

Study on Overseas Warehouse Location of Manufacturing Cross-border E-Commerce Enterprises Based on Multi-objective

YingyingLiang¹, XiaoHe²,Jianlu Li^{3*}, YuanhuanWang²,ShuangZhang²

¹Liaoning University of Technology, School of Economics, No. 169, Shi Ying Street, Guta District, Jin Zhou, Liao Ning Province, China

²Liaoning University of Technology, China, Liaoning province, Jinzhou 121001, Liaoning, China

³Management Information System,Benedictine University

*Corresponding Author.

Abstract

As a new logistics mode, overseas warehouse can save transportation time for cross-border logistics and also solve the problem of customer return and exchange as soon as possible. This paper takes manufacturing cross-border e-commerce enterprise logistics as the starting point, considering cost, market, environment, society and other factors, establishes a multi-objective overseas warehouse location model to set up alternatives, analyzes the location model by analytic hierarchy process, selects the optimal solution of overseas warehouse location in the alternatives, and verifies the method by an example. Finally, it puts forward targeted suggestions for manufacturing cross-border e-commerce enterprises to establish overseas warehouses, and then promotes the new logistics mode of manufacturing cross-border e-commerce overseas warehouses to mature and standardize.

Keywords: Manufacturing, cross-border e-commerce enterprises, overseas warehouse location, multi-objective optimization, AHP

1.Introduction

In recent years, cross-border e-commerce as an emerging industry has developed rapidly, which has added a lot of color to the growth of national GDP. Cross-border e-commerce logistics is also accompanied by the development of cross-border e-commerce enterprises. However, the development and operation mode of cross-border e-commerce logistics is not perfect. In the process of operation, there are many problems such as slow delivery time, high packet loss rate and incomplete transportation lines. The emergence of these problems greatly reduces the shopping experience of overseas consumers, and the satisfaction of cargo inspection, resulting in a new model of overseas warehouse logistics. Compared with other special line logistics, overseas warehouse logistics can save time, delivery rate is fast, price is relatively cheap, and can be transported at home and abroad, which can better attract customers' purchase desire. However, overseas warehouses can solve the problem of traditional cross-border logistics, but freight prices and storage costs will also increase, so how to choose an economical and applicable location is particularly important.

By sorting out relevant literature, it is found that among many location methods, analytic hierarchy process and particle swarm optimization algorithm are widely used to solve the problem of overseas warehouse location. At this stage, some scholars have the following research on overseas warehouse location problem. Mei Baolin(2018) believes that the address selection of overseas warehouses should pay attention to the factors that affect the development of overseas warehouses, establish a combination of options, combine local cultural practices, focus on extensive thinking, in-depth research, and select the optimal address according to expert opinions^[1]. Li Yangchunzi(2017) pointed out that the location of overseas warehouses should fully consider social background factors and economic cost factors. Among them, economic cost factors should cover warehousing costs and land operation costs, and social background factors are reflected in policy support, international environment, current international relations, local cultural customs and other aspects^[2]. Qingqian Li (2020) believes that the main contradictions should be grasped when analyzing cross-border e-commerce issues, and only by analyzing layer by

layer can the key points be discovered.^[3] Chen Mengnan and Yang Bin(2017) broke through the previous single location model, established a dual-objective optimization model using integer programming method, namely the minimum cost and maximum customer satisfaction model, and designed a particle swarm optimization algorithm to solve the problem^[4]. Jun Chen(2020) from the distribution and transportation process, fully considering the uncertainty of demand and location in the data analysis process, established the distribution center location model, and obtained the optimal location scheme^[5]. Kong Hao(2020) fully considered the cost factor in establishing the overseas warehouse model, and introduced transport costs and infrastructure costs into the cost factor, focusing on the impact of this factor on the alternative target location^[6]. Zhu Jiatong, Zhang Bixi et al.(2017), from the perspective of customers'ability to accept prices and demand for local markets, proposed that the location of overseas warehouses is affected by factors such as construction cost, transportation mode, spatial distance and time cost. The single objective model of overseas warehouse location is established, and the specific location scheme is obtained by using genetic algorithm and particle swarm optimization algorithm. The location results are more realistic and reliable^[7]. Su Liyan(2017) first considered the specific factors affecting the development of overseas warehouses, and organized these factors into several options, which provided objective development data for the location of overseas warehouses^[8]. When analyzing the influencing factors of overseas warehouse location, Fu Zhengchuan(2019) mainly focuses on cost, such as time cost, storage cost and raw material cost. In addition, we also consider the unmarketable cost of commodities caused by force majeure and the risk cost of natural disasters, and derive the most suitable location scheme by calculating the risk cost and force majeure cost^[9]. Cao(2019) believed that the location of overseas warehouses should fully consider the uncertainty cost and formulate relevant location schemes according to the uncertainty of influencing factors^[10].Wang Junqing (2018) established a hierarchical model of overseas warehouse location selection with hub factors and social policy factors as the main core factors in the article, using the analytic hierarchy process to analyze the given options, and according to the income weight of each program Draw the most optimal location plan^[11].

Overseas warehouse is essentially a tertiary industry, so the degree of time control and service attitude are very important for cross-border e-commerce enterprises. Therefore, the overseas warehouse location problem in this paper considers four factors: cost, market, environment and society, and deeply excavates the decision objects contained in each factor. After comprehensive consideration, this paper uses the analytic hierarchy process to analyze the overseas warehouse location problem. Choosing analytic hierarchy process to solve the problem of overseas warehouse location of cross-border e-commerce enterprises in this paper can transform complex problems into hierarchical problems, set up multiple hierarchical objectives, combine qualitative and quantitative, consider all possible influencing factors, judge the importance of each influencing factor with the experience of decision makers combined with the actual situation of enterprises, reasonably give each standard weight of each decision scheme, and use the weight to calculate the advantages and disadvantages of each scheme, so the results are clear and clear, which is of practical significance to solve the problem of overseas warehouse location.

This paper is organized as follows. The first part describes the overseas warehouse location problem. The second part establishes the overseas warehouse location model, describes the analysis steps. The third part verifies the feasibility of the model and the analysis results through examples. The fourth part puts forward effective suggestions for the overseas warehouse location of cross-border e-commerce enterprises according to the scheme and influencing factors provided in this paper.

II. Description of Issues

The process of overseas warehouse location is generally divided into three steps: country selection, area determination and location selection. The overseas warehouse location problem of cross-border e-commerce enterprises can be described as an e-commerce enterprise that wants to develop overseas markets. After selecting the target country, considering the cost, transportation and other factors affecting the company's business development, the best location is selected, and the overseas warehouse is established to improve logistics efficiency and service quality, save transportation time, enhance the comprehensive competitiveness of enterprises, and successfully develop overseas markets.

Through investigation and query of relevant research data, this paper finally draws up cost factors that are subdivided into freight labor cost, land warehouse construction cost and energy fixed cost. Subdivided into technology upgrading, per capita income, new things acceptance market factors. Subdivided into natural environment, convenient transportation, offline store density of environmental factors. The social and environmental factors subdivided into policies and regulations, government support and the international trading market environment are the main influencing factors for the location of overseas warehouses of cross-border e-commerce, and the overseas warehouses with the least cost, the most suitable market for enterprise development, the best environment and the best policy are selected for cross-border e-commerce enterprises. The process is shown in figure 1.

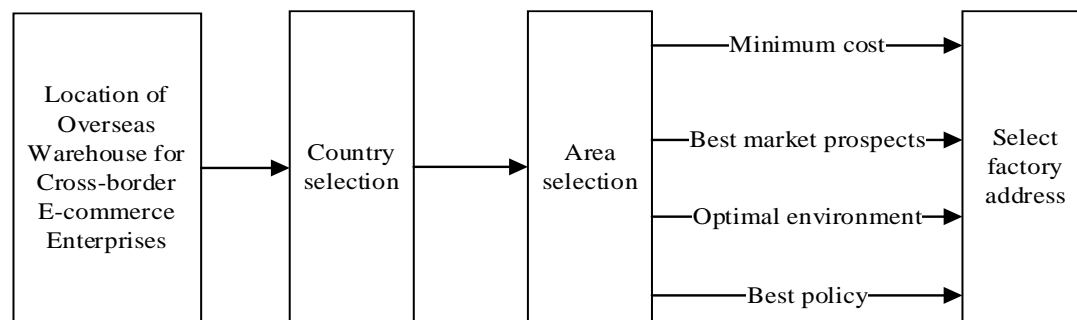


Figure 1 Flow Chart of Overseas Warehouse Location of Cross-border E-commerce Enterprises

III. Model Establishment and Analysis Steps

3.1 Establish hierarchical structure model

According to the description of the above problems, this paper sets the target layer for the overseas warehouse location of cross-border e-commerce enterprises, and the first-level criterion layer is the cost factor, market factor, environmental factor and social factor. The first-level criterion layer is subdivided into the second-level criterion layer of freight labor cost, land warehouse cost, energy fixed cost, technology upgrading, per capita income, new things acceptance, natural environment, traffic convenience, offline store density, policies and regulations, government support, international trading market environment. The scheme layer is different alternative warehouse addresses.

On this basis, the hierarchical structure model of various factors is constructed, as shown in the following figure 2.

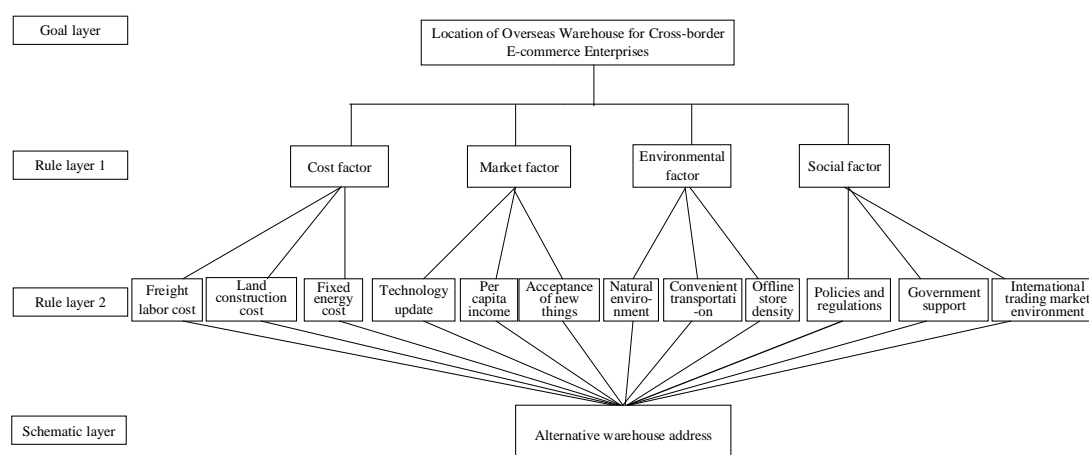


Figure 2 Hierarchical Model Structure

3.2 Construction of judgment matrix

Establish the hierarchical structure model, then construct the judgment matrix. The judgment matrix is constructed by using the relative scale to compare the factors and evaluate the grade according to their importance. In this way, the difficulty in comparing the factors with different properties can be and the accuracy can be improved.

Compare the importance of the guidelines to the objectives. a_{ij} is the comparison result of the importance of factor i and factor j , which is called judgment matrix according to the matrix formed by pairwise comparison results. The judgment matrix has the following properties:

$$a_{ij} = \frac{1}{a_{ji}} \quad (1)$$

The scaling method of judging matrix result a_{ij} is given, which is divided into nine grades. Table 1 shows:

Table 1 Measurement Method of Judgment Matrix a_{ij}

Scale	Implication
1	Represents the same importance of two factors
3	That one factor is slightly more important than the other
5	That one factor is more important than the other
7	Represents that compared with two factors, one factor is more important than the other.
9	Represents that compared with two factors, one factor is extreme important than the other.
2468	Median of the above two adjacent judgements
Reciprocal	Judgement a_{ij} by comparison of factor i with j , then judgement $a_{ji} = \frac{1}{a_{ij}}$ by comparison of factor j with i

3.3 Hierarchical single sorting and its consistency test

After the judgment matrix is constructed, the results are sorted by single level, and the judgment matrix will be consistent and inconsistent. For the consistent matrix, its normalized feature vector is taken as the weight vector. For the inconsistent (but within the allowable range) judgment matrix A , corresponding to the eigenvector of the maximum eigenvalue λ_{\max} of the judgment matrix, it is normalized and denoted as the weight vector W . The element of W is the sorting weight of the relative importance of the same level element to a factor in the upper layer. Attainable

$$Aw = \lambda_{\max} w \quad (2)$$

Define consistency indicators as:

$$CI = \frac{\lambda_{\max} - n}{n - 1} \quad (3)$$

$CI = 0$, with complete consistency;

CI close to 0, with satisfactory consistency;

The greater the CI , the more serious the inconsistency.

The random consistency index RI is introduced to measure the size of CI. The method is to construct 500 pairwise comparison matrices A_1, A_2, \dots, A_{500} randomly, then the consistency index $CI_1, CI_2, \dots, CI_{500}$ can be obtained.

$$RI = \frac{CI_1 + CI_2 + \dots + CI_{500}}{500} = \frac{\frac{\lambda_1 + \lambda_2 + \dots + \lambda_{500}}{500} - n}{n - 1} \quad (4)$$

The random consistency index is as follows. Table 2 shows:

Table 2 Random Consistency Index RI

Order of matrix	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49

Define consistency ratios:

$$CR = \frac{CI}{RI} \quad (5)$$

It is generally believed that when the consistency ratio $CR < 0.1$, the consistency of the judgment matrix is within the allowable range, and there is satisfactory consistency. Through the consistency test, the normalized feature vector can be used as the weight vector, otherwise the judgment matrix needs to be corrected.

3.4 Hierarchical total ranking and its consistency testing

After the single-level sorting and consistency checking are completed, the total-level sorting and consistency checking are carried out. Hierarchical ranking, as its name implies, is to calculate the weight of the relative importance of all factors at a certain level to the highest level (total goal). This process is carried out from high level to the lowest level.

In the middle layer (criterion layer), m factors A_1, A_2, \dots, A_m are ranked as a_1, a_2, \dots, a_m for the total target.

The bottom layer (scheme layer) n factors on the upper layer are A_j levels but sorted as $b_{1j}, b_{2j}, \dots, b_{nj}$.

The total ranking of the lowest level (scheme level) is:

$$\begin{aligned} B_1 &: a_1 b_{11} + a_2 b_{12} + \dots + a_m b_{1m} \\ B_2 &: a_1 b_{21} + a_2 b_{22} + \dots + a_m b_{2m} \\ &\dots \\ B_n &: a_1 b_{n1} + a_2 b_{n2} + \dots + a_m b_{nm} \end{aligned} \quad (6)$$

That is, the weight of the bottom (programme level) factor i to the overall objective is:

$$\sum_{j=1}^m a_j b_{ij} \quad (7)$$

Let B_1, B_2, \dots, B_n to the factor A_j ($j = 1, 2, \dots, m$) in the upper layer (A layer) is CI_j , and the random consistency index is RI_j , the consistency ratio of the total hierarchy is:

$$CR = \frac{a_1 CI_1 + a_2 CI_2 + \dots + a_m CI_m}{a_1 RI_1 + a_2 RI_2 + \dots + a_m RI_m} \quad (8)$$

When $CR < 0.1$, it is considered that the hierarchical total ranking passes the consistency test, and the hierarchical total ranking has satisfactory consistency. Otherwise, the element values of the judgment matrix with high consistency ratio need to be readjusted.

At this point, the final decision is made according to the overall ranking of the lowest level (decision level).

IV. Example Analysis

A multinational company was established in 2011, and it is a well-known domestic overseas business brand with the largest scale effect of revenue. Its products mainly include three series: battery research and development and charging, multi-functional headphone audio, and intelligent innovation technology. Its revenue mainly comes from foreign markets, such as North America, Europe, Japan, the Middle East and other economically developed regions with strong consumption and standardized operation. The company had prepared to establish overseas warehouses in the United States, investigated several central cities in the United States, and finally chose the H Free Zone on the West Coast of the United States as the site after weighing the advantages and disadvantages. Taking this company as a case, this paper draws up City J, City X, City S, City F and City P as alternative addresses of overseas warehouses. After the above steps, the empirical analysis of the overseas warehouse location of this company is carried out to test the feasibility of the above overseas warehouse location scheme.

4.1 Establish hierarchical structure model

According to the influencing factors of overseas warehouse location of cross-border e-commerce enterprises mentioned in the third chapter, the hierarchical structure model of case enterprises is constructed as figure 3.

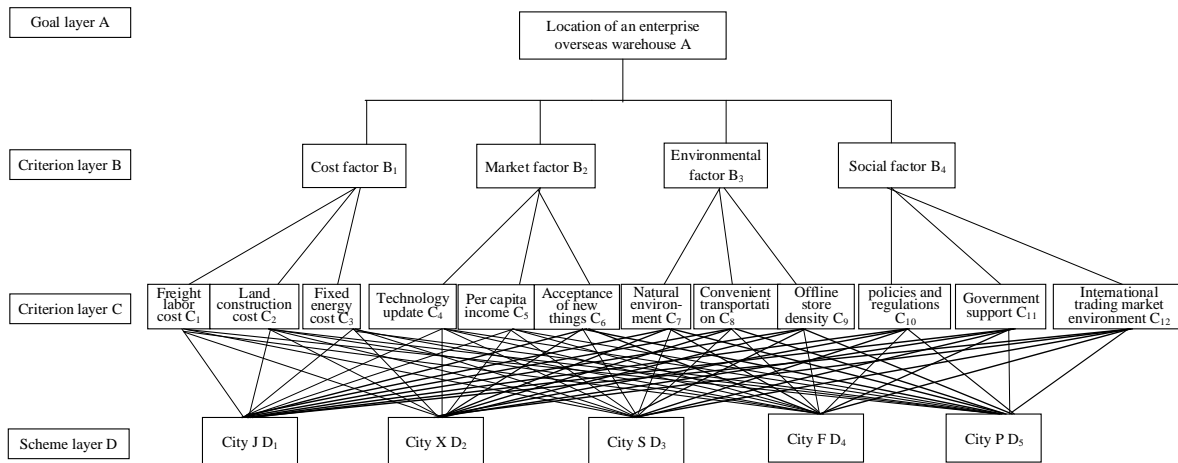


Figure 3 Structure Chart of Case Company Level Model

4.2 Construction of judgment matrix and hierarchical single ranking and consistency testing

Through interviews with employees in the relevant departments of the case company, on the basis of the factors considered in this paper are discussed, the results of the discussion will tell experts to use the experience and knowledge of experts to determine the weight of each index based on the method of industry expert scoring, the judgment matrix is shown in the following table, in order to save space, the eigenvalues and consistency test results of each judgment matrix are included in the table 3, table 4, table 5, table 6, table 7, table 8, table 9, table 10, table 11, table 12, table 13, table 14, table 15, table 16, table 17, table 18 and table 19.

Table 3 Decision Factor Judgement Matrix

	Cost factor	Market factor	Environmental factor	Social factor	Weight (wi)
Cost factor	1	1/3	1	1/3	0.1317
Market factor	3	1	3	1	0.395
Environmental factor	1	1/3	1	1	0.1733
Social factor	3	1	1	1	0.3001
Location target of overseas warehouse: $\lambda_{\max}=4.1533$ CR=0.0574 CI=0.051					

Table 4 Cost Factor Judgement Matrix.

	Freight labor cost	Land construction cost	Fixed energy cost	Weight (wi)
Freight labor cost	1	3	3	0.6
Land construction cost	1/3	1	1	0.2
Fixed energy cost	1/3	1	1	0.2
Target cost factors of overseas warehouse location: $\lambda_{\max}=3$ CR=0 CI=0				

Table 5 Cost Judgement Matrix for Freight Labour

	City J	City X	City S	City F	City P	Weight (wi)
--	--------	--------	--------	--------	--------	-------------

City J	1	3	3	3	5	0.4339
City X	1/3	1	1	1	3	0.1627
City S	1/3	1	1	1/5	3	0.1179
City F	1/3	1	5	1	3	0.2245
City P	1/5	1/3	1/3	1/3	1	0.061
Target cost of overseas warehouse location factor freight labor cost: $\lambda_{\max}=5.3692$ CR=0.0824 CI=0.0923						

Table 6 Land Construction Cost Judgment Matrix

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	3	5	3	3	0.4115
City X	1/3	1	1	1/5	1	0.0898
City S	1/5	1	1	1/7	1/3	0.0608
City F	1/3	5	7	1	3	0.3141
City P	1/3	1	3	1/3	1	0.1238
Target cost factors of overseas warehouse location land construction cost: $\lambda_{\max}=5.3344$ CR=0.0746 CI=0.0836						

Table 7 Energy Fixed Cost Judgment Matrix

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	1/3	1/3	1/3	1/5	0.0652
City X	3	1	1	3	3	0.3363
City S	3	1	1	1	3	0.2699
City F	3	1/3	1	1	1	0.1739
City P	5	1/3	1/3	1	1	0.1547
Target cost factors of overseas warehouse location energy fixed cost: $\lambda_{\max}=5.3723$ CR=0.0831 CI=0.0931						

Table 8 Market Factor Judgment Matrix

	Technology update	Per capita income	Acceptance of new things	Peight (wi)
Technology update	1	1/3	1	0.2
Per capita income	3	1	3	0.6
Acceptance of new things	1	1/3	1	0.2
Target market factors of overseas warehouse location: $\lambda_{\max}=3$ CR=0 CI=0				

Table 9 Judgement Matrix of Technical Updating Factors

	City J	City X	City S	City F	City P	Peight (wi)
City J	1	5	5	3	5	0.4922
City X	1/5	1	1	1/3	3	0.109
City S	1/5	1	1	1/3	3	0.109
City F	1/3	3	3	1	3	0.2334
City P	1/5	1/3	1/3	1/3	1	0.0564
Technical renewal of target market factors for overseas warehouse location: $\lambda_{\max}=5.2383$ CR=0.0532 CI=0.0596						

Table 10 Judgement Matrix of Per Capita Income Factor

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	3	3	1	5	0.3536
City X	1/3	1	1	1/3	3	0.1326
City S	1/3	1	1	1/3	3	0.1326
City F	1	3	3	1	3	0.3193
City P	1/5	1/3	1/3	1/3	1	0.0619
Per capita income of overseas warehouse location target market factors: $\lambda_{\max}=5.1366$ CR=0.0305 CI=0.0342						

Table 11 New Things Acceptance Judgment Matrix

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	3	3	1	5	0.3481
City X	1/3	1	1	1/3	3	0.1305
City S	1/3	1	1	1/3	1	0.1048
City F	1	3	3	1	5	0.3481
City P	1/5	1/3	1	1/5	1	0.0686
Acceptance of new things for overseas warehouse location target market factors: $\lambda_{\max}=5.0981$ CR=0.0219 CI=0.0245						

Table 12 Environmental Factors Judgment Matrix

	Natural environment	Traffic condition	Offline store density	Weight (wi)
Natural environment	1	3	3	0.6
Traffic condition	1/3	1	1	0.2
Offline store density	1/3	1	1	0.2
Target environmental factors of overseas warehouse location: $\lambda_{\max}=3$ CR=0 CI=0				

Table 13 Judgement Matrix of Natural Environmental Factors

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	1	1	3	5	0.2878
City X	1	1	1	3	3	0.2598
City S	1	1	1	3	5	0.2878
City F	1/3	1/3	1/3	1	3	0.1079
City P	1/5	1/3	1/5	1/3	1	0.0567
Target environmental factors natural environment of overseas warehouse location: $\lambda_{\max}=5.0981$ CR=0.0219 CI=0.0245						

Table 14 Traffic Condition Factor Judgment Matrix

	City J	City X	City S	City F	City P	Weight (wi)
--	--------	--------	--------	--------	--------	-------------

City J	1	1	1	3	5	0.2901
City X	1	1	1	1	5	0.2328
City S	1	1	1	3	5	0.2901
City F	1/3	1	1/3	1	3	0.1355
City P	1/5	1/5	1/5	1/3	1	0.0516
Target environmental factors traffic conditions of overseas warehouse location: $\lambda_{\max}=5.1366$ CR=0.0305 CI=0.0342						

Table 15 Judgement Matrix of Offline Store Density

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	1	1	3	5	0.2815
City X	1	1	1	3	5	0.2815
City S	1	1	1	3	5	0.2815
City F	1/3	1/3	1/3	1	3	0.1055
City P	1/5	1/5	1/5	1/3	1	0.0501
Target environmental factors of overseas warehouse location offline store density: $\lambda_{\max}=5.0417$ CR=0.0093 CI=0.0104						

Table 16 Social Factor Judgment Matrix

	Policies and regulations	Policy support	International trading market	Weight (wi)
Policies and regulations	1	1	1/3	0.2
Policy support	1	1	1/3	0.2
International trading market	3	3	1	0.6
Target social factors of overseas warehouse location: $\lambda_{\max}=3$ CR=0 CI=0				

Table 17 Judgement Matrix of Policy and Regulation Factors

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	1	1	1	3	0.2227
City X	1	1	1	1/3	3	0.1788
City S	1	1	1	1/3	3	0.1788
City F	1	3	3	1	3	0.3456
City P	1/3	1/3	1/3	1/3	1	0.0742
Policies and regulations on target social factors of overseas warehouse location: $\lambda_{\max}=5.1958$ CR=0.0437 CI=0.0489						

Table 18 Factor Judgment Matrix of Policy Support

	City J	City X	City S	City F	City P	Weight (wi)
City J	1	1	1	1	3	0.2308
City X	1	1	1	1	3	0.2308
City S	1	1	1	1	3	0.2308
City F	1	1	1	1	3	0.2308
City P	1/3	1/3	1/3	1/3	1	0.0769
Policy support for target social factors of overseas warehouse location: $\lambda_{\max}=5$ CR=0 CI=0						

Table 19 Environmental Judgment Matrix of International Trading Market

	City J	City X	City S	City F	City P	weight (wi)
--	--------	--------	--------	--------	--------	-------------

City J	1	3	3	1	5	0.3536
City X	1/3	1	1	1/3	3	0.1326
City S	1/3	1	1	1/3	3	0.1326
City F	1	3	3	1	3	0.3193
City P	1/5	1/3	1/3	1/3	1	0.0619
Target social factors of overseas warehouse location international trading market environment: $\lambda_{\max}=5.1366$ CR=0.0305 CI=0.0342						

The CI values of each judgment matrix are equal to or close to 0, and the CR values are less than 0.1, indicating that the consistency of each judgment matrix is acceptable.

4.3 Hierarchical Total Ranking and Consistency Test

After calculation, the weight table of the middle layer of group decision and the bottom conclusion (weight) table of group decision are obtained as shown in Table20 and Table 21.

Table 20 Group Decision-making Middle Layer Weight Table

Nodal point	Global weight	Same level weights	Superior
Cost factor	0.1317	0.1317	Location target of overseas warehouse
Market factor	0.395	0.395	
Environmental factor	0.1733	0.1733	
Social factor	0.3001	0.3001	
Freight labor cost	0.079	0.6	Cost factor
Land construction cost	0.0263	0.2	
Fixed energy cost	0.0263	0.2	
Technology update	0.079	0.2	Market factor
Per capita income	0.237	0.6	
Acceptance of new things	0.079	0.2	
Natural environment	0.104	0.6	Environmental factor
Traffic condition	0.0347	0.2	
Offline store density	0.0347	0.2	
Policies and regulations	0.06	0.2	Social factor
Policy support	0.06	0.2	
International trading market	0.1801	0.6	

Table 21 The Bottom Conclusions (weight) Table of Group Decision Making

Underlying elements	Conclusion value (weight)
City J	0.3379
City X	0.165
City S	0.1648
City F	0.266
City P	0.0662

As shown in table 21, the bottom data of group decision shows that the highest value of City J is 0.3379, the second weight of City F is 0.266, and the lowest weight of City P is 0.0662 compared with other cities. This data shows that the development of City P is lagging behind in many alternative addresses, and it is necessary to further improve the comprehensive quality of the city, and the best address for comprehensive analysis is City J.

It can be seen that the case company can choose the best location after the analysis of various factors, which proves that the location scheme proposed in this paper has certain stability.

V. Suggestions on Overseas Warehouse Location of Cross-border E-commerce Enterprises

5.1 Experience sharing meeting on overseas warehouse construction

As an emerging model, overseas warehouse is not mature and should learn from the development experience of other enterprises. According to the development planning and operation mode of other similar enterprises, specific operation strategies can be formulated according to their own situation, and cooperate with other excellent enterprises to promote better and faster development of enterprises.

5.2 Integration into the warehouse environment, first shot at work

In the process of overseas warehouse construction, we should investigate the local economic conditions, experience the local customs and habits. On the one hand, it improves customer satisfaction and increases the order rate and turnover rate of goods. On the other hand, it is conducive to the familiarity of overseas warehouse employees with future work and lays a solid foundation for the subsequent operation of overseas warehouses. Enterprises can recruit local excellent staff in advance, do a good job of staff training in advance, save the follow-up overseas warehouse operation time, improve the overall quality of overseas warehouse staff.

5.3 Actively Participating in the Symposium on Political and Commercial Exchanges and Exchanging New Ideas

For small and medium-sized or in the financing stage, cross-border e-commerce enterprises with loans should actively coordinate with local governments and listen to their opinions and suggestions when establishing overseas warehouses, which is conducive to the subsequent project operation and long-term development of enterprises. With guidance from the government and relevant departments. When the overseas warehouse model developed to a mature transition phase can apply for government cooperation, or policy funding support, mutual benefit, harmonious development, better promote enterprise and regional development.

Acknowledgements

This paper is the humanities and Social Sciences Research of the Ministry of Education: Research on the influence mechanism of financial support upstream degree on the export performance of China's manufacturing industry (17YJC790090); Support plan for Innovative Talents of Colleges and Universities in Liaoning Province in 2020; "Breeding project" for young scientific and technological talents of Liaoning Provincial Education Department: theoretical and practical research on the scale effect of trade facilitation on Liaoning cross border e-commerce (JQW201915403).

Reference

- [1] "Research on overseas warehouse location in cross-border logistics in Meibaolin," Southern entrepreneurs, no. 1, pp. 112-114, 2018.
- [2] Y. C. Z. Li, "A new model of cross-border logistics - overseas warehouse location research," Hangzhou: Zhejiang University, 2017.
- [3] Q. Q. Li, "Analysis of Chinese cross-border e-commerce logistics dilemma and solution strategies. Creativity and Innovation, no. 5, pp. 12-13, 2020.
- [4] M. G. Chen, B. Yang, X. L. Zhu, "Dual-objective optimization of overseas warehouse location for export cross-border e-commerce," Journal of Shanghai Maritime University, vol. 38, no. 2, pp. 33-38, 2017.
- [5] J. Chen, "Logistics factors affecting cross-border e-commerce implementation," Economic Management Journal, no. 1, pp. 3-5, 2020.
- [6] H. Kong, "A study on the activation of cross border e-commerce in China," The E-Business Studies, no. 1, pp. 7-9, 2020.
- [7] J. T. Zhu, B. X. Zhang, L. A. Ju, et al., "Study on overseas warehouse location of cross-border e-commerce in China," Value engineering, no. 7, pp. 8-80, 2017.

- [8] L. Y. Su, "Research on overseas warehouse location of e-commerce - A case study of C company," Beijing: University of Foreign Economics and Trade, 2017.
- [9] Z. C. Fu, "Study on overseas warehouse location under the background of cross-border e-commerce," Xiamen: Overseas Chinese University, 2019.
- [10] X. R. Cao, "Research on multi-objective location model of overseas warehouse of cross-border e-commerce under uncertain environment," Hefei: Hefei University of Technology, 2019.
- [11] J. Q. Wang, "Study on overseas warehouse location based on analytic hierarchy process," Tomorrow, no. 6, pp. 7-8, 2018.
- [12] S. Cao, L. Xu, "Research on the Overseas Warehouse Construction of Cross-Border E-Commerce," The Twelfth Wuhan International Conference on E-Business, 2013.
- [13] X. Guan, H. Y. Zhou, L. Y. Zhang, et al., "Model design of cross-border e-commerce overseas warehouse location selection based on game theory," BIC 2021: 2021 International Conference on Bioinformatics and Intelligent Computing, 2021.
- [14] Y. Zheng, D. Chen, Y. Sun, et al., "Problems for the development of China's cross-border e-commerce overseas warehouses and the countermeasure," Business & Economy, 2019.
- [15] D. D. Wang, S. S. Peng, Y. U. Li-Ting, et al., "Study on joint distribution of micro, small and medium cross-border e-commerce enterprises," Logistics Engineering and Management, 2019.
- [16] Z. Y. Lin, "New features of Chinese cross-border e-commerce: branded, refined and diversified," China's Foreign Trade, vol. 578, no. 02, pp. 54-57, 2020.
- [17] X. W. Liu, "Cross-border e-commerce works against the negative influence caused by the pandemic," China's Foreign Trade, vol. 578, no. 02, pp. 20-21, 2020.