Model Construction and Empirical Research on Site Selection of Urban Logistics Distribution Center

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Abstract. The rapid development of logistics technology profoundly affects and changes the traditional social economy. Logistics distribution center promotes the optimization of the structure of logistics industry and brings changes and development to the radiation area of logistics distribution center. On the basis of summarizing the influencing factors of WM city's logistics distribution center location, this paper introduces and studies the analytic hierarchy process (AHP) and carries out an example analysis combined with the influencing factors of WM city's distribution center location. The first part of this topic summarizes the city logistics distribution center. The second part analyses the influencing factors of WM city logistics distribution center. The third part is the demonstration of an example. It demonstrates the advantages, disadvantages and rationality of establishing logistics distribution centers in W several regions by using analytic hierarchy process.

Introduction

With the rapid development of economy after the reform and opening up, more and more enterprises and even enterprises all over the world pay attention to logistics distribution center. Logistics distribution center is an important part of modern logistics system. It plays a vital role in the rationalization of the whole logistics system and the efficiency of commodity circulation [1]. Logistics distribution center is the base of commodity turnover, sorting, storage, warehouse circulation and processing. In addition to increasing the added value of goods, it can also overcome the time and space problems in the process of sports [2]. It is necessary for us to study and discuss the logistics distribution center in the city, so that the distribution center can better cooperate with the development of the city and promote the development of the city.

The main influencing factors of WM city's logistics distribution center location are WM city as the research object. This paper explores the factors influencing the location of logistics distribution centers in WM city. Distribution center promotes the development of urban logistics, reduces the cost of logistics distribution, and improves the efficiency of distribution. A good distribution center plays a vital role in promoting the overall development of a region. Especially in today's increasingly developed stage of online shopping, a good distribution center is particularly important.

Different regions have different factors affecting the location of logistics distribution centers, and different regions have different situations. Specific problems need specific analysis. The factors influencing the location of WM city logistics distribution center should be understood and analyzed through the specific situation of WM city before making a judgment.

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General Situation of Urban Distribution Center

Overview of Urban Logistics System

The Meaning of Urban Logistics. Urban Logistics refers to the logistics that takes the city as the main body to promote the development of all aspects of the city. Its existence is to promote urban development. It refers to the physical flow of goods within the city, the distribution of goods between the city and the outside areas, and the process of urban waste cleaning, and there are different modes and systems. In short, under the urban planning and design, logistics activities related to urban planning and supervision are aimed at promoting the rapid circulation of urban commodities [3].

Characteristics of Urban Logistics. Urban logistics has lots of features, including 5 mainly: Logistics activities are abundant and information is abundant; The transportation route is less, mainly for highway transportation; There are many logistics nodes, transport small batches, many varieties and high frequencies; There are many restrictions on urban planning and various regulations; Relative Balance of Logistics Facilities Layout.

Component Elements of Urban Logistics. Logistics base is a new type of logistics node with strong intensive function and large scale. It is a new type of logistics warehouse with the development trend of economic development and logistics intensive [4].

As a large logistics node, logistics base has the characteristics of many logistics facilities, strong comprehensive function and strong basic function. And it is the place where logistics facilities gather and many logistics routes converge. It has very powerful functions.

Freight corridor is composed of stage point, road grade, available period, saturation situation, bottleneck position of peer capacity, etc. It is the main trunk line connecting the main logistics nodes.

Transportation is the basic transportation facilities that the internal and external logistics of cities such as railways, highways, aviation and railways want to connect. With the emergence of a variety of transport routes, transport departments can also carry out comprehensive transport according to various transport characteristics.

Logistics information platform mainly provides basic information services for enterprise logistics information system. For example, transportation status information, traffic status information, management information and so on. It also plays a role in promoting information communication between different enterprises, providing timely vehicle status and tracking services.

China's logistics industry is still on the rise and needs policy support. Through policy support, the order and development of the industry can be maintained.

Location Principle of Urban Distribution Center. The principle of minimum cost is a principle that must be considered in the establishment of distribution center location [5]. The transportation cost from distribution center to enterprise to each demand point varies with the location of distribution center. The relevant factors of logistics distribution center change at any time, not in a fixed state. Therefore, when considering the location problem of WM city distribution center, it is necessary to make location decision under quantitative circumstances. When considering the location of distribution center of gravity, we need to consider the corresponding number and scale. Also consider maintenance costs, distribution costs, operating costs and other costs. Mathematical model can be used to consider and analyze the location problem. Taking the lowest cost as the goal, the mathematical model is built. In the original market, enterprise competition not only occurs between enterprises but also within enterprises. Not only has it caused great damage to consumers, but also a great waste of resources. There are many negative impacts on society. However, with the changes of the times and the emergence of supply chain, the coordination of various departments within the enterprise has posed a great challenge, which requires the coordinated operation of the whole enterprise.

Summary of Urban Distribution Center

Urban distribution center refers to the distribution center within the scope of a city's internal region. Because the city is generally relatively small, goods can be directly distributed to the
end-user through automobile transportation, so automobile distribution is mostly used. Therefore, such distribution centers are often combined with retail operations. And the advantages are very obvious, high efficiency, more times, small batches, multi-user urban distribution is very advantageous.

The Difference between Urban Logistics and Other Logistics

**Containing Different Contents.** The resources contained in urban logistics are transportation resources of the whole society, not only transportation routes and tools. In the modern era of highly developed information technology, information resources of other industries in society, such as electricity and urban communications, will reasonably cooperate with urban logistics to improve the efficiency of urban logistics and promote the development of cities. The other logistics is optimized by the company or enterprise internal resource unit, which is very limited.

**Different Degree of Integration.** Urban logistics system can reasonably dispatch a large number of resources within the city. We should have more advantages in the use of land, roads and logistics equipment. Enterprise logistics is only based on the resources and equipment of the enterprise, so there are many restrictive factors.

Significance of Developing Urban Distribution Center

With the continuous development of economy, urban logistics distribution center has become an unavailable key element of urban economic development, and is becoming more and more important. Urban logistics distribution center involves distribution, information processing, packaging, processing and other links. The equipment and logistics involved in most areas of the whole city, the development of urban logistics distribution center will not only promote the construction of urban logistics infrastructure, technological progress and innovation, but also drive the further development of machinery, electronics, network and other industries. Promote the change and development of enterprises and even the whole city's industrial structure, enterprise organization and other aspects. The main manifestations are as follows: Promoting urban development; Reducing Costs and Promoting Regional Development; Relieving Urban Traffic Pressure and Promoting Urban Traffic Development; Improving the living standard of urban residents

Analysis on the Influencing Factors of Site Selection of Urban Distribution Center

Influencing Factors of Site Selection of Distribution Center

The location of modern logistics distribution center is of great significance to a logistics enterprise. Site Selection is the first step in the establishment of logistics distribution centers [6]. So site selection is a key step, like a cornerstone. Proper location of logistics enterprises will have great advantages to promote the development and progress of enterprises. In other words, if the site is not properly chosen, it will pay a painful price and even lead to the demise of enterprises. The characteristics of urban logistics distribution are high frequency, small freight volume and short distance. Therefore, the construction of logistics distribution center is different from the conventional distribution center construction, which has its own unique situation [7]. It is shown in figure 1 & figure 2.

**Traffic Factors.** Good transport infrastructure and low distribution costs. WM city is accessible in all directions and nine provinces are accessible. WM city, with its high-speed rail network all over the country, is the only city in central China that can fly directly to four continents in the world. Traffic conditions have an important impact on the cost and efficiency of logistics distribution. WM city has unique transportation advantages and good transportation infrastructure. The establishment of distribution centers in WM city can directly take advantage of the existing transportation advantages and improve transportation efficiency. Logistics distribution centers are generally larger. So the cost is too high. In order to save costs and promote the sustainable development of logistics enterprises, we need unique transportation infrastructure [8].
Flat terrain and rapid development of transportation facilities. WM city is located in the middle and lower reaches of the Yangtze River plain, east of the Jianghan Plain. The terrain of WM city is high in the East and low in the West, high in the South and low in the North. WM city has flat terrain, convenient and rapid construction of basic transportation, and good traffic prospects in the future. With flat terrain and good traffic, transportation distance can be greatly reduced. Transportation speed can be improved and distribution cost is low. The flat terrain reduces the cost of building distribution centers.

**Natural Factors.** Seasonal characteristics: winter and summer are obvious, goods are easy to store and storage costs are reduced. WM city belongs to subtropical monsoon humid climate area. In winter and summer, the rainfall is abundant. According to the characteristics of the goods, WM city can easily avoid the damage caused by adverse weather and climate. Moreover, WM city has low temperature in winter and is relatively dry, which is suitable for storage and storage of goods.

Wind Direction Characteristics: Fixed Wind Direction, Convenient Construction of Distribution Center. WM city is located in the south-central part of China. In spring and summer, it is affected by plum rain and high temperature, and the wind blows in the direction of the South China Sea. In winter, the influence of the West Siberian Plain brings the wind from the north, and the wind direction is relatively fixed. The wind in the changing season is strong and obvious. Because of the large area and high cost of establishing distribution centers in WM city, distribution centers need to be built in suburban areas. It is necessary to avoid these wind directions and avoid the waste gas from W suburban industries being blown into distribution centers.

**Social Environmental Factors.** Good business environment, easy to develop distribution centers. In 2017, the gross domestic product (GDP) of WM city was 134.134 billion yuan. Among them, the added value of the primary industry is 40.82 billion yuan. The added value of the
The composition of the three industries was adjusted from 3.3:43.9:52.8 last year to 3.0:43.7:53.3. According to the permanent population, the per capita GDP of the whole city reached...
123,831 yuan, an increase of 6.6%. The industrial structure of WM city is obvious, and the object selection of logistics distribution center is clear. After defining the service object, it can improve the professional level of service and enhance the regional competitiveness, thus improving the overall level of logistics distribution in WM city.

Customer needs are widely distributed. WM city has a large population and a wide distribution area, which is very advantageous for the logistics distribution center. Distribution centers serve customers, so customer needs are very important. What are the service customers of the distribution center? What are their requirements in general? And the time of distribution and other requirements need to be considered. Therefore, in the establishment of logistics distribution centers, the location of distribution centers can be selected according to the distribution products.

Providing stable talents for distribution centers, the policy is obvious. WM city has many colleges and universities, with highly developed scientific and technological talents, many reserve talents, cheap and sufficient labor force, which can provide useful talents for the sustainable development of distribution centers and promote the development of distribution centers.

In December 2016, WM city Logistics Bureau issued the 13th Five-Year Plan for the Development of Modern Logistics in WM city, which will continue to build more than 80 new projects with a total investment of 104.9 billion yuan. We hope to build WM city into a national logistics city. WM municipal government has corresponding supporting preferential policies for the construction of logistics distribution centers. The establishment of distribution centers in WM city can not only enjoy some preferential policies of the country, but also enjoy the internal preferential policies of WM city to reduce costs.

Model Construction & Empirical Research

Principle of Analytic Hierarchy Process

Description of Analytic Hierarchy Process. Analytic hierarchy process (AHP) is a multi-criteria decision-making method. This method is to set goals after the essential analysis of the problem, and then lay the influencing factors of the problem into a hierarchical structure model. Quantitative analysis is less used than qualitative analysis. The decision-making process is mathematicalized to provide a relatively gradual method and theory for solving complex problems with multi-objective, multi-criteria or no structural characteristics. Analytic Hierarchy Process (AHP) has a wide range of applications and convenient methods. Starting from the whole system, it has its advantages, so it has a wide range of applications [9].

Operating Thought of Analytic Hierarchy Process. Analytic Hierarchy Process (AHP) is to decompose complex problems into hierarchical systems. The decomposed influencing factors are divided into several interrelated and orderly levels. List the problems and make them organized. According to the interrelation of each factor and the hierarchical relationship, the same hierarchy is grouped to form a multi-level analytical structure model. The final problem is categorized as the lowest level and ranked according to the relative importance weights of the target level (the highest level). According to the results of subjective judgment and expert opinions, two comparisons are made, and then the importance is described. The concept of discriminant matrix is introduced to quantify comparative judgment. The maximum eigenvalue and eigenvector are obtained by discriminant matrix. Thus, the weight of this level for a certain element in the upper level is calculated. Through the repetition of this step, the weight of each element in the upper layer can be obtained, and then the most appropriate method can be selected by comparing and sorting. Analytic hierarchy process (AHP) is very simple and reasonable, and it is an effective tool for decision-making process.

Steps for Applying Analytic Hierarchy Process

Definition of the Problem. According to their relative relationship, the problems considered, factors and decision-making are divided into the top and bottom outbound hierarchical structure maps.
Constructing Judgment Matrix. In order to avoid the unacceptability of only qualitative research, Professor SAAYT proposed a consistent matrix method: comparing all factors in pairs. Relative scale comparison is used to minimize the problems caused by different indicators of nature, thus increasing accuracy.

A judgment matrix is constructed with the above examples:

There are five criteria in the criteria layer, C1: Scenery; C2: Cost; C3: Residence; C4: Diet; C5: Travel. Then score two or two points.

\[
A = \begin{pmatrix}
1 & 1/2 & 4 & 3 & 3 \\
2 & 1 & 7 & 5 & 5 \\
1/4 & 1/7 & 1 & 1/2 & 1/3 \\
1/3 & 1/5 & 2 & 1 & 1 \\
1/3 & 1/5 & 3 & 1 & 1 \\
\end{pmatrix}
\]

Hierarchical Single Sort. Hierarchical single ranking is the weight ranking of the importance of this level relative to the factors in the previous level. It is the basis of ranking the important factors at this level. (Sum-product method can be used)

One-time Test of Judgment Matrix.

(1) Consistency Indicators

\[
CI = \frac{\lambda_{\text{max}} - N}{N-1} \quad CI = 0, \quad A \text{ accordance; } CI \text{ bigger,}
\]

The more serious the inconsistency of A is

(2) Random Consistency Index RI (Description). It is shown in table 1.

<table>
<thead>
<tr>
<th>N</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI</td>
<td>0</td>
<td>0</td>
<td>0.58</td>
<td>0.90</td>
<td>1.12</td>
<td>1.24</td>
<td>1.32</td>
<td>1.41</td>
<td>1.49</td>
<td>1.51</td>
</tr>
</tbody>
</table>

(3) Consistency ratio: Used to determine the range of inconsistencies in A

\[
CR = \frac{CI}{RI} \quad \text{when } CR < 0.1, \quad \text{When the inconsistency of A is within the allowable range, the eigenvector of A can be used as the weight vector.}
\]

Hierarchical Total Sorting. A process of ranking weights that determine the importance of all factors at a given level to the overall objective. This process is carried out from top to bottom, from the top to the bottom, so the result is the result of the total ranking.

There are M factors in C layer from C1 to CM. For the total target, _ = A1, A2, A3... Am, P layer has N factors of CJ level but ranks B1j, B2j... Bnj (j = 1,2,...) M), then the total order of P layer is:

\[
\begin{align*}
P_1 & \rightarrow A_1B11+A2B22+\ldots A_mB_m1 \\
P_2 & \rightarrow A_1B12+A2B22+\ldots A_mB_m2 \\
P_n & \rightarrow A_1B1n+A2B2n+\ldots A_mB_mn \\
\end{align*}
\]

Table 2. The Weight of the I Factor of P Layer to the Total Objective.
Example Analysis

Overview of Alternative Points. After long-term field investigation and demonstration, there are three alternative points for logistics distribution centers [10].

Option A is located in Y Zone. Option B is in C District. Option C is the E Zone.

Because the three places are located in WM city, the basis of climate factors are similar, much the same. Therefore, there is no comparison in the next process of establishing the index system.

Establishment of Hierarchical Analysis Structure Index System of Site Selection Influencing Factors. Combining with the relevant analysis of this paper, the hierarchical structure index system of influencing factors of WM city logistics distribution center location is established. It can be divided into three levels: traffic factor, natural factor and social environment factor. The index system is mainly shown in Fig. 1-1 [11].

Weight Analysis of Indicators.

(1) Weight Analysis of Various Factors in Criteria Layer. The second level mainly includes traffic factors, natural factors and social environment factors. In the analytic hierarchy process (AHP), the hierarchical proportion of the indicators is determined by the experts' scores, while the experts' scores are judged according to the existing information, as well as the experts' professional knowledge and experience. The experts' scores are averaged so that the scores can be regarded as the final factor weight score [12].

Relatively important among them is $\omega_i = (\sum_{i=1}^{3} e_{ij})^{1/n}$

Then the normalization process is carried out $\omega_i = \frac{\sum_{i=1}^{3} \omega_i}{\sum_{i=1}^{3} \omega}$

Consistency index CI=0.1, and $\lambda_{max}$ is the maximum eigenvalue of the judgment matrix (3.)

The evaluation of the index weight needs to be given to the expert group for scoring.

In many discussions, the consistency of judgment and proof should be ensured, otherwise the judgment matrix created cannot be used. In the process of building logistics distribution center in WM city, the company needs to be scientifically replicated by a professional team through consultation. Table 3 below:

Table 3. Evidence from Comprehensive Judgment of Criteria Level Indicators.

<table>
<thead>
<tr>
<th>Traffic factors</th>
<th>Social environmental factors</th>
<th>Natural factors</th>
<th>Relative importance $\omega_i$</th>
<th>Consistency Indicators CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic factors</td>
<td>1.0</td>
<td>2.0</td>
<td>5.0</td>
<td>0.5813</td>
</tr>
<tr>
<td>Social environmental factors</td>
<td>0.5</td>
<td>1.0</td>
<td>3</td>
<td>0.3092</td>
</tr>
<tr>
<td>Natural factors</td>
<td>0.2</td>
<td>0.3333</td>
<td>1.0</td>
<td>0.1096</td>
</tr>
</tbody>
</table>

Among them, the consistency index of $\lambda_{max}$=3.0037 is 0.0036, less than 0.1, which indicates that the matrix passes consistency test, the weight of traffic factor is 0.5813, social environmental factor is 0.3092, and natural factor is 0.1096.

Table 4. Judgment Matrix of Traffic Factor Indicators.

<table>
<thead>
<tr>
<th>Traffic factors</th>
<th>Traffic Basic Conditions</th>
<th>Transportation Development Prospect</th>
<th>Relative importance $\omega_i$</th>
<th>Consistency Indicators CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Basic Conditions</td>
<td>3.0</td>
<td>1.0</td>
<td>0.6333</td>
<td>0.0372 $&lt;$ 0.1</td>
</tr>
<tr>
<td>Transportation Development Prospect</td>
<td>1.3333</td>
<td>0.5333</td>
<td>0.3667</td>
<td></td>
</tr>
</tbody>
</table>
(2) The weight of economic factors is determined. Table 4 below
\[ \lambda_{\text{max}} = 3.0387, \text{ the consistency index is 0.0372 less than 0.1, and the matrix passes the consistency test. The relative importance of traffic basic conditions is 0.6333, and the importance of traffic development prospects is 0.3667.} \]

(3) The weight of natural factors is determined. Expert consultations are shown in table 5 below.

**Table 5. Judgment Matrix of Natural Factor Indicators.**

<table>
<thead>
<tr>
<th>Natural factors</th>
<th>Seasonal characteristics</th>
<th>Wind direction characteristics</th>
<th>Relative importance ( o_i )</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seasonal characteristics</td>
<td>1.0</td>
<td>3.0</td>
<td>0.6333</td>
<td>0.0372&lt;0.1</td>
</tr>
<tr>
<td>Wind direction characteristics</td>
<td>0.6666</td>
<td>1.3333</td>
<td>0.3667</td>
<td></td>
</tr>
</tbody>
</table>

\[ \lambda_{\text{max}}=3.0387, \text{ the consistency index is 0.0372 less than 0.1, and the matrix passes the consistency test. The relative importance of natural basic conditions is 0.6333, and the importance of traffic development prospect is 0.3667.} \]

(4) The weight of social environmental factors is determined. Expert consultation is shown in table 6 below.

**Table 6. Judgment Matrix of Indicators of Social Environmental Factors.**

<table>
<thead>
<tr>
<th>Social environment</th>
<th>Business environment</th>
<th>Talent policy</th>
<th>Customer demand</th>
<th>Relative importance ( o_i )</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business environment</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1667</td>
<td>0.1729</td>
<td>0.0036&lt;0.1</td>
</tr>
<tr>
<td>Talent policy</td>
<td>1.0</td>
<td>1.0</td>
<td>0.2</td>
<td>0.1381</td>
<td></td>
</tr>
<tr>
<td>Customer demand</td>
<td>6.0</td>
<td>5.0</td>
<td>1.0</td>
<td>0.7320</td>
<td></td>
</tr>
</tbody>
</table>

\[ \lambda_{\text{max}}=3.0037, \text{ the consistency index is 0.036 less than 0.1, and the matrix passes the consistency test. The importance of business environment factor is 0.1729, the importance of talent policy is 0.3667, and the importance of customer demand is 0.7320.} \]

**Table 7. Comprehensive Importance Index of Various Factors.**

<table>
<thead>
<tr>
<th>Criterion level</th>
<th>Substratum</th>
<th>Relative importance</th>
<th>Influence factor</th>
<th>Relative importance ( o_i )</th>
<th>Comprehensive Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic factors</td>
<td>Transportation infrastructure</td>
<td>0.6333</td>
<td>0.3681</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transportation Development Prospect</td>
<td>0.3667</td>
<td>0.2131</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural factors</td>
<td>Seasonal characteristics</td>
<td>0.6333</td>
<td>0.0694</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wind direction characteristics</td>
<td>0.3667</td>
<td>0.0401</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social environmental factors</td>
<td>Business environment</td>
<td>0.1729</td>
<td>0.0534</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Customer demand</td>
<td>0.1381</td>
<td>0.0427</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Policy talents</td>
<td>0.7320</td>
<td>0.2263</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In summary, the weight of each influencing factor and the value of comprehensive importance index of the whole decision-making system can be obtained by comprehensive analysis, and the following table 7 can be obtained.

**Judgment Matrix of Factors Affecting Alternative Points.** Combined with Y Zone, C District, E Zone, the influencing factors of each alternative point were judged again. We established a judgment matrix of candidate points relative to influencing factor.

1. Constructing Transportation Basic Conditions Matrix

<table>
<thead>
<tr>
<th>Traffic Basic Conditions</th>
<th>Y Zone</th>
<th>C District</th>
<th>E Zone</th>
<th>( \omega_i )</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>8.0</td>
<td>4.0</td>
<td>1.0</td>
<td>0.7015</td>
<td>0.0521&lt;0.1</td>
</tr>
<tr>
<td>C District</td>
<td>1.0</td>
<td>0.25</td>
<td>0.125</td>
<td>0.0718</td>
<td></td>
</tr>
<tr>
<td>E Zone</td>
<td>4.0</td>
<td>1.0</td>
<td>0.2267</td>
<td>0.2267</td>
<td></td>
</tr>
</tbody>
</table>

\( \lambda_{max}=3.0542, \ CI=0.0521<0.1 \). The matrix passes the test, the relative importance of Y Zone is 0.7015, C District is 0.0718, and the relative importance of E Zone is 0.2267. From this we can see that Y Zone has obvious advantages, the E zone is the second, C District is relatively poor. Y Zone has many national highways, provincial highways and organic fields. C District and E Zone are not near Y Zone.

2. Constructing Traffic Prospect Conditional Matrix

<table>
<thead>
<tr>
<th>Traffic Prospect Conditions</th>
<th>Y Zone</th>
<th>C District</th>
<th>E Zone</th>
<th>( \omega_i )</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>1.0</td>
<td>5.0</td>
<td>7.0</td>
<td>0.7380</td>
<td>0.0137&lt;0.1</td>
</tr>
<tr>
<td>C District</td>
<td>0.1429</td>
<td>0.5</td>
<td>1.0</td>
<td>0.0944</td>
<td></td>
</tr>
<tr>
<td>E Zone</td>
<td>0.2</td>
<td>1.0</td>
<td>2.0</td>
<td>0.1676</td>
<td></td>
</tr>
</tbody>
</table>

\( \lambda_{max}=3.0142, \ CI=0.0137<0.1 \). The matrix passes the test, the relative importance of Y Zone is 0.7380, C District is 0.0944, and the relative importance of E Zone is 0.1676. From Table 9, we can see that Y Zone has obvious advantages, the E zone is the second, C District is relatively poor. Y Zone has better development prospects and more policies, which are more suitable than C District and E Zone.

3. Constructing Seasonal Characteristic Conditional Matrix

<table>
<thead>
<tr>
<th>Traffic Prospect Conditions</th>
<th>Y Zone</th>
<th>C District</th>
<th>E Zone</th>
<th>( \omega_i )</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>6.0</td>
<td>1.0</td>
<td>0.5</td>
<td>0.3591</td>
<td>0.0519&lt;0.1</td>
</tr>
<tr>
<td>C District</td>
<td>6.0</td>
<td>2.0</td>
<td>1.0</td>
<td>0.5644</td>
<td></td>
</tr>
<tr>
<td>E Zone</td>
<td>1.0</td>
<td>0.1667</td>
<td>0.1667</td>
<td>0.0765</td>
<td></td>
</tr>
</tbody>
</table>

\( \lambda_{max}=3.0539, \ CI=0.0519<0.1 \). The matrix passes the test, the relative importance of Y Zone is 0.3591, C District is 0.5644, and the relative importance of E Zone is 0.0765. From Table 10, we can see that C District has obvious advantages, Y Zone is the second, and the E Zone is relatively poor. C District is more stable in terms of seasonal characteristics.

4. Constructing Wind Direction Characteristic Conditional Matrix
Table 11. Wind Direction Characteristic Conditional Matrix.

<table>
<thead>
<tr>
<th>Traffic Prospect Conditions</th>
<th>Y Zone</th>
<th>C District</th>
<th>E Zone</th>
<th>$\omega_i$</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>1.0</td>
<td>4.0</td>
<td>6.0</td>
<td>0.6853</td>
<td>0.0521 &lt; 0.1</td>
</tr>
<tr>
<td>C District</td>
<td>0.25</td>
<td>1.0</td>
<td>3.0</td>
<td>0.2213</td>
<td></td>
</tr>
<tr>
<td>E Zone</td>
<td>0.1667</td>
<td>0.3333</td>
<td>1.0</td>
<td>0.0934</td>
<td></td>
</tr>
</tbody>
</table>

$\lambda_{max}=3.0541$, $Cl=0.0521<0.1$, The matrix passes the test, the relative importance of Y Zone is 0.6853, C District is 0.2213, and E Zone is 0.0934. From Table 11, we can see that Y Zone has obvious advantages, C District is the second, E Zone is relatively poor. Y Zone belongs to the north of WM city, which is less affected by wind direction.

(5) Constructing Seasonal Characteristic Conditional Matrix

Table 12. Conditional Matrix of Operating Environment Characteristics.

<table>
<thead>
<tr>
<th>Traffic Prospect Conditions</th>
<th>Y Zone</th>
<th>C District</th>
<th>E Zone</th>
<th>$\omega_i$</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>6.0</td>
<td>3.0</td>
<td>1.0</td>
<td>0.6393</td>
<td>0.0520 &lt; 0.1</td>
</tr>
<tr>
<td>C District</td>
<td>1.0</td>
<td>0.25</td>
<td>0.1667</td>
<td>0.0869</td>
<td></td>
</tr>
<tr>
<td>E Zone</td>
<td>4.0</td>
<td>1.0</td>
<td>0.3333</td>
<td>0.2737</td>
<td></td>
</tr>
</tbody>
</table>

$\lambda_{max}=3.0540$, $Cl=0.0520<0.1$, The matrix passes the test, the relative importance of Y Zone is 0.6393, C District is 0.0869, and the relative importance of E Zone is 0.2737. From Table 12, we can see that Y Zone has obvious advantages, E Zone is the second, C District is relatively poor. Y Zone has a good policy, a large population and a good proportion of industries.

(6) Constructing Customer Demand Characteristic Conditions Matrix

Table 13. Customer Demand Characteristic Conditions Matrix.

<table>
<thead>
<tr>
<th>Traffic Prospect Conditions</th>
<th>Y Zone</th>
<th>C District</th>
<th>E Zone</th>
<th>$\omega_i$</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>1.0</td>
<td>7.0</td>
<td>9.0</td>
<td>0.7766</td>
<td>0.0790 &lt; 0.1</td>
</tr>
<tr>
<td>C District</td>
<td>0.1429</td>
<td>1.0</td>
<td>3.0</td>
<td>0.1549</td>
<td></td>
</tr>
<tr>
<td>E Zone</td>
<td>0.1111</td>
<td>3.0</td>
<td>1.0</td>
<td>0.0685</td>
<td></td>
</tr>
</tbody>
</table>

$\lambda_{max}=3.0821$, $Cl=0.0790<0.1$, The matrix passes the test, the relative importance of Y Zone is 0.7766, C District is 0.1549, and the relative importance of E Zone is 0.0685. From Table 13, we can see that Y Zone has obvious advantages, E Zone is the second, C District is relatively poor. Y Zone has a large population and many universities close to City Center, so its customers are in great demand. However, E Zone is mainly residential area, which is similar to C district, so the gap between the two areas is not large.

(7) Constructing the Conditional Matrix of Personnel Policy Characteristics

$\lambda_{max}=3.0184$, $Cl=0.0177 < 0.1$, From Table 14, the matrix passes the test, the relative importance of Y Zone is 0.7075, C District is 0.1560, and the relative importance of E Zone is 0.1364. From this we can see that Y Zone has obvious advantages, C District is the second, E Zone is relatively poor. Y Zone has special policy support.

<table>
<thead>
<tr>
<th>Traffic Prospect Conditions</th>
<th>Y Zone</th>
<th>C District</th>
<th>E Zone</th>
<th>$\omega_i$</th>
<th>Conformity index CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>6.0</td>
<td>1.0</td>
<td>0.7075</td>
<td>0.7075</td>
<td>0.0177 &lt; 0.1</td>
</tr>
<tr>
<td>C District</td>
<td>1.0</td>
<td>0.3333</td>
<td>1.0</td>
<td>0.1560</td>
<td></td>
</tr>
<tr>
<td>E Zone</td>
<td>1.0</td>
<td>0.1667</td>
<td>1.0</td>
<td>0.1364</td>
<td></td>
</tr>
</tbody>
</table>

**Final Point Determination.** To sum up, we know the response weights of the influencing factors of the three alternative points, and the final weights can be calculated. The calculation process is as Table 15 follows:

1. Total score of Y Zone:
   \[0.3681 \times 0.7015 + 0.2131 \times 0.7380 + 0.3591 \times 0.0694 + 0.6853 \times 0.0401 + 0.0534 \times 0.6393 + 0.0427 \times 0.7766 + 0.2263 \times 0.7075 = 0.693\]
2. Total score of C district:
   \[0.3681 \times 0.0718 + 0.2131 \times 0.0944 + 0.0694 \times 0.5644 + 0.0401 \times 0.2213 + 0.0534 \times 0.0869 + 0.0427 \times 0.1549 + 0.2263 \times 0.1560 = 0.138\]
3. Total score of E Zone:
   \[0.3681 \times 0.2267 + 0.2131 \times 0.1676 + 0.0694 \times 0.0765 + 0.0401 \times 0.0934 + 0.0534 \times 0.2737 + 0.0427 \times 0.0685 + 0.2263 \times 0.1364 = 0.17\]

Table 15. W Final Weight Value of Influencing Factors in Three Places.

<table>
<thead>
<tr>
<th>Site Selection of WM city Logistics Distribution Center</th>
<th>Comprehensive weight</th>
<th>Comprehensive sorting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y Zone</td>
<td>0.693</td>
<td>1</td>
</tr>
<tr>
<td>C District</td>
<td>0.138</td>
<td>3</td>
</tr>
<tr>
<td>E Zone</td>
<td>0.172</td>
<td>2</td>
</tr>
</tbody>
</table>

The first place in the ranking is Y Zone, the second is E Zone and the third is C District. Through the above analysis, we can draw some simple conclusions. Firstly, traffic factor is one of the most important factors in the criterion level, and the establishment of distribution centers in WM city should first consider this factor. Secondly, transportation infrastructure is also very important, as well as customer needs and talent policies are the basic level needs to focus on the object.

**Conclusion**

WM city logistics distribution center is very important, even directly related to the rationality of the logistics network of the whole enterprise and even the city and the survival and development of enterprises. This paper makes a comprehensive analysis and Research on the influencing factors of WM city's logistics distribution center from different aspects [13], and summarizes the paper as follows:

**Introducing City Logistics Distribution Center**

WM city Logistics Distribution Center is introduced, mainly including the following aspects: First, the meaning of urban logistics distribution center is introduced. Secondly, it introduces the city logistics distribution center. Thirdly, it describes the difference between urban logistics and other logistics. To the following WM city logistics distribution center to do a paving role, describes the role of the city logistics distribution center [14].

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The Influencing Factors of WM city Logistics Distribution Center

This paper introduces the influencing factors of WM city's logistics distribution center from three aspects: Firstly, it introduces the traffic environment factors. Secondly, introduce the natural factors. Thirdly, it introduces the factors of social environmental education. This step is very important to the whole paper. It is a comprehensive introduction to the influencing factors of WM city Logistics Distribution Center. It also introduces some principles that should be paid attention to.

Introduce the Location Method of City Logistics Distribution Center

After the principle of the previous step, the related factors affecting the location of city logistics center are put forward. After that, two kinds of location models are introduced and the case is analyzed.

There are many factors affecting the location of WM city's logistics distribution center, and there are many uncertain factors, only a few deterministic factors [15]. Therefore, in the factors of WM city logistics distribution center location, it is impossible to put forward a set of suitable methods for any logistics enterprise logistics distribution center location. The actual situation and many factors need to be taken into account in order to get the ideal situation.

Example Analysis

The AHP method introduced in the third step is used to analyze the specific situation of WM city. It can be concluded that the proportion of traffic factors in WM city logistics distribution center is very important and should be considered first.

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References


