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Research on third party logistics enterprise business process with container shipping as main transportation mode

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WORLD MARITIME UNIVERSITY

Malmö, Sweden

**Research on Third Party Logistics Enterprise
Business Process with Container Shipping as main
Transportation Mode**

By

ZHANG JIAXU

The People's Republic of China

A dissertation submitted to the World Maritime University in partial
Fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME SAFETY AND

ENVIRONMENTAL MANAGEMENT

2016

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Declaration

I certify that all the materials in this research paper that are not my own work has been identified, and that no materials are included for which a degree has previously been conferred on me.

The contents of this research paper reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of Dissertation: **Research on Third Party Logistics Enterprise Business Process with Container Shipping as main Transportation Mode**

Degree: **MSc**

Under current business settings, third party logistics enterprises are facing extreme competition and reducing margin. They can achieve increasing profits by effectively planning, designing and managing the entire supply chain of their customers.

Shipping logistics is based on port and organically combined the basic function such as transportation, storage, transmission, handling, packaging, circulation processing and information processing. It manages the goods circulation process through effective planning, organizing, coordinating and controlling as the lowest cost and the best service level.

Thinking for the customers is the most important factor for a third party logistics company and customers to successfully establish a good relationship. And it is the embodiment of the enterprise culture and spirit and the guarantee for the quality service to customers.

As the international community is paying more and more attention to saving resources, the protection of the environment and sustainable development, energy saving and environmental protection has become a national strategy to each country. In the research of supply chain management, it also got the corresponding reflecting

Logistics safety problems exist in each link of the third party logistics enterprise operation. To broadly understand the logistics safety, it is to avoid risks, to ensure the long-term development of the third party logistics enterprise and to form competitive advantages of reliability, to achieve the fully satisfaction of our own, the demand side

and social benefit.

The direction and trend of third party logistics enterprise and its sea container transportation business are optimizing and positive. Only by paying more attention to the details and make full use of environmental protection and safety management method together with experience and knowledge can the third party logistics keep pace with the development and build its competitiveness in the market and finally be the leading navigator of logistics world.

KEY WORDS: Third Party Logistics, Container sea transportation, business process

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CHAPTER 1

INTRODUCTION

1.1 Current Problem on Third-Party Logistics Service

In 1998, D. Lambert defined logistics management as follows: “the process of planning, implementing and controlling the efficient, effective flow and storage of goods, service, and related information from point of origin to point of consumption for the purpose of conforming to customer requirement”(D. Lambert 1998) . With time flying by, logistics is developing at the same pace of economy development. Modern logistics is the product of market economy globalization with a combination of warehousing, transportation, loading and unloading and has the characteristics of highly informationization, specialization, systematization and integration. In brief, it is an advanced form of organization and management mode.

In modern logistics, the third party logistics is currently the main form of manifestation. Third party logistics refers to a model that a logistics company, which is neither the supplier nor the buyer of the goods. offers logistics service. The third party logistics has become a new model of logistics operation and has been much more welcomed by the enterprise, Moreover, under China’s current economic development, it has been widely generalized and supported by all the level of society. An increasing number of companies chose the third party logistics as a main operation model to strengthen the management. As lying in a professional development path, third party logistics enterprise must promote itself under the market environment and seize the developing opportunities. However, opportunities always come along with problems and from my working experience and personal analysis, the industry of third party logistics has following problems:

a. Substandard entrance level.

This field does not belong to high technology industry or capital –intensive industry. In other words, comparing with other industries, logistics field is relatively easier to enter. According to the information from National Business Registration Report, over ninety percent of logistics enterprise belongs to SMEs(small and medium-sized enterprises). Some of them are struggling to survive and are at the edge of becoming

bankrupt, some even have to be registered and cancelled repeatedly because of bad operation. They heavily lack of the ability of reducing risk. That is all because of the substandard entrance level. “Sometimes even a single truck and a desk can run a transportation business and numerous of substandard enterprises with bad management and low standard rushed into the market and caused disordered competition. Maybe the only way for them to survive is to lower the price and finally cause the break of the capital chain. In other words, they ran away with money under compulsion illegally.” said the Secretary-General of a city’s logistics association of China.

Being easier to accessed means people who work in this industry have relatively lower comprehensive quality than other industries such as IT and finance. As we all know that logistics belongs to service industry, therefore, a lower quality of employees at most times means a lower service quality. It is a big problem in logistics industry and it is the same situation no matter in China or in other areas around the world. As a result, the pace of development and the probability of logistics may be influenced negatively.

b. Market depression

It is widely accepted that shipping market is the barometer of the world economy, while the logistics market is closely connected with shipping market and the world economy. Especially when a logistics enterprise chooses ocean transport as main logistics model, the profitability of the enterprise can be heavily influenced. Shipping company has ships which belong to high value fixed assets. This brings huge profit when the market is running well, but, at the same time, is of big risk. Unlike the shipping company, mostly a logistics enterprise does not have many fixed assets. Much work they do is more or less like what an agent or a forwarder does. Agent fee or commission is not as much as freight rate and that makes a logistics enterprise not be able to earn as much as shipping company. They can only rely on the shipping company to get a price lower than the freight rate so that they can have more profit on ocean transport. The reality is that under current world economy situation, shipping company cannot offer competitive rate, therefore the logistics market is also

facing a big problem that is a lack of profitability.

c. Low service level

As mentioned above, third party logistics is neither the supplier nor the buyer of the goods. They are professional logistics enterprises and focus only on logistics service. It brings a problem that the extent of assimilation with supplier and buyer is limited. A good third party logistics service supplier shall be familiar with the production plan, inventory and warehouse demand as well as the appropriate financial situation of the customers. Then the third party logistics enterprise shall come up with a characteristic logistics plan for the customer. In other words, they should offer differentiated logistics service. From my personal view and experience, most logistics enterprises are still offering typical logistics service and mainly focusing on the transportation aspects. The world of logistics shall be tightly bound to the supply chain management but it seems that most logistics enterprises are not able to achieve it. This problem as well as the two points mentioned above is also a big problem and challenge for a third party logistics enterprise especially when they need to choose sea transport as their main transportation model. In my opinion, supply chain management shall definitely be a major business for a splendid third party logistics enterprise and it is the only way for them to improve their service level.

Under current business settings, third party logistics enterprises are facing extreme competition and reducing margins. They can achieve the increasing profits by effectively planning, designing and managing the entire supply chain of their customer. The motivation to improve supply chain management is associated with new challenges and opportunities, such as the integration and coordination of inter-organizational efforts. (Ernesto D.R. Santianez-Gonzalez, Ail Diabat. 2015. Applied Mathematical Modeling. Modeling logistics service providers in a non-cooperative supply chain..WWW.elsevier.com)

1.2 Research Status of World Wide

Melo et al. conducted a specific literature review of facility location models in the context of supply chain management and focused mainly on applications detailed to supply chain network design. His work is based on helping a product company to

design a supply chain network and ignored the competition between agents. The model and solutions that he proposed are mainly focused on choosing the location. Nagurney et al studied the design and management of supply chain with the impact of competition such as manufacturer and distributors. Diabat et al studied the integrated location and inventory problem considering risk pooling. There are some well-done researches about the supply chain management but one thing shall be mentioned is that most of them are written on supplier's or buyer's side. We cannot find many researches from the view of third party logistics enterprise. Diabat proposed a chart which I think is very useful for a logistics service supplier to improve the supply chain management service and have a better understanding of it.

**E.D.R. Santibanez-Gonzalez, A. Diabat/ Applied Mathematical Modelling 40(2016)
6340-6358**

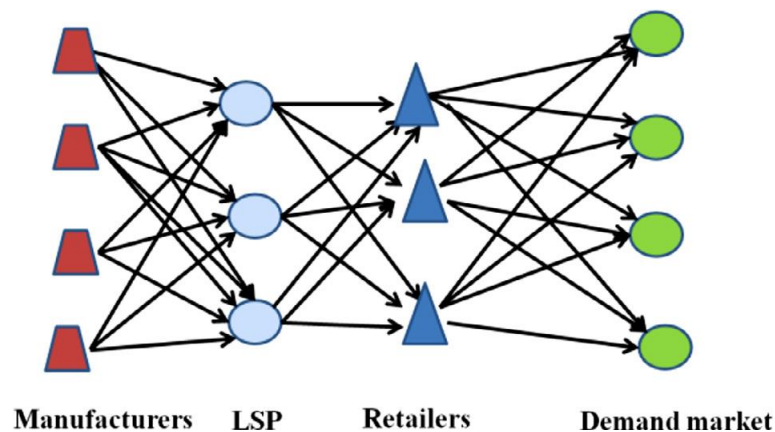


Fig. 1.1 Supply chain network

Third party logistics enterprise equals to the role of LSP and we can see it has direct relationships with manufacturers and retailers. It means the connection and business cooperation should be more comprehensive and complex. Otherwise we can just use a straight line to connect manufacturers and retailers instead. The importance of Logistics service provider is highly emphasized.

1.3 Research Status of China

Quan Yong pointed out in his research paper that the third party logistics has occupied a considerable weight on the market abroad. The proportion of enterprises using third party logistics service is about 76%, while it is 58% in USA, 80% in Japan. A study about supply chain and logistics management service which was

carried out by the U.S. Company IDC shows that the average annual growth rate of logistics outsourcing in the world wide will increase by 17%. At the same time, Chinese third party logistics enterprise has greatly developed. However, there are still many problems which mainly reflected as: small and weak, the service function is not complete, closed logistics channel, short of talents, facility backwardness, low level of management and incompleteness of the system.

Wen-shen Li in his research paper analyzed in detail about the problems existing in the development of third-party logistics enterprises in our country: severe resource waste, low efficiency of third party logistics, lack of service outlets, lack of core competitiveness, lack of government guidance and planning, lack of systematic management, low degree of standardization, disorderly competition disturbing the order of the overall market. Then he proposed that to form a high-efficiency third party logistics enterprise operation mode, China shall cultivate the logistics market positively and strengthen logistics requirements development, the find out service differentiation through market analysis.

Yun-ying Qi in his research paper pointed out that Chinese third party logistics enterprise in the process of restructuring should base on the reengineering method of life cycle and analyze the whole process of reengineering. It is divided into four stages as: preparation, analysis, design and implementation.

1.4 Objectives of Research

This research focuses on:

- a. Optimize the operation details of third party logistics using advanced methodologies and accumulated experience. Analyze the deficiency at present and improve the third party logistics service level.
- b. Improve the operation and management problems of third party logistics enterprise and increase returns and profits.
- c. Offer a reference to a third party logistics enterprise when they would like to conduct supply chain management business and choose sea transport as a type of transportation.

In this research paper, I will have a summarized discussion of third party logistics

business in Chapter 2. Then I will discuss the container shipping transportation business and the relating logistics affairs in Chapter 3. Then I will have a deep discussion in chapter 4 on the business process of third party logistics including the establishment of plan, the preparation before transportation, the monitoring and control during the process and the performance evaluation of logistics service. Finally in chapter 5 I will have a conclusion and expectation on third party logistics. I have been working for a big third party logistics enterprise for over 3 years and have been dealing with logistics affairs of national manufacturing enterprise and supply chain. I will combine my experience and thoughts together with the advanced knowledge and methodologies that I have learnt in postgraduate courses to make my research meaningful and valuable.

CHAPTER 2

Overview of Third Party Logistics

2.1 Definition of Third Party Logistics

The concept of third party logistics began to appear in 20th century in European and American countries. The word “third party” came after the management concept—“outsourcing”. Outsourcing refers to an enterprise dynamically controls the configuration of services and other functions by itself and uses the external resources for the internal management production services of the enterprise. People introduced the word “outsourcing” to logistics domain and created the concept of third party logistics.

In the European and American countries, often the third party logistics is defined as the traditional organization performing logistics functions to an outside logistics enterprise and the function of the third party logistics company contains the process of the whole or part of logistics activities. From the angle of the service provider, the third party logistics is defined as “a third party logistics enterprise try to meet the customer requirements and provide services such as transportation, the carrier management, transportation, warehousing, distribution and other logistics activities linked to all or part of the logistics process with certain professional knowledge and technology”

David Simchi-Levi thinks that the third party logistics is a kind of owner's relationship with the third party company. Comparing with the traditional basic services, the third party logistics enterprise can customize logistics service for the customer and keep a long-term and mutually beneficial relationship with customers.

The American Association of Supply Chain Management thinks that outsourcing all or part of the logistics business to a professional logistics management company which can provide customers with diversified and personalized logistics services can be called as third party logistics and the company can be called as third party logistics service provider. The appearance of it speeds up the rate that spare parts and material transferring from suppliers to manufacturers and at the same time sets up a better platform for the goods flowing from manufacturer to the distributor.

Third party logistics services provider provides a variety of business services including transportation, warehousing, inventory management, packaging, loading and unloading as well as freight forwarder.

In Japan, there are two kinds of different interpretations to third party logistics. One is that third party logistics refers to a logistics service provider provides logistics service between first party productive enterprise and second party consuming enterprise. Another concept is that first party logistics refers to the manufacturing enterprises or circulation enterprises operating logistics activities by themselves. Second party logistics refers to logistics service provider organizes only a single logistics service such as transportation, warehousing. etc. Third party logistics refers to a logistics service provider which is able to organize the logistics service including logistics system planning and designing, solution and the specific logistics operation to the customer.

In China's national standard "logistics term" (revised edition), the third party logistics refers to the logistics service mode that provide customers with comprehensive or special logistics system design or the operation of the logistics system independently neither from supply nor demand sides. Third party logistics enterprise refers to an enterprise provides logistics services under the form of contract within a certain period of time to the supply or demand enterprise as a

middleman in the logistics activities.

In the actual supply chain of goods, third party logistics enterprise is not independent among the participants, but it is on behalf of the receiving party or shipper and provides a service in the supply chain logistics activities, It does not have actual right of possession of the good but only provides the needed logistics services.

2.2 Business of Third Party Logistics

From my perspective, the main purpose of the enterprise running business is to gain more profit. Third party logistics gets the benefits by providing services for the society and enterprises through the perfect infrastructure, information service system, and professional logistics operation. With the development of third party logistics, its business scope including storage, picking, transportation, and all kind of value-added services are also expanded. Transportation is a process of cargo carrying, moving from one place to another place. Comparing with transportation, warehousing is a kind of static behavior and for the purpose of the demand for certain goods for temporary or long-term storage. Distribution refers to the goods be sent on time, safely to the destination, and it is the last link of logistics activities. All above are the basic and necessary businesses of third-party logistics. In addition, third party logistics also provides some value-added services such as marketing analysis. third party logistics conducts sales analysis and forecast based on a large amount of data and can provide customers in strategic level with some marketing plans, etc.

Therefore, the business of third party logistics enterprise is no longer just about transportation. It is necessary to shift the business to supply chain management so that the third party logistics enterprise can have more points and opportunities of making profit. Of course, third party logistics enterprises cannot reach to all the information and finance statistics of the whole supply chain and it is a real challenge for them. But what they can do is to complete the logistics related task first and during the cooperation period, with the decent of credibility, try to get valuable information about the production information and finance stats. It is neither stealing nor spying. It is about to conduct better service to the customer because logistics is closely connected with the production and logistics budget is a very important aspect

of the total budget of the enterprise. For instance, the customer needs third party logistics to help them to improve the inventory control and save money on logistics affairs so that the cooperation can be penetrated.

With the expansion of the enterprise market, the demand for the third party logistics and services business is growing and third party logistics has to make services more fully in place in order to meet customer's growing demands. Various businesses of third-party logistics not only makes the social logistics facilities be fully and reasonably used, but also makes resources get reasonable configuration. At the same time, it also provides the foundation for enterprise's scale operation and scale benefits.

2.3 Third Party Logistics Enterprise

Since writer has worked for a third party logistics enterprise, so my own observations are: Third party logistics enterprise is essentially a nonproductive enterprise only providing logistics service functions and logistics service is the only product. However, only providing services to maintain the survival of an enterprise is very difficult, thus, in order to occupy a place in the market, logistics enterprises must have a clear and complete understanding of their own business operation model and adopt effective marketing tool. The so-called enterprise business operation model essentially is the way of obtaining value and is the description to enterprise's operation on the macro level, strategic level and the economy logic as a whole. Also, it is the essence description of collaborative relationship. A summary of third party logistics enterprise operation mode can be divided into three categories.

Table 2.1 Three categories of third party logistics mode

Operation Mode	Descriptions
The traditional outsourcing operation mode	This is the main operation mode of third party logistics enterprise in China. It is simply complete the certain logistics service and does not relate to the enterprise internal production and marketing plan. The management process is simple and at the same time lack of effective communication

	with customers, and finally easy to produce the "bullwhip effect*".
Strategic alliance operation mode	This mode pays attention to information exchange and sharing between supply chain enterprises and forming a strategic alliance of third-party logistics network system. Compared with the traditional mode, the model can realize effective communication with customers and use the Internet to break through the geographical constraints. The using of network can realize both orders and production and sales service network reservation.
Comprehensive logistics operation mode	This mode constructed a comprehensive logistics group and used a variety of functions of logistics in the range providing raw material supply, agent and management services to upstream and delivery distribution business to downstream. At the same time complete logistics, business flow, information flow and capital flow.

*The bullwhip effect is a distribution channel phenomenon in which forecasts yield supply chain inefficiencies. It refers to increasing swings in inventory in response to shifts in customer demand as you move further up the supply chain.

Source: Wikipedia

To conclude, from my perspective, people have realized the development trend of third party logistics but in the actual business operation it is still difficult to achieve. I think it is a living example of the gap between academic research and real business. What I will do in the following chapters is to combine them with the business operation using academic research and analysis.

CHAPTER 3

Overview of Ocean transportation of Container

3.1 Container and Container Transportation

Container is a cargo containing tool which is specifically for turnover use, easy to be loaded and unloaded, has characteristics of mechanization and upsizing, and assemble goods to a large unitize transport unit. The definition of container from International Standardization Organization is as follows:

Container is a kind of transport equipment and shall meet the following requirements:

- a. Have durability, its strong intensity can be used repeatedly
- b. Being designed specially to facilitate the transport of goods and no need to be changed in one or more modes of transportation.
- c. Setting devices to facilitate loading and unloading and handling, especially easy to shift from a mode of transportation to another mode of transportation.
- d. When being designed, attention should be paid to facilitate the loading and unloading of cargo.
- e. Inside capacity shall be 1 cubic meters of more.

Containers not only have varies of kinds but also have different usages such as sealed container, ventilated container, reefer container, etc. To solve the problem of container specification differences influencing on international transport cohesion, ISO unified 3 series with a total of 13 kinds of standard specifications. On the problem of containers conversion unit, people mainly adopts TEU as container calculation unit which is also known as the standard unit. Currently in most of the container transport, people use 20ft container and 40ft container. In order to make the number of containers to be calculated in unified way, people take 20ft container as the standard calculation unit and 40ft as two units of account for the purpose of convenient calculation in container operating.

Container transportation refers to a modern advanced transportation means in which an amount of goods put into the standard container and transport it as a unit. It is not only applicable to single mean of freight transportation, but also suitable for the combined transportation between the different modes of transportation. Container transportation is a capital intensive industry, and each link of the whole

transportation system and various departments shall have high collaboration so as to ensure the efficient operation. However, the container transportation is of good quality with high efficiency and is suitable for the organization of the multimodal transportation, which is a huge advantage. Therefore, as a kind of transportation mode which is of high efficiency, high benefit and high quality, it got a fast development. Container transportation can reduce the damage and loss of the cargo and plays an important role in improving the quality of freight, the economic benefits of the owner, shipping companies and port.

3.2 Container Logistics

Container logistics refers to the logistics activities that use containers to conduct the transportation, storage, loading and unloading, dismantling and packing, circulation processing and distribution for goods suitable for container and format through the whole process. Container logistics is based on the container transportation. Therefore, the container transportation system is the core of carrying out container logistics activity. Container transportation system is the most widely spread and complex system including facilities and equipment, transportation organizing and management, public information service and each component within each link etc. Ways of container logistics transportation reflect the high integrity and organization of the container transportation system. With the continuous development of container logistics transportation system, at present the world has formed a large world-wide professional transportation system. I concluded the system from my view and experience and its basic elements are as follows.

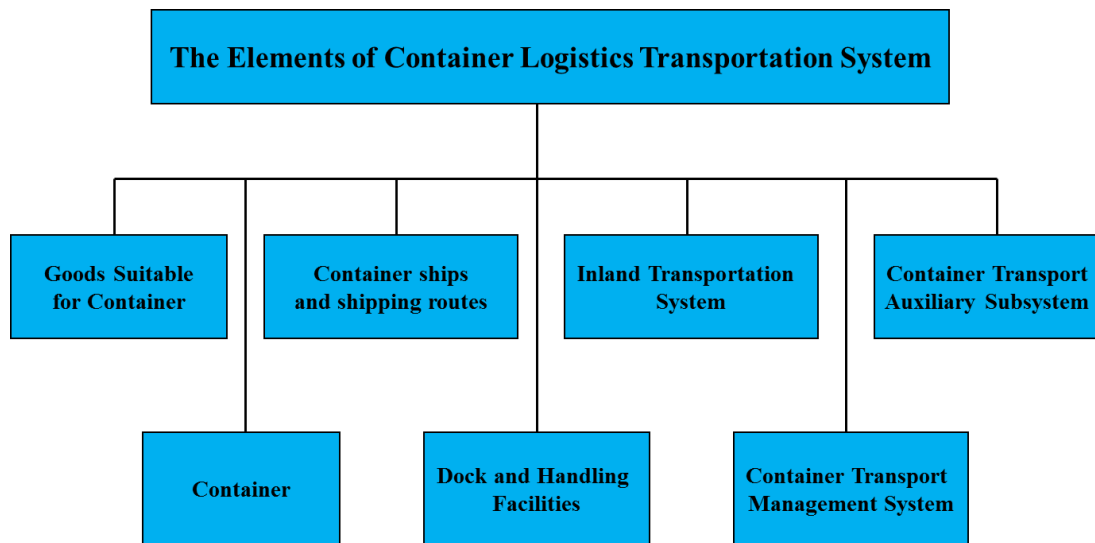


Figure 3.1 The elements of container logistics transportation system

Goods which are suitable for container and containers represent objects of container logistics transportation. Goods suitable for container are mostly general cargo. Among all the goods under global transportation, goods suitable for container occupy ninety percent of the total. In the process of transportation, container is to standardize the goods and transportation packaging. Also, it is the basic unit of the container logistics transportation. It is part of the cargo and part of the transportation. Container ships and shipping routes, dock and handling facilities and inland transportation system respectively represents the three big areas of full container logistics process, meaning the maritime transportation, port turnover and inland transportation. Container ships and shipping routes are the key ingredients in completing container maritime transportation, also, they are the important resources of the container liner company. Container terminal is the place where containers being loaded and unloaded, stored and distributed. It is the hub where different transportation modes be changed. In the realization of containers linking transportation between land and sea, it plays an important role. Inland transportation subsystem covers the hub port and the surrounding areas of the network system and consists of numerous transportation lines (road, rail, inland water transportation route and coastal feeder, etc.), transportation facilities (trains, container trucks, inland river ships and coastal ships, etc.), and numbers of container cargo hubs (terminal yard,

inland freight station, railway station, highway transit station, inland port wharf, feeder port, the shipper factory warehouse, etc.). Its main function is to complete the consolidation transportation task (or distribution task) between origins (destinations) and hubs. Container transportation management system generally includes industry management agencies, laws and regulations and standard system, container transportation enterprises and their agents, information systems, etc. Container transportation auxiliary subsystem mainly includes containers and equipment relating industry, finance, insurance, telecommunications, the Internet industry, state institutions, etc.

As you can see from container logistics system, container multimodal transportation is an obvious advantage of container logistics. Through the reasonable connection between different modes of transportation, it realizes Door to Door container logistics services. As a main form of international logistics, container logistics is also an important part of modern logistics. Under the background of the development of the Internet, it, at the same time, meets a good opportunity to develop to intelligentization.

3.3 Container Ocean Transport Logistics

In the field of logistics, 90% of the international freight is carried through container transportation. Each year, more than 30 million heavy TEU travel around the world and since 2003, cargo handling capacity of Chinese ports continuously ranked the 1st place in the world. Facing such a large scale of container traffic, domestic and foreign scholars did numerous researches of modern shipping logistics development and construction. At the end of 2004, the South Korean government launched the "smart container" project which is also known as the "RFID shipping logistics" and was applied from January 2007 between Busan port and the west coast ports of the United States and the European main ports to improve the efficiency and security of trading between South Korea and other countries. However, for the multi-mode transport and the development of information technology, there were still some problems in shipping logistics. Therefore, starting from the actual situation of the objective, it is necessary to conduct in-depth exploration and research.

3.3.1 The connotation of the shipping logistics

Shipping logistics is based on port and organically combined the basic functions such as transportation, storage, transition, handling, packaging, circulation processing, information processing. It manages the goods circulation process through effective planning, organizing, coordinating and controlling as the lowest cost and the best service level. By one or more modes of transportation, cargos and goods complete the entity flow between supplier abroad and places of receipt. Ports, in the development of modern shipping logistics, play an increasingly important role. Observing from the history, the development of world ports went through three generations: Marine cargo handling and storage center → A value-added goods service center → International logistics center. Modern port is not only the hub of goods multimodal combined transportation by rail and sea, but also international goods storage and distribution center which sets logistics service center, business center, information service center and personnel service center as a whole.

3.3.2 Analysis of shipping logistics development trend

Shipping logistics relying on the port of its own advantages has become one of the new logistics industries in the logistics market. In the new era, I personally think that ocean shipping logistics development presents the following new trends:

a. Large logistics

Economic integration has prompted shipping logistics to develop in the direction of internationalization, scale, systematic. Shipping logistics industry internally formed a highly integrated supply chain channel relations through joint planning and operations.

b. Integration

Relying on the logistics park nearby, integrated logistics services are carried out. It provides the best logistics solutions at ports, at sea and in other processes of transportation including hinterland transport, customs declaration, commodity inspection and storage services.

c. Multimodal transportation

It develops from single transportation mode to multimodal transportation such as

in-water transition, sea-railway combined transportation, etc.

d. The virtual chain

Shipping logistics is an efficient virtual supply chain based on port database information platform. Any link in the supply chain can achieve resource and information sharing and overall function optimization of logistics service. Finally it forms a global coverage of the virtual port based on a virtual chain.

The new trends in the development of shipping logistics provide an important reference basis for studying conform to the needs of economic globalization and continuously improving its logistics functions. In next chapter I will discuss the operation in container ocean transportation logistics based on above analysis.

CHAPTER 4

Research on Business Process

4.1 Establishment of Project Plan

4.1.1 Communication and Cooperation between First Party Logistics (Customer)

a. Declaration of Customer Service Theory

Considering that customers are the most important factors for a third party logistics company and customer to successfully establish a good relationship. And it is the embodiment of the enterprise culture and the guarantee of quality service to customers. First of all, they should establish a vibrant enterprise culture which sets customers' demands as the guidance and takes technology innovation as the support. On the one hand, the enterprise service culture has the function of setting constraints and norms to each member's thought and behavior and permeating customer service consciousness to every employee's mind which will be reflected by their specific actions. On the other hand, it can give enterprise a huge centripetal force and cohesion which lead members of enterprise to produce a high mood and enterprising spirit. The establishment of this kind of culture starts from enterprise's senior management personnel. Logistics enterprise customer service should include all the work related to the customer. Secondly, we should make employees aware that customer is the enterprise's most important resource. Staff's service concept needs to

be shifted from just to meet customers' request to active service step by step.

The smooth launching of third party logistics enterprise's customer service function must have a specific organization: the customer service department. Customer service department generally contains four main functions: business assistance, quality audit, operation monitoring and complaint handling. The business assistance mainly refers to the customer service department using their own internal and external information advantages to form a coordination mechanism between functional departments of the enterprise and customers in order to improve the efficiency of cooperation. Quality audit refers to formulating quality standard under the premise of customer's satisfaction and enterprises giving full consideration to their own conditions. Then it starts to conduct logistics service quality review and assessment to ensure the implementation and improvement of service quality. Operation monitoring makes the customer service department conducts supervise function to internal departments and form an internal error-self-correction ability. Complaint handling is directly pointed to the emergency logistics business using different communication channels and solutions compared to normal business, carrying out recording, investigation and handling, tracking customer complaints and offer advices to improve service to quell customers' complaints. Finally it makes up the image loss of enterprise.

Customer service department is also responsible for the following work: communicating with customers, conducting customer satisfaction survey, organizing customer service coordination meeting, establishing and completing customer service system, etc. Customer service is a process of continuous revising and improving as shown below

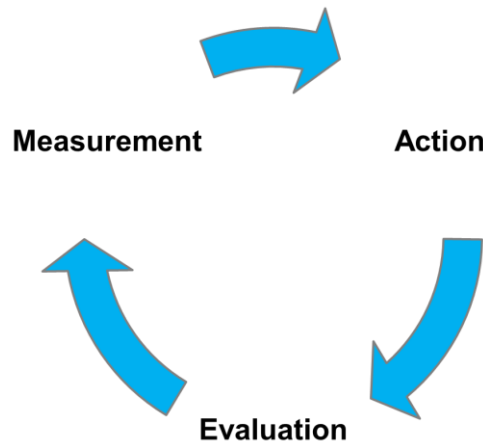


Fig 4.1 Process of improving service

First of all, the logistics enterprises measure service elements in actual performance by using the existing performance evaluation indexes. Then they find out the differences between actual performance and the standard one and take actions to improve and enhance the service to meet or exceed customer requirements. Then they analyze the evaluation of customer satisfaction, formulate and implement the new service standard.

The above theory is very important for third party logistics enterprise to communicate to the customer. It not only provides a good first impression but also let the customers have an initial understanding of the service system and thinking. It can also help to build a better relationship and carry out following cooperation smoothly.

b. Thoroughly understand customer situation

As mentioned before, third party logistics enterprise should conduct supply chain management service for the customer. That is to say, they should not only receive the transportation or shipping order in which says the logistics service supplier please arrange the shipment of certain cargo from one place to another. At present, most enterprises that need third party logistics are production or manufacture company. And their scales are relatively big. Under this condition, there must be some problems with their company which they need third party logistics enterprises to help with. The initial and obvious problem is that they cannot handle external logistics smoothly. That is the direct reason why they choose third party logistics. However,

third party logistics enterprises shall realize that the external logistics can directly and seriously influence internal logistics and finally have problems with the customer's production, inventory, time control and budget. Therefore, the need of third party logistics means the need to improve their internal situation as mentioned above. Even though the manufacture company is reluctant to admit it, problems are definitely there. If third party logistics considers himself as a cargo carrier, he can only do what a driver would do. However, if he considers himself as a supply chain manager, he will definitely have more business to do.

Hereby I will take a big international manufacture enterprise as an example. They imports raw materials from abroad. Then they produce the product with the raw material in the manufactory plant. After the production, they export the product to foreign countries. The cargo value is high and the time limit is strict. I will respectively analyze five aspects that third party logistics need to know.

From the production aspect, we can see the different kinds of raw materials come from different places around the world. Lacking of one kind of means the production cannot be carried out. Third party logistics should get to know all the materials that need to be imported including the origin, amount, degree of urgency, frequency of demand, etc. It is to ensure that there is no such condition that the production department needs a certain kind of material but cannot get it and cause the delay of the production plan.

From the inventory aspect, we can say it is related to storage affairs. A production or manufacture company will have a warehouse but the dimension of the warehouse can never be so big. In other words, it is often not enough for the storage. It is because of the designing of the manufacturer and purpose of saving money and the increasing profit. A big warehouse means the increasing marginal cost because the main business for the company is to do the manufacture work. Storage cannot directly make money. It is also the reason why professional warehouse is needed in the world. However, a better logistics plan and management can maximize the use of enterprise's own warehouse and by optimizing the inventory control using logistics method, more money will be saved and the production pressure can be released to

some extent. Third party logistics enterprise can have an analysis of the customer's warehouse and if possible, get to know the specific operation process of the customer.

From time control aspect, I should say the whole producing time includes the logistics time. After getting purchase order from the buyer, the production chain is started and it has time limit. Reducing logistics time means offering more time to production and manufacture and finally release the pressure of the manufacture company. Being aware of the time limit of the production is a double win communication but during actual operation in logistics business, the most information that the carrier received is this shipment is urgent and you must minimize the logistics time. It is a lack of mutual understanding and customer may think that the carrier is paid with so much money so that they should of course give more pressure to them. An elastic time control can also help the customer to save money because third party logistics often has some resources to lower the money if time allowed. Another reason that can contribute to the achievement of it is that third party logistics business is not once-only business, both parts are looking for long-term cooperation. Offering benefits for both sides is obviously good for it. In my perspective, it is a significant thinking that third party logistics enterprise shall transit to the customers.

From the finance aspect, in my research experience, for certain kind of good, the ideal logistics cost is calculated and set at a certain percentage of total cargo value, for instance, five percent of the total sales price. Knowing this together with the manufacture company is useful for both sides to set up a mutual plan if the target has not been achieved.

From the cooperation aspect, the word cooperation hereby refers to the cooperation among the raw material supplier, buyer and manufacturer. Third party logistics is the connection among them. They will contact the raw material supplier on behalf of the manufacture to get the goods. If they can have a communication and cooperation during the picking process, third party logistics enterprise can not only get a satisfactory assessment from their customer but will also have more opportunities to

find more cooperation with the supplier. When next time the supplier decides the carrier of their logistics business, a logistics enterprise with a good expression will contribute to it. On the contrary, if third party logistics enterprises cannot get along with the business partner of the customer, they are likely to lose their business cooperation.

c. Finding the problems and opportunities of profits

The purpose of huge amount of communication for third party logistics is to improve the service level by offering differentiated logistics service and find more opportunities to make money. The problem of the customer is the profit point of the logistics enterprise. Price difference is just an initial profit for a third party logistics enterprise and cannot be the core business under current market and situation.

4.1.2 Research of Cargo Details and choice of Container type

This research project is pointing to container sea transport, so the investigation of the cargo is to find if it is suitable and convenient to be put into container. However, not all the cargo can be suitable for container transportation, property such as the cargo value, freight rate, boundary dimension, package form and weight are different. They influence the technical availability and economical availability of being put into container for transportation. So before the establishment of logistics project plan, third party logistics enterprise shall conduct a specific survey to all the cargoes and define if they are those suitable for container.

Cargoes suitable for container refers to all kinds of cargoes which can be suitable for being loaded into the container and the transportation safety can be assured. Technically speaking, the dimension and physicochemical property (inflammability, effumability, etc.) shall be appropriate for container transportation. Economically speaking, the cargoes shall have relatively high value and strong freight capacity. Based on the characteristics of container sea transport, we can have following chart for reference:

Table 4.1 Classification of suitable cargo for container

	Cargo value and freight capacity	Package, dimension, weight, etc	Examples
Most suitable	High	appropriate	Textile, small appliances, package food, hardware, pharmaceuticals, etc
Suitable	Lower than the best	appropriate	Wire, paper pulp (plat), some decoration materials, metal products, etc
Marginal suitable	Low value and just can do	Scrape through	Steel ingot, steel, wood (logs), pig iron, small components, etc
unsuitable	Low	Inadequacy	Iron and steel scrap, large components, etc

After inspecting the cargo, third party logistics enterprise shall choose the right container type to conduct the transportation. Generally we use following types of container:

- a. Dry container. It is the most common type of container and is used to carry general cargo which is valuable, fragile and small. Among all the types of containers, the freight rate of this kind of container is the lowest. So dry container is always the first choice while selecting containers.
- b. Reefer container. It refers to the container which has refrigerating system and is used to carry frozen cargo which needs to be kept under certain temperature.
- c. Insulated container. It is used to carry the cargo which cannot be frozen.
- d. Ventilated container. It is used to carry cargo which cannot stand hotness and stuffiness for instance, fruits.
- e. Open top container. It is used to carry heavy, huge and tall cargo which is difficult to be loaded and unloaded through container door.
- f. Flat rack container. It is used to carry big, heavy and oversized cargo.
- g. Tank container. It is used to carry liquid cargo.

From my point of view, apart from above analysis, third party logistics shall pay special attention to frozen cargo and dangerous cargo. Frozen cargo often has a high standard of temperature keeping requirements. The quality of reefer container is different. Some can meet the requirements of high standard and some cannot. The

age of the reefer container is more important compared with other types of containers because the refrigerated system has a short time span of using and is easy to be broken. Third party logistics enterprise shall choose carefully even for some details as the brand of refrigerated machine and take care of the using method of reefer container. For dangerous cargo, we should know that some liner companies refuse to accept it so the choice can be less. Another important aspect is that it will take much longer for dangerous cargo to finish the customs declaration process. The time is difficult to control and third party logistics enterprise shall have a completed communication with the customers about it. They should make full preparation about the customs affairs so that the total logistics time can be controlled. Or the production may be influenced by the delay of logistics.

As I mentioned above, the freight rate of dry container is much lower than other types of containers. It is even worth to increase the packing and handling cost if the cargo can be loaded into the dry container. Also, other costs of the special containers such as demurrage and detention are higher compared with dry container. So I recommend third party logistics enterprise and the customers to think completely about all the cost and aspects after inspection of cargo and choose the most appropriate container.

4.1.3 Choice of Routes and Mode

Han Zeng-Xia(2011, Research on the Optimal routes and modes selection in container multimodal transportation networks, A thesis Submitted to DMU for master degree) established an optimal route and combinatorial transportation optimization model of container multimodal transportation. He considered the transportation path and transportation modes comprehensively and established the model with a time constraint which aimed at minimizing the total cost that included transportation costs and transition costs. Then the optimal model was turned into a shortest path model with one tie constraint, and the method of solving it was given.

It is a valuable research on choosing the route of multimodal transportation and can be a good reference for third party logistics enterprise. However, in my point of view, his study focused too much on the ideal situation and theoretical analysis. For instance, when establishing the model and functions, he proposed six assumptions

such as only considering the transition time and cost when meeting transition point, the place and equipment of all the imagined transition point are perfect, the distance between two transition points remain the same even if the transportation modes are different, etc. Mostly the assumption cannot be achieved during actual operation. There are also similar researches done on the theoretical level. I think these researches, to conclude, have following problems to be considered:

- a. Too many assumptions. When studying and calculating the best routes and similar questions, many assumptions were raised to optimize the situation and calculation. However, reality can never be the same of imagination and most assumptions cannot be avoided and erased. It makes the reader feels difficult to refer to the study when he conducts his own business.
- b. Neglect of management aspect. The management and control of logistics business is one of the most important factors that need to be considered. However, it is difficult for the researcher to add the management consideration into the model and function. Actually the management factor can not only influence the cost of logistics but also affect the time of transportation.
- c. Neglect of artificial factor. Logistics business is about the service and artificial factor are the points that cannot be ignored because the work and behavior of human cannot be substituted by computer and machine. What is more, cultural factor is also related to artificial factor and cannot be avoided in the international logistics business.
- d. Incompleteness of function. As far as I study, the time factor in the model and function established by others is set under the condition that time is limited. In other words, they just think the transportation will be finished under a time limit. However, as I mentioned before, there should be a dynamic time control in the logistics process. Being faster than standard sometime can help to save money and resources. But being slower sometime can help both sides save more money. It cannot be reflected in the thesis but it is a truth in the reality.

Therefore, from my perspective, I think we shall combine the theoretical knowledge with the real experience and the following aspects shall be considered:

- a. Since the main transportation mode in this research is sea transportation, we shall consider other modes on both the origin side and the receipt side. One point should be paid attention is regional difference. For instance, Europe has a bigger and professional railway transportation system than Asia. The freight is relatively lower than road transportation. If there is a rail freight station near the supplier or receiver. To some occasion, the saving cost can even cover the margin of different ports of discharge. So third party logistics enterprise shall seize the resources of it in order to make more profits. On the other hand, in China, the railway container transportation system is not complete so road transportation may be the main mode.
- b. The power of port. Port is one of the most important factors of constructing and optimizing the routes because route is just a connection line of ports. No port, no route. So the choice of port is always the main problem of planning the route. The geographical position, the economic development of nearby areas, the equipment and facilities of port(including the ability of loading and unloading), charges in the port and service level can all be the main aspects of analyzing the port. Some big container ports, such as Hamburg, Rotterdam, have much more advantages and it is enough for third party logistics to choose for the better service even if the cost may be a little higher.
- c. The service level of local agency. Logistics business contains huge numbers of trivial cases which need to be coordinated. Third party logistics enterprise plays a role of the operator of the whole logistics process but it cannot reach everywhere that the container reaches. It highlights the importance of the service level of local agency because it can help the operator to solve the emergency and urgent cases. If certain area has a good local agent, that place shall definitely be considered as part of the routes.
- d. Another aspect which needs to be paid attention to is that third party logistics shall try the best to avoid transition of container no matter the container is at sea or on the road. Many logistics enterprises think the transition service of big liner companies is fast and stable. But from my experience and inspection. Even the

top container liner companies sometime are stuck by the transition of container. The result is that the container may be delayed by transition in the transition port. The serious problem is that once the container is delayed, the ship has already gone and the only thing they can do is to wait for the nearest available ship. It can easily cause the loss of total required transportation time. When it comes to the road, more transition means more potential hazards. So the problem of transition is also very important and easy to be neglected.

4.1.4 Choice of Sub-contractor

The choice of sub-contractor including the liner shipping company, the local agent, customs agent, truck company, loading company, etc. Apart from liner shipping company, other choices of sub-contractor are relatively easier. Third party logistics enterprise shall carefully inspect the sub-contractors to see whether do they have certain certification and qualification to do their jobs or not. For instance, when the dangerous cargo needs to be carried, the sub-contractor must have relevant certifications of handling dangerous cargo. The situation in Europe is better than that in China. In China, in some occasions, some truck companies think as if they can carry everything. It is because of lacking of sufficient regulation and control and it is very dangerous. Third party logistics shall definitely avoid this kind of sub-contractor.

The world of liner container transportation is changing. Big liner shipping companies are forming shipping alliance to fight with the tough of shipping market. From the view of third party logistics enterprise, it is a rapier because the freight rate cannot be that low under the control of the shipping alliance, but enough routes are supplied. However, alliance does not mean the same company and there are situations that third party logistics have to choose the liner company in the same route. From my experience, one important aspect may be easy to be ignored. That is other costs and fees apart from the freight rate. Under the shipping alliance, the freight rate of certain route may be the same, but the cost such as detention and demurrage of the container at port of loading and port of discharge depend on each company itself. It can be a huge difference and some fees are very high and the condition is very strict.

Especially when third party logistics enterprise and the customer decide to use special type of container, such as open top container. The tarpaulin of open top container can be easily damaged. The repair fee is very high in some container shipping company. Third party logistics enterprise shall never just focus on the freight rate.

4.1.5 Thinking of low-carbon

As the international community pay more and more attention to saving resources, environmental protection and sustainable development, energy saving and environmental protection became a national strategy for each country. In the research of supply chain management, it also has the corresponding reflecting. Especially under the background of economic globalization, the problem is more prominent. Since the 90s, many scholars have spent a lot of time on problems such as reverse logistics, green supply chain, closed-loop supply chain and tried to add the influence of environment to every link of supply chain management. In supply chain management, the methods of reducing carbon emissions include controlling the carbon emissions on the physical process such as: improving or replacing equipment to improve energy efficiency, green product design to reduce the production process of carbon emissions, using clean energy and new energy to achieve energy conservation and emissions reduction. Based on those, from the angle of optimization, improving enterprise operational decision by adjusting or redesign the supply chain structure or logistics network to reduce carbon emissions is also brought to the attention of the enterprise. Such as improving order batch, changing the storage location and transportation routes, joining upstream and downstream enterprises together to optimize carbon emissions management on supply chain, etc. On the field of low carbon structural analysis and design of logistics supply chain, there are obvious cost differences between different countries and regions (the manpower, land, raw material and lead to the situation that huge amount of cargo transportation occurred between Asia and North America, Europe. And at the same time the production is still adopted to "offshore" such as Mexico for North America, Turkey for Europe, etc. Even in the same country, there is also a choice of central

cities (such as the Yangtze River delta, Near the Pearl River delta, etc.) (similar to "offshore"), in the western region (such as Chengdu, Chongqing, etc.) or close to raw materials (similar to "offshore", consideration of cost advantages such as manpower, land, raw materials), etc. Choosing a different layout of supply chain obviously has a major impact on carbon emission and distribution. On the other hand, the product/service mode of production organization also has important influence on carbon emission. In view of the demand risk sharing, giving rapid response to customer demand, finishing product storage and transportation of space requirements, selecting centralized production or subcontracting parts production and product assembling, "offshoring" and "offshore" production, concentration or separation of production have a big difference in cost and lead time, carbon emission, efficiency, flexibility and so on. Therefore, the enterprise needs to coordinate and optimize the supply chain structure and mode of production and meet the requirements of fast and changeable characteristics of the market and finally achieve the target of economic and environmental protection.

Third party logistics plays an important role in the supply chain operation especially considering "carbon emission". First of all, a lot of logistics modes can be used and they have different energy efficiency, transportation time and carrying capacity, etc. The specific choice is related to the characteristics of the product and also associated with the carrier preference on cost and environmental factors. At present, in China, there is a separation between members on the supply chain and logistics business operation. Each one of them is independently to optimize its own interests and cause the double marginal effects of carbon emission which leads to a large amount of additional carbon emission. Therefore, we need to systematically consider supply chain members and the operation behavior of logistics suppliers. Embedding logistics activities throughout the supply chain activities and design coordination contracts to optimize the various stakeholders to reduce the carbon emission.

4.2 Preparation before Transportation

4.2.1 Insurance

Insurance is a very important aspect in the logistics business and in the face of the

transition of the logistics industry, the law should play the role of adjustment specifications for third party logistics service industry to establish a new good order and provide a solid legal protection. The establishment of logistics industry legal order can not only regulate the behavior of logistics operator and clarify the logistics operator's responsibility, but also effectively promote the development of logistics insurance business. Clarifying the responsibility of the logistics operator is the premise of logistics insurance. The lawmaking of shipping logistics service in our country at present is still very immature and shipping logistics legal system has not been formed. Laws and regulations to adjust the shipping logistics legal relationship can be scattered found in other laws and regulations and cannot adapt to logistics industry. Due to the logistics industry in our country witnessed many new changes, specialized logistics legal system has not formed yet. Logistics operator behavior has not been built and responsibility sharing is not clear. It has greatly hindered the development of logistics industry.

With the development of third party logistics, logistics risks, which mainly refers to the liability on logistics demand side also increases. Therefore, in the insurance market, the insurer introduced a special liability insurance which underwrites the risk of liability for logistics operator: logistics liability insurance. It is to point to in the process of logistics business and combines the liability of the carrier in the transportation assumed by logistics operator, the liability of keeper in the process of storage, circulation processing, etc. It is underwriting by the insurer. The risk of this insurance will cover transportation, processing and circulation, port operation, and all kinds of logistics process. With only one insurance, logistics operator, can get the protection of many sides and save the operating cost a lot. In general, this kind of logistics liability insurance which covers multiple logistics links has a larger coverage than the individual liability insurance in logistics process and avoid the overlap and gap of each logistics links' individual liability insurance. It also avoids repeating insurance and can meet the demand of the development of modern logistics industry.

Shipping logistics liability comprehensive insurance is a kind of logistics liability

insurance insured by the underwriter for the risk of the operator of shipping logistics on the basis of logistics activities in shipping and with other transportation ways of combining of transportation service.

It is very important for third party logistics enterprise to be familiar with. As in this research, the main transportation mode is sea transportation, I will point it out. The comprehensive aspects are reflected in:

- a. The diversity of the underwriting risk. It covers risk of liability for breach of contract and tort liability.
- b. The comprehensive characteristics of insurance. It covers both in the overall sense of shipping logistics operator and actual logistics operator who complete the logistics business and operation, etc.

In addition, in the same shipping logistics liability comprehensive insurance policy, there may be both the content of the Marine insurance and things which are not the content of the Marine insurance. This series of characteristics make shipping logistics liability comprehensive insurance different from oneness "shipping logistics liability insurance which covers only specific reason that makes shipping logistics operator bear the liability for damages of goods. It is also different from the logistics cargo insurance and its additional insurance. Logistics cargo insurance is usually signed and adopted as the method of open policy insurance. The subject is the logistics goods which generally refer to the flowing goods in logistics way. Insurance clauses for not insured goods will also be listed and the value of jewelry and other valuables must be declared in advance to the underwriter. After getting the approval, it can be insured as the subject-matter of engagement by special arrangement. Logistics cargo insurance coverage can be treated as a comprehensive combination of the traditional freight insurance and property insurance which mainly cover relating expenses and losses of goods caused by natural hazards or accidents in various logistics links

4.2.2 Preparation with cargo

Generally analyzing, I concluded the preparation with cargo into three important aspects as: lashing of cargo (reinforcement), controlling of weight distribution and waterproof.

Loading reinforcement materials and devices are key factors to assure the safety of container loading. Loading reinforcement materials and device are directly related to the quality of the stability of the cargo. Good loading reinforcement material is the basis of safety transportation. It can make the good withstand various forces in the process of transportation and ensure the good do not move in the container. In advance, it can avoid unbalancing loading, unbalancing stress and concentration of weight. Therefore, strengthening the management of loading reinforcement materials and devices are the very important links of container loading reinforcement and must be paid enough attention to.

Container loading reinforcement materials mainly include:

- a. Binding and pulling materials. Binding reinforcement ways mainly includes: splayed shape, reverse splayed shape, cross shape, etc. A variety of pulling modes can be used alone or can be combined of two or more. Pulling should be as symmetrical as possible. When stretching and pulling, they intertwine the single and double lines of zinc wire between the goods and nodes in the container and pull tightly to make the firmness of wire as same as possible. The rest wires is to be twined between the rope poles then being fastened by heave stick. The operator should reasonably choose the lashing position of cargos. When aiming at preventing the horizontal move of cargo, the pulling and stretching position should be as low as possible. When aiming at preventing the capsizing of cargos, the position can be higher appropriate. Heave tight shall not damage the wire and it is prohibited to use damaged and galvanized iron wires. When fixing single strand wire rope end, the minimum number of clamps shall be three. When two ropes are fastened, the tied rope head should be tauted and use no less than four wires to screw fastened.
- b. Masking and blocking material. The masking and blocking material of container loading mainly include wood block, triangle wood, square wood, plywood, bamboo veneer and so on.
- c. Other materials. Other materials of container loading are twist cudgel, round steel, grilled curium nail, etc.

The reinforcement devices of container loading are mainly steel bracket, steel mounts etc. Steel bracket, steel mount should be made based on the shape of goods, weight, use of container condition and the strength, specifications, anti-skid and reinforcement measures should be able to meet the safety requirements of carriage of the goods.

Cargo weight distribution. If the weight of goods in the container cannot get average distribution and form a concentrated load, it will have a great influence on the carrying capacity of container itself. The distribution of good weight shall meet:

- a. The container horizontal load is uniform distributed load.
- b. Container longitudinal load is within the scope of a certain length as uniformly distributed load.

After loading the container, the body frame of container truck's working bending moment exceeds the maximum permissible bending moment. It is called concentrated loading. In the process of deciding the loading project, third party logistics enterprise shall verify the loading concentration condition to ensure the safety, integrity of cargo and the performance of trucks. In addition, the loading process is to consider the volume of goods, weight, strength of the packaging and the nature of the goods. We should put goods with solid outer packing and heavy weight on lower levels and put fragile, lighter weight cargo above to make the loading of goods the weight of the formation of uniform distribution on the bottom. Otherwise, it may cause the fall off of container bottom or bending of bottom beam. If there is an excursion of container's center of gravity, when using sprawled grabs lifting, the container may incline. In addition, the weight distribution of transportation vehicle may be unbalanced.

There are two kinds of plans to avoid concentrated loading. One is uniformly distributed load and another is multipoint concentrated load. Both plans are designed for the goods in the container's bending moment matched with the maximum allowable bending moment of vehicle to judge the feasibility of the loading scheme.

Waterproof is also a very important aspect for the cargo loading of containers. Especially when using open top containers and carrying over height cargos. The

encapsulation of the open top container is weak and the cargo may get wet easily. It is very dangerous not only to some cargos but also to some lashing materials like those wooden ones. The safety and quality of the cargo, container and the ships may be influenced. Usually a big plastic cover with professional sealing can meet the requirements but many third party logistics forget to think about it when using open top containers.

4.2.3 Safety Assurance

Logistics safety problems exist in each link of the third party logistics enterprise operation. To broadly understand the logistics safety, it is to avoid risk, to ensure the long-term development of third party logistics enterprise and form competitive advantages of reliability to achieve the full satisfaction of our own, the demand side and social benefit.

I will take the safety management work in the United States as an example. The United States has constituted a safety management system in which has channels of high efficiency, fast information, good service and characteristics of scientific, socialization, specialization. The government department in charge of security, police department, fire department and each enterprise's security agencies are in close cooperation and organic combination. Foreign trade logistics enterprises, commodity circulation enterprises, information flowing enterprises and other various forms of logistics enterprises are well organized together. The US market has higher levels of economic development which are mainly reflected by the development of orderly and reasonable of efficiency. The logistics industry of US has formed its integration and diversification of significant features and the construction of the modern logistics mode and systematic characteristics of socialization.

The main characteristics of safety management work of US are:

First, the safety facilities are advanced and scientific management level is high. Communications equipment in the United States developed in advance and international contact and the popularizing rate is high. The computer network development benefits from a powerful communication system. Safety alerts and notification system are distributed among various government departments,

individuals, businesses, and a variety of shops such as police and fire departments, security companies and other institutions. These unicom systems make the enterprise safety management and social security management closely unified together and formed a unified entirety.

Second, most American enterprises take initiative to cooperate with the government departments and make safety management work obtained the very good implementation. The overall consciousness is very high.

Third, citizens of the United States generally have higher awareness of security management and security quality. In the United States, the safety management laws and regulations are more completed. For a long time, US citizens formed the good safety consciousness and quality. In public places, they are consciously abided by the rules and public morality. For example, in places where smoking is not allowed, there would be no person smoking. In the smoking area, they also do not throw cigarette butts. People will consciously throw cigarette butts at the specified place after extinguishing. Once someone is in violation of regulations, the implementation of punishment will be very tough.

I selected the key factors influencing the logistics and safety management system in detail. The range consists of four modules:

The first big module as the basic safety, including safety elements like: hardware construction specialization, standardization management system, safety culture and the safety of the operation.

The second module to risk control including safety elements like: safety equipment, insurance, law-abiding and safety policy. Among them, the safety equipment and insurance can be classified to the internal risk control factors and law-abiding and safety policy can be attributable to the external risk control factors.

The third module is business safety, including safety elements like: rapid response, rapid adjustment, division of labor cooperation.

The fourth module is the social safety which contains the safety elements as: energy-saving and environmental protection, public safety and social responsibility.

Four modules constitute the comprehensive logistics and safety management system,

as shown:

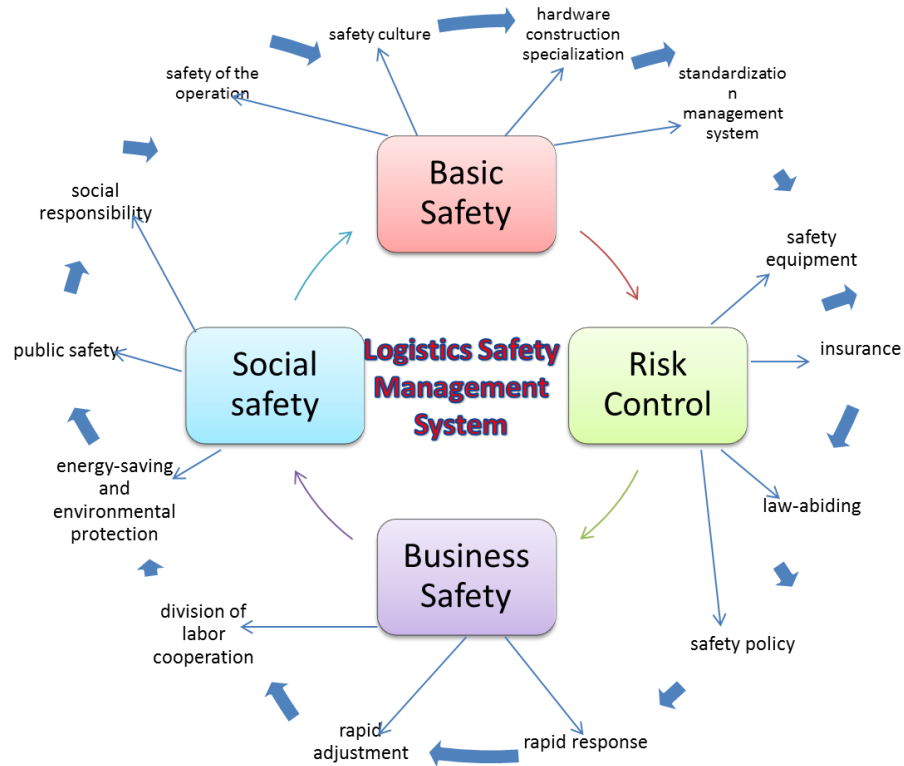


Fig 4.2 Logistics Safety Management System

After the selection of constitute elements of modern logistics enterprise security management system is completed, the modern logistics system structure of safety management is formed. But various elements within the logistics and safety management system do not exist in isolation, they have direct or indirect contact and impact.

First of all, there are positive effects among the four elements. In the logistics enterprise basic safety module, Enterprises should have good hardware facilities and equipment, at the same time have good software such as complete system of employees, complete operation process, complete mechanism of training and education, etc. With these basic management requirements, enterprises can begin normal operation and consider how to avoid risky factors in the operation, what goes

wrong in the operation. In practice, such as loss of the goods warehouse means need to review whether the safety facility is perfect, the problem such as whether it needs to be improved. Timely adjustment and control of risk is based on the good management and risk control and enterprises can focus on regular service to create high quality service and to ensure their competitiveness and competitive position. In the process of achieving its own benefits and the benefits of the customers, enterprises should consider social responsibility. As the large cell of the society, enterprises shall consider the environmental influence they make to themselves and to others. Enterprise realizes the social value by completing the social responsibility and getting increasing of recognition and reputation. It is the power source to enhancing competitiveness and anti-risk ability and improving infrastructure construction.

Secondly, among those factors, there are mutual influences. Sometime, the effect is not in order but crossed. When we adjust the competitiveness, for instance, it often involves that new scheme is put forward. The new scheme depends on the present stage complete situation of basic security element and also needs to be considered at the same time, if the new adjustment is a violation to the policy or industry standards. From various aspects of comprehensive judgment, a safe and effective decision is concluded.

The relationship between various factors is not deep but it requires management to keep global thinking and the managing idea of open source and facing the changes and challenges of enterprises. In this way can they get competitive opportunities in the increasingly tense market environment.

Based on the points above, the construction of a comprehensive logistics and safety management system, we can say being intuitive and clear of safety management evaluation for the logistics enterprises, is not an easy thing, we should combine the elements of a comprehensive security system with the practical work. I summarized the twenty indicators and through which we can be clearer to measure and judge the circumstances of the safety management of the enterprise as shown in figure:

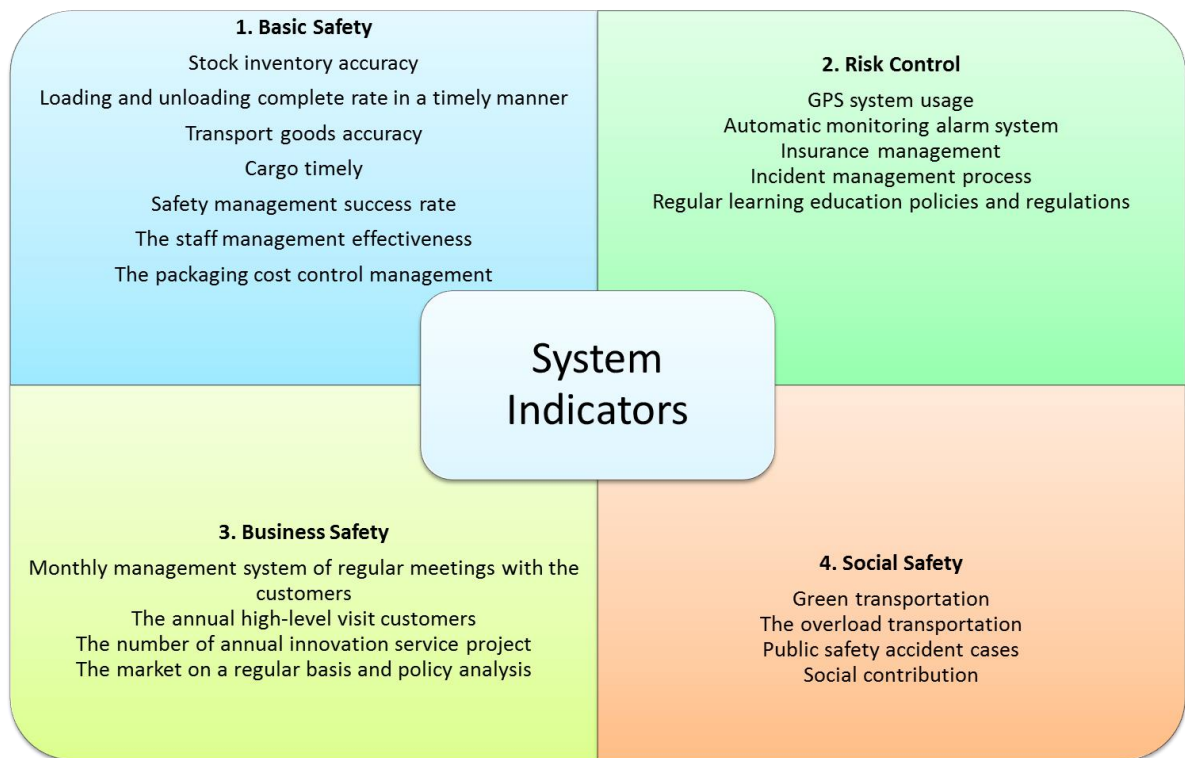


Fig 4.3 Comprehensive logistics safety management indicators

4.3 Control of the process

4.3.1 The development of Logistics PFMEA

PFMEA(Potential Failure Mode and Effect Analysis) is an analysis tool which is widely used in the risk management and sustainable improving of quality and safety aspects in production process. In this part, I will discuss it in logistics usage for third party logistics.

a. Setting up logistics PFMEA group

Through the setting up of specialized logistics PFMEA group to implement the development and maintenance of the logistics of PFMEA. PFMEA team members need to have special knowledge of logistics and rich field experience. It is generally constructed by the logistics manager, continuous improvement engineer, head of packaging, packaging engineer and personnel such as chief of a section. Team members' early system of PFMEA application training is required. They need to actively contact logistics employees in each link in the process of application in order to get direct, accurate information and discover the potential failure modes such as

quality, safety, etc. in the process.

b. Establishing logistics FMEA evaluation criteria

At the early stage of the development of logistics of PFMEA, we should build a logistics FMEA evaluation criteria:

The **severity** is to assess when a potential failure modes occur, the severity of the impact indicators to the quality of product, ordering cost and customers (such as production line etc.) and it ranges from 1 to 10 and is decided by the failure mode of the most serious influence degree.

The **occurrence** refers to the possibility of specific failure causes. The higher score means failure causes can be more occurrences.(1-10)

Detectability degree means when a potential failure occurs, based on the best available detection control method, an evaluation indicator that reflects the possibility of accurate detection of risk. (1-10)

c. Clearing each logistics process

Example: Material receiving, storage, preparation, material handling, material transport and return empty containers, etc.

d. Analyzing logistics process potential failure through the PFMEA identification.

Conducting the analysis of the logistics process, and identifying potential failure and causes using of fishbone diagram. Then analyze the effect of the most serious potential failure and potential failure causes frequency of occurrence statistics. Understanding the existing detection methods, organization of PFMEA assessment, according to logistics FMEA evaluation criteria, evaluate the potential failure severity (S), potential failure causes frequency occurrence (O), and the existing detection methods of recognition (D). By the product of S, O, D, determine the RPN (Risk Priority Number), the higher the RPN, means that the higher the Risk. We need to concentrate resources and make it our priority, as shown in figure.

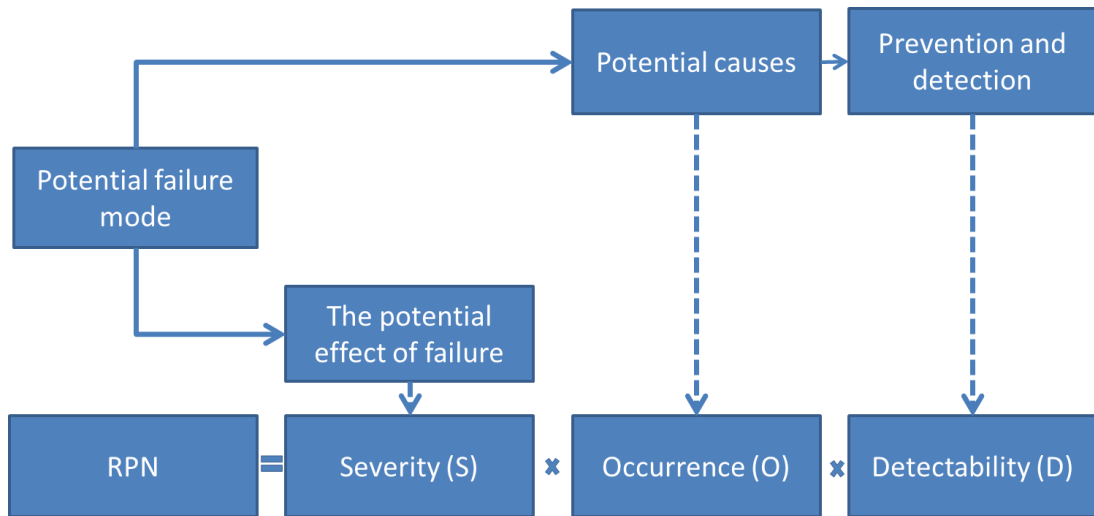


Fig 4.4 Analysis Process of PFMEA

4.3.2 The Management of Logistics PFMEA

Through the process of implementation of PFMEA, control plan, dynamic management of standardized work instruction, the process of logistics daily quality can be controlled. Every month according to the actual operation situation, assess the TOP5 RPN and solve the problems in PFMEA team reviewing meeting. For high RPN value, high severity levels (9 or 10) risk, there must be priority of solving. By determining person in charge and making improvement plan and time node, third party logistics can achieve continuous progress. After verifying the effectiveness of measures, we need to recalculate RPN values and update the PFMEA. Then review and update the process controlling plan. After issued to the logistics section, the section organized to develop review and update work of standardized work instruction. Thus, it can form the dynamic relationship among the three. Through dynamic management, we can constantly achieve the logistics daily quality process improvement. The use of PFMEA analysis of logistics process can help to timely and efficiently find the potential failure in aspects of quality and safety and then help to take measures to avoid risks. PFMEA can also help logistics area to determine the top priority of RPN risk and optimize the logistics process. It is a very good continuous improving tool. The PFMEA can also be applied to the material daily quality control, packaging, quality improvement and can effectively reduce material knocking against each other, scratching, dropping, rusting and other quality risks. It

has achieved good effect in third party logistics service quality improvement process.

4.4 Performance Evaluation

Third party logistics enterprise performance evaluation can urge the enterprises to improve their management ability and enhance the overall efficiency of the enterprise. Domestic research on logistics performance evaluation focuses on two aspects: the selection of indicators and the research of evaluation method. In the selection of index system, they did not form a unified design principle and have different emphasis. And most of them take logistics operation efficiency and logistics service as evaluation indicators but have less research on the logistics cost, logistics economic benefit and the development potential of logistics. So in the performance evaluation system, we need to make a comprehensive consideration and assessment.

a. The performance evaluation of the customer level

The main considerations are for customer satisfaction evaluation of logistics service and the number and performance evaluation on quality of customer developed by enterprise management behavior. The starting point of the performance evaluation of customer level is profitability because enterprise's ultimate purpose is to obtain more profits. Customer satisfaction is the core and key of performance evaluation on customer level because the expansion of market share and the improvement of customer profitability depend on the improvement of customer satisfaction. Indicators are: customer satisfaction (micro/macro customer satisfaction), customer retention rate, customer acquisition rate, market share (rate), customer profitability (customer average profit margin).

b. The performance evaluation of business process level

Business process level performance evaluation of third party logistics enterprise is the best part that can reflect the characteristics of the industry and enterprise. So we need to combine the characteristics of the third party logistics enterprise with customer's need to identify its evaluation index. It is conducted from the operating costs, quality of service, service ability, informational level and resource utilization. The indicators of performance evaluation of logistics enterprise business process level are: operating costs (unit logistics cost index), accurate, timely delivery rate,

rate of delivery, cargo's quality, customer demand rate, purchasing power (procurement achievable rate), inventory, distribution, information level and resource utilization (rate).

c. The performance evaluation of technological innovation level.

It is mainly analyzed from three aspects: the research and development investment, research and development production and research and development economic benefits. The ultimate goal of enterprise research and development is the huge economic benefits brought by the research and development achievements. The specific indicators are: research and development cost, research and development expense ratio, number of research and development production, research and development productivity, new product or project logistics rate of return on investment and application of new logistics technology efficiency.

d. The performance evaluation of staff levels

For the performance evaluation on the level of staff, we respectively proceed from two aspects: enterprise leadership and general staff. third party logistics enterprise leadership evaluation can be done from multiple perspectives and hereby we evaluate from three key factors which influence the making performance (knowledge, experience, ability). For the performance evaluation of employees, the core is the employee contribution to the value of the enterprise. Indicators are: leadership levels of knowledge, Leadership experience degree (average working number of year), Leadership ability (decision-making accuracy), staff's cultural quality (employees' knowledge level), employee satisfaction (employee turnover), employee training (number of employee training or employee training fee), employee participation in management (staff suggestions or advice employees benefit), productivity of the employees.

The purpose of third party logistics performance evaluation research is to find the weak link in the operation of third party logistics, improve to a better level and realize the logistics enterprise development goals.

Through the analysis above, I concluded following logistics performance improvement measures:

- a. Good logistics performance is based on the effectiveness of the cycle of measurement- action-evaluation. So, it is necessary to establish an effective performance management system of logistics and ensure the effectiveness of supervision and communication.
- b. Complete the integration of third party logistics functions, including internal integration and external integration to promote third party logistics performance improvement. The empirical study found that logistics is related to the integration and logistics performance has improved significantly. Internal logistics integration factors including: top management support, commitment with company scope, attitude change, combination of communication and training , practical plan, good access to information, system design of supporting customer service. And the external integration is to implement supply chain management, to establish real-time, interaction and sharing of integrated information platform.
- c. Strengthen the customer relationship management. Through the knowledge of customer relationship management and sharing information and customer requirements, look for enterprises and customer perception gap, shorten the distance between them and customers, and win the trust of customers.
- d. Establish strategic partnership with supplier and fourth party logistics provider and help them to improve their logistics performance.

CHAPTER 5

SUMMARY and CONCLUSIONS

World of logistics is developing. Any business type of single function cannot survive under the current trend. Traditional freight forward business and container carrier thought are out of date. Having been working under this circumstance and studying the professional knowledge, I concluded following perspective through this research project.

- a. The trend and direction of third party logistics development has been accepted by the public but the business of third party logistics enterprise still needs to be improved and completed. The thought of supply chain management from third party logistics side needs to be specified.

- b. Sea container logistics is becoming more and more important under the globalization trend at present. It can definitely help third party logistics enterprise to earn more profit.
- c. The establishment of sea container logistics project plan shall go beyond traditional method and thought and take more details into consideration. What is more, the concept of environmental protection shall be added into the plan.
- d. Before the transportation, many aspects should be assured and paid attention to such as: insurance, lashing and safety management system.
- e. The controlling of process need to introduce new methodology to satisfy the logistics demands of customers such as PFMEA
- f. The performance evaluation needs a complete and systematic thinking strategy.

The direction and trend of third party logistics enterprise and its sea container transportation business are optimizing and positive. However the market of this field is relatively disorderly and the service level of most third party logistics enterprises are still very low. It is because many of them started their business just as an agent or a freight forwarder. The operation and business that they used to do cannot fit for the new generation. Only by paying more attention to details and make full use of environmental protection and safety management concept together with experience and knowledge can third party logistics keep pace with the development and build its own competitiveness in the market and finally be the leading navigator of logistics world.

I am looking forward to see the prosperous future of the logistics world and I am confident that this research project can help third party logistics in a particular way.

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