online shopping can meet the ever-changing personalized needs of consumers. The future market space is huge and the prospect is very broad. However, due to the virtual nature of online shopping, it is bound to produce a large number of returns, accompanied by more and more serious return logistics problems. The reverse logistics caused by the return of goods is a link that cannot be ignored in e-commerce: the cost of the return of goods directly affects the profit of the business, and the quality of the return service determines the reputation and image of the business. Therefore, it is of great significance to pay attention to the logistics management of returns in the online shopping environment, to study the reverse logistics of returns in depth, and to actively improve the existing return process.

At present, there are a lot of problems in the logistics service of return. The main goal of this paper is to point out the problems of return logistics in the online shopping environment and put forward some specific improvement strategies to improve the service quality of online shopping.

This paper raised 3 main research questions: The causes and problems of return logistics in the e-commerce environment? What are the return logistics models in China, and the influencing factors of choice? How to optimize return logistics management and specific measures to be taken? Based on this, we first introduce some basic theoretical knowledge of reverse logistics, classifies and characterizes the return logistics, and reveals the importance of return logistics and the complexity of return management. Chapter four stated the empirical findings on the causes and problems of return logistics in the e-commerce environment and presented four main return logistics models in e-commerce environment: self-operated model, third-party model, joint model and integrated solution provider. Then we concluded the main factors in influencing the choice of return logistics model and made comparison between above four models. Finally, we choose the most representative enterprise Taobao in China’s e-commerce environment to analyze. According to Taobao’s existing problems existing in the return process was analyzed, we put forward the optimization of the return process and strengthen the return logistics management measures, hope this advice will return logistics network shopping environment to provide the reference on the solution of the problem, to realize the harmonious development of return logistics and return service.

At present, the development of reverse logistics is still in its initial stage, and the research data on reverse logistics management of returns are not comprehensive enough, especially the research on return logistics in the e-commerce environment is less. However, with the rapid rise of online shopping, return logistics has been widely paid attention to. More and more scholars and enterprises are trying to study the countermeasures to solve the problem of return logistics, and some achievements have been made. Return logistics will be gradually improved. Due to the author's limited ability and insufficient materials, there are still many problems and shortcomings in this paper. In terms of strategies to improve the return logistics process and improve the level of return logistics management, this paper only makes a preliminary discussion, but it still stays at the theoretical level, and there is no actual data to carry out empirical research, which needs further research and improvement in the future. In shortage, hope the expert of each respect criticizes and corrects.

7. References

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