

Analysis of the Influence of International Logistics Cost on International Trade Based on Feature Extraction

LiHan¹, JinHu², ZhenfeiYao¹

¹Qufu Normal University, Rizhao, Shandong, 276800, China

²Shandong Vocational and Technical University of International Studies, Rizhao, Shandong, 276800, China

Abstract

With the development and prosperity of economy, every country is not satisfied with limiting its economic development to domestic, and more and more countries and enterprises focus more on international economic development competition. However, the division of labor in industrial structure is becoming more and more clear, and the fierce market competition makes it more and more difficult for enterprises to control production costs in the production process, so many enterprises have to change to the circulation field in order to reduce costs. For international logistics, transportation, material management, distribution and other consumption costs are its main business coverage. As an important part of foreign trade expenditure of enterprises, it is of great significance to the development of enterprises, and the level of logistics cost also restricts the development of enterprises to some extent. Based on feature extraction algorithm, this paper analyzes the influence of logistics cost on the development of international trade, and then puts forward effective control measures of logistics cost to promote the sustainable development of international trade.

Keywords: International trade, Transportation, Logistics cost, Feature extraction

I . Introduction

With the development of economic globalization, international trade has a greater and greater impact on social and economic development. In order to adapt to the trend of social development, accelerate the process of nationalization and comprehensively develop international trade, it is of great significance to China's social and economic development [1]. The development of international trade not only promotes the development of social economy, but also promotes the development of international logistics industry. International trade not only brings social and economic prosperity, but also brings new changes to the international logistics industry. Because it is an important part of foreign trade expenditure, enterprises should pay enough attention to it [2]. The increase of logistics cost year by year not only limits the healthy and sustainable development of enterprises, but also has a great impact on the development process of international trade [3]. For international logistics, transportation, material management, distribution and other consumption costs are its main business coverage. As an important part of enterprises' foreign trade expenditure, it is of great significance to the development of enterprises, and the level of logistics cost also restricts the development of enterprises [4]. In order to further stabilize and enhance the status and influence of Chinese enterprises in the international market, we must pay attention to the internal strengthening management of international logistics costs, scientific control, reduce cost expenditure, improve their core competitiveness in the international market and further expand economic benefits [5].

With the development of economic globalization, the economies of various countries are developing alternately, and the competition is becoming more and more fierce, which is not only a valuable opportunity but also a powerful challenge for China's foreign trade [6]. Facing the great integration of the world economy, we should pay more attention to the development of international trade business and make continuous innovation in the field of international trade. With the strengthening of the trend of economic globalization, enterprises are facing increasingly fierce competition, the continuous refinement of industrial division of labor and the gradual lengthening of industrial chain, which makes enterprises pay more and more attention to cost from the production field to the circulation field

[7]. Due to the rapid development of international trade, its impact on social economy is increasing. In order to comply with the overall development trend of the international community, it is necessary to improve international competitiveness and focus on the development of international trade [8]. In order to enhance China's comprehensive strength, we must seize the international market and give full play to China's due influence. If Chinese enterprises want to improve their international competitiveness and maximize their economic benefits, they must further improve the international trade business and promote its rapid development [9]. In the process of increasingly fierce market competition, continuous refinement of industrial division of labor and continuous extension of industrial chain, the difficulty of enterprise production cost control has gradually increased, and it must be changed to the field of circulation [10]. Based on the feature extraction algorithm, this paper analyzes the impact of logistics cost on the development of international trade, and then puts forward the effective control strategy of logistics cost to promote the sustainable development of international trade.

II. The Impact of International Logistics Cost on International Trade

A. The Impact of International Logistics Cost on International Trade Behavior

Price, transportation cost and inventory cost are the priority objects of enterprises in their foreign trade. In this process, the logistics cost must be considered, and the trade mode and trading country should be selected according to the enterprise's own situation. Therefore, the trading country of products with price competitive advantage is the primary consideration when enterprises choose. That is to say, in the situation of the same quality, the choice of products with relatively low prices can effectively control the expenditure cost of enterprises, effectively control the expenditure cost of enterprises and create more economic benefits for enterprises. The basic elements of logistics are shown in Figure 1.

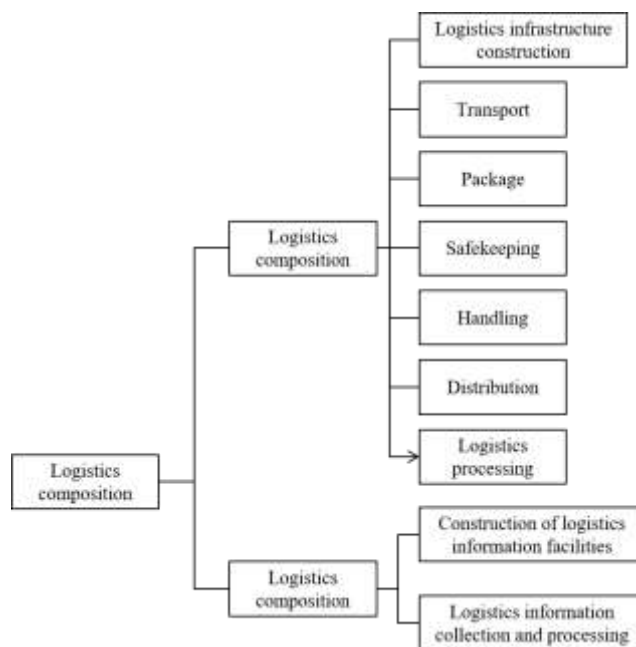


Fig.1 The Basic Elements of Logistics

With the continuous development and growth of enterprises, it is necessary to fully consider the logistics cost. Therefore, when choosing a trading country, we should not only examine whether the products have price advantage, but also consider the geographical position of the trading country. International logistics costs are related to the degree of foreign trade and economic interests of enterprises. The higher the international logistics costs, the greater the obstacles to the economic development of enterprises. From a certain point of view, the increase or decrease of

the value between the price difference and the logistics cost difference determines the profit difference in the process of international trade.

When a country considers importing a certain kind of goods, it will examine the comprehensive factors of each country, such as geographical location, the quality and price of goods in each country, and so on. Especially when the prices of goods are almost the same, geographical location becomes more important. Inventory cost accounts for a large proportion of international logistics costs. In the process of international trade, it is necessary to select the appropriate quantity of goods according to the actual situation of enterprises. Inventory cost control is carried out according to the inventory required by enterprises in international trade, and order batches can be added for management [12]. The transaction price of goods is often affected by logistics cost. The commodity price is high, and the corresponding logistics cost is directly proportional to it. Therefore, the interests of enterprises are directly affected by them. In international trade, trade terminology is the key point, which runs through the whole trade process. The foreign trade of enterprises should be considered in many aspects, such as price, transportation cost and inventory cost. Combined with the actual situation of enterprises and the development advantages of enterprises, it is necessary to choose a more suitable trade mode and an ideal trading country.

B. The Impact of International Logistics Cost on International Trade Volume

Among the components of international logistics cost, storage cost is an important cost factor. With the rapid development of international trade, more and more countries pay attention to the storage cost factor in logistics cost. In many cases, in order to reduce the logistics cost in international trade and reduce the storage cost in the logistics cost, enterprises will scientifically and reasonably estimate and plan the import quantity of goods in the process of importing goods. In the overall cost of international logistics, the cost expenditure which occupies a large proportion is inventory cost. Therefore, from a practical point of view, we should measure the specific situation of enterprises as a whole and choose the quantity of goods correctly. Generally speaking, enterprises need to control the inventory cost according to the specific needs of international trade or their own inventory quantity. Of course, they can also take the way of increasing the number of orders to complete the corresponding management work. Because logistics cost is a problem that must be considered in the process of enterprise development, in the choice of trading countries, we should choose products with competitive price and consider the geographical position of trading countries at the same time.

In the cost of international logistics, a key component is the storage fee. Therefore, when importing goods from abroad, enterprises will choose the best quantity of goods imported. Even if the freight and storage fee of goods in transit are the lowest, the storage fee of their own inventory goods will be low while satisfying the sales. We can consider adopting the basic model of economic order batch determination in financial management to determine the optimal order quantity, that is, when the annual demand of a certain inventory is fixed, the order batch will be reduced and the order batch will be increased. The relationship between logistics capability and supply chain performance is shown in Figure 2.

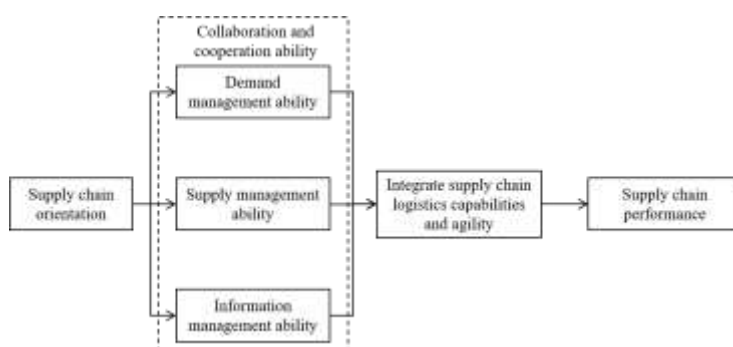


Fig.2 The Relationship between Logistics Capabilities and Supply Chain Performance

Assume that $X_i \in R^n$ is the factor that influences the logistics cost on international trade, and Y_i is the analysis value of logistics characteristics. The logistics feature analysis model based on feature extraction algorithm is to find the relationship between X_i and Y_i :

$$f : R^n \rightarrow R \quad (1)$$

$$y_i = f(x_i) \quad (2)$$

In the formula: R^n is the factor affecting logistics cost on international trade. According to the feature extraction algorithm theory, the establishment of the logistics feature analysis model seeks to establish the following expression:

$$f(x) = \sum_{i=1}^k (a_i - a_i^*) K(x, x_i) + b \quad (3)$$

In the formula: x is the factor that affects the logistics status, x_i is the i sample among the k samples, and $K(x, x_i)$ is the kernel function. The kernel function adopts the radial basis function, as shown in the following formula:

$$K(x, y) = \exp \left| -\frac{\|x - y\|^2}{2\sigma^2} \right| \quad (4)$$

In the process of putting in and circulating imported goods in the domestic market, enterprises will set reasonable prices for imported goods, and prices play an important role in regulating the relationship between market supply and demand. Under normal circumstances, the higher the price of imported goods, the lower the market demand, and the lower the price of imported goods, the higher the market demand. This supply and demand and price, in turn, determine the quantity of imported goods. Enterprises need to pay attention to the relationship between the quantity of imported goods and pricing, and find the best balance between them, so as to enhance the best profit model of enterprises in international trade [13]. Because of the influence of choosing a trading country, many enterprises need to consider many contents, including transportation cost, inventory and price, when launching foreign trade. At the same time, we should choose the most suitable trade mode and trading country according to the actual situation and advantages of enterprises. Logistics cost is the problem that enterprises must analyze when conducting international trade. Therefore, the price advantage of products and the specific geographical location of trading countries should be considered in the specific choice of trading countries. In addition, the specific geographical location of the trading country must be analyzed when calculating the transportation cost and storage cost of products. Only through comprehensive analysis and selection can we realize the control of logistics costs and help enterprises create more economic benefits.

III. International Logistics Cost Control Measures

For enterprises, the control of international logistics costs in international trade affects whether their competition has advantages, and whether the future development of enterprises can achieve sustainability is also greatly affected. For Chinese enterprises, international logistics cost control has a strong influence, which not only relates to whether

enterprises have competitive strength and can occupy a favorable position in the world market, but also determines the future development direction of enterprises. In the process of international trade, if the transportation distance between the two sides is relatively stable, we can shorten the transportation distance to the maximum extent and provide a strong guarantee for cost saving in the process of foreign trade. Only in this way can we really control the cost, maximize the economic benefits and promote the gradual improvement of foreign trade competitiveness. Transportation cost refers to the payment for transportation between two geographical locations and the expenses related to administration and maintenance of inventory in transportation. The basic idea of controlling transportation cost is to maximize the quantity of goods transported under the condition of fixed transportation distance. In international trade, if the transportation distance between the two sides of the trade is stable, the transportation distance should be shortened to the greatest extent, which can reduce the cost of foreign trade, thus better control the cost and obtain more economic benefits, and finally improve the competitive strength of enterprises.

From the perspective of logistics cost, if logistics cost increases gradually, the transaction price of enterprise products will increase accordingly. Otherwise, it is bound to have a negative impact on the economic benefits of enterprises. Inventory cost is always proportional to the quantity of goods. In the process of controlling inventory cost, enterprises should also consider the actual situation and actual needs of enterprises. Choose a more reasonable inventory to ensure that the inventory can fully meet the market demand, and ensure that the inventory is scientifically controlled within a certain range, thus avoiding the phenomenon of excessive inventory cost. Logistics cost control refers to the cost control of one or more local links of logistics in the logistics activities of enterprises, so as to achieve the expected logistics cost target. There is a direct proportional relationship between the quantity of goods and the inventory cost. When enterprises control the inventory cost, they should also consider the specific situation of enterprises as a whole and the real demand [14]. Only in this way can we determine the most scientific storage quantity, thus ensuring that the inventory quantity can fully meet the market needs. The product mode positioning of the logistics distribution system is shown in Figure 3.

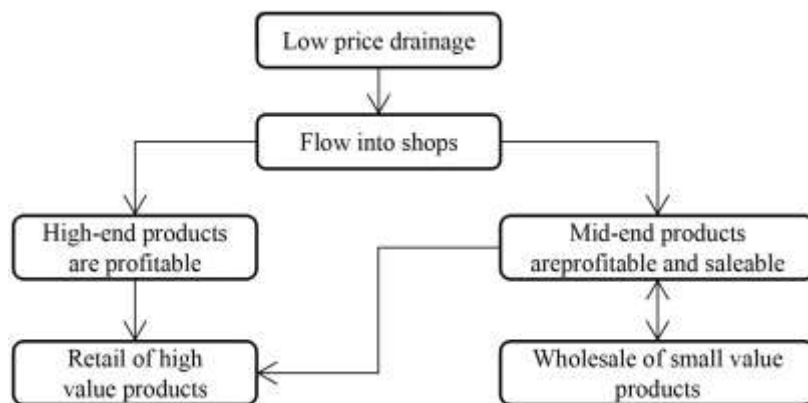


Fig.2 Product Model Positioning

It is necessary to choose an appropriate quantity for commodity storage, and this appropriate quantity is balanced between meeting the market demand in a certain period of time and not causing excessive storage cost. Logistics enterprises can use the basic model of economic order batch determination in financial management to determine the optimal order quantity, so as to control the storage cost reasonably. For enterprise logistics management, various cost inputs in the management process are closely related to enterprise management. The key lies in whether the cost control of international trade logistics is reasonable, which is a problem that enterprises need to pay attention to. From the operational level, self-operated logistics business does not really reduce logistics costs, and even affects the quality and efficiency of logistics services, which plays a negative role. Therefore, when conducting foreign trade, each enterprise must truly recognize its own advantages, implement the concept of high-quality logistics outsourcing, and select powerful logistics companies to complete various services of the enterprise.

IV. Conclusions

At present, the growth of social and economic interests benefits from the development of international trade, which plays an increasingly important role in the current economic society. Based on the environment of economic times, the development of international trade has become an important pillar to drive the steady growth of social economy, so all enterprises must have a clear understanding. Therefore, if enterprises want to stand in the fierce market environment, the control of logistics cost is more critical for enterprises. With the acceleration of economic globalization, the influence of international logistics cost on international trade has been paid more and more attention by countries and enterprises. Therefore, in the process of international trade, enterprises and countries must pay attention to the importance of international logistics costs, and adopt various measures and methods to reduce international logistics costs and enhance profits in international trade. In order to achieve a longer-term and stable development and improve its market competitiveness, enterprises must improve their own economic benefits, strengthen the control of international logistics costs, reduce enterprise costs and realize the maximization of enterprise economic benefits in the process of foreign trade. In the process of international trade development, enterprises need to increase the effective control of transportation costs and inventory costs, and actively implement the concept of high-quality logistics outsourcing, so as to improve the competitiveness of enterprises from different angles and levels and promote the healthy development of enterprises.

References

- [1] Sohn JI, Woo SH, Kim T W. Assessment of logistics service quality using the Kano model in a logistics-triadic relationship. *International Journal of Logistics Management*, vol. 28, no. 2, pp. 680-698, 2017 .
- [2] Marti L, Puertas R. The importance of export logistics and trade costs in emerging economies. *Maritime Economics & Logistics*, vol. 19, no. 2, pp. 315-333, 2017.
- [3] Ekici S O, Kabak O, Ulengin F. Improving logistics performance by reforming the pillars of Global Competitiveness Index. *Transport policy*, vol. 81, no. 9, pp. 197-207, 2019.
- [4] Stojanovi U M, Iveti J. Macrologistic performance and logistics commitments in sales contracts in international supply chains. *International Journal of Logistics Management*, vol. 31, no. 1, pp. 59-76, 2020.
- [5] Tsai F M, Lu C C, Chang Y M. A network model for solving the yard truck routing and scheduling problem. *International Journal of Logistics Management*, vol. 27, no. 2, pp. 353-370, 2016.
- [6] Cai Xilin. The impact of international logistics costs on international trade. *Public investment guide*, vol. 328, no. 8, pp. 24-25, 2019.
- [7] Ban Ran. The impact of cold chain logistics on the cost-benefit of agricultural products. *Technical Economy and Management Research*, vol. 269, no. 12, pp. 30-34, 2018.
- [8] Min H, Ahn YH, Lambert T. Benchmarking and improving mass transit systems in the United States based on best-in class practices: Policy implications. *International Journal of Logistics Management*, vol. 28, no. 1, pp. 172-193, 2017.
- [9] Wu Tongyu, Wang Jian. Multi-scale analysis and development evaluation of logistics hub cities based on multi-layer complex networks. *Transportation System Engineering and Information*, vol. 19, no. 1, pp. 33-39, 2019.
- [10] Yu Junyang, Xu Zhechun, Hou Hanli, etc. International Trade Business Process Specification Inspection and Quarantine Data Exchange Electronic Certificate Modeling. *Modern Electronic Technology*, vol. 537, no. 10, pp. 146-150, 2019.

- [11] Shen Xin, Dong Xin. Construction of International Trade Single Window and Prospects of Cross-border E-commerce. *China Logistics and Procurement*, vol. 566, no. 1, pp. 39-40, 2019.
- [12] Sun Liquan. International Shipping Logistics Cost Accounting. *Ship Vocational Education*, vol. 6, no. 5, pp. 73-77, 2018.
- [13] Zhang Chen, Dong Hongfei. The impact of international logistics development on international trade. *Business Culture*, vol. 391, no. 10, pp. 41-42, 2018.
- [14] Babri S, Jornsten K, Viertel M. Application of gravity models with a fixed component in the international trade flows of coal, iron ore and crude oil. *Maritime Economics & Logistics*, vol. 19, no. 2, pp. 334 -351, 2017.