Analysis on the Effect of Enterprise Logistics Strategic Planning

Yanfen Gong and Liping Li

ABSTRACT

The article regulates the content of logistics strategic planning of SMEs (the abbreviation of small and medium-sized enterprises) based on the analysis of current logistics strategic environment of SMEs, then puts forward the system of evaluation indicators for logistics strategic planning of SMEs, finally puts up simulate evaluation using the method of fuzzy evaluation.1

KEYWORDS

Small and Medium-sized Enterprises; Logistics; Strategic Planning; Evaluation Indicators

INTRODUCTION

The rapid development of economy and trade promotes enterprise logistics services becoming the most economical and rational integrated service model. Especially with the strong involvement of the information technology, the logistics has demonstrated its strong momentum and the immense business opportunities[1,2]. As an important component of enterprises strategic planning, whether the logistics strategic planning can succeed or not will effect survive and

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prospect of enterprises in the market competition[3]. For enterprises, logistics planning should not only be a theoretical thing, but also be turned into practical action. So according to enterprises development for strategy, logistics planning is acquired in the agenda. But with the rapid social progress and economic development, and constant changes of social and economic environment that the enterprises confront, logistics strategic planning of the enterprises exits high degree of uncertainty. Then, it is very important to make logistics strategic planning with the market-oriented and the satisfaction of customer’s targets.

THE BASIC IDEAS OF LOGISTICS STRATEGIC PLANNING

Logistics strategic planning of SMEs is drawing up long-term logistics strategic plans. It includes analysis and portfolio of internal and external environmental factors of business and determining the purpose and nature, setting strategic objectives, then defining strategies and policies to help the enterprise to achieve the target. Here, the basic principles of choosing business purposes, objectives, strategies and policy are able to play the advantages of SMEs, to overcome the disadvantage effectively, to take advantage of opportunities and to avoid threats.

THE CURRENT LOGISTICS STRATEGIC ENVIRONMENT OF SMES

Through a market survey, in a short period of time the environment of SMEs will not change heavily. We can get the following conclusions by SWOT analysis:

Strengths: the rate of logistics outsourcing share increases; logistics cost rate has declined; the potential to reduce the cost of logistics is enormous; the level of awareness of policy makers on logistics has raised; many enterprises have made logistics as an important component of the enterprise's core competitiveness; logistics network building business has become one of the strategies development of many enterprises.

Weaknesses: the idea of position of Logistics in the development strategy is not clear; logistics and business flow integration; the efficiency of logistics is low; logistics internal management functions are scattered; pay more attention to production and less to logistics, logistics management and facility is relatively backward; logistics distribution system is unsound and so on.

Opportunities: the demand of logistics has got a rapid increase and the increase is higher than economic growth significantly; logistics elasticity of demand has increased annually, and economic growth is increasingly depending on the development of logistics; logistics cost growth has slowed down annually; the increase of logistics is bigger than economic growth; fixed assets investments in logistics grow rapidly; logistics infrastructure and equipment development has begun to take shape.
Threatens: there is no laws and regulations about logistics; logistics cost is a high proportion of the GDP, and declines slowly; logistics community and specialization are in low degree, and the speed of development is slow relatively; logistics development is still in the expansion phase; we are lack of sufficient awareness and attention of the role and status of logistics in the development of economic and enterprise; Logistics Standardization lags behind seriously.

BASIC PRINCIPLES AND TARGETS OF LOGISTICS STRATEGY FOR SMES

For enterprises customers are the survival foundation, the only way to survive and develop is to find enough customers for their products and service. Therefore, the basic principle of enterprise logistics strategy is to satisfy needs of customers with the best service. According to the purpose of logistics strategy and the environment SMEs faced, there should be there parts in logistics strategic targets of SMEs:

Reduce the Cost of Logistics

Enterprises aim at reducing the cost of logistics as much as possible while maintaining the satisfaction level of customer service. However, changing patterns of various logistical cost often conflict. So, we should pursue the optimal of total cost rather than one-way cost in planning logistics strategy; and we should pursue the efficiency of supply chain system not the efficiency of certain sector or certain logistics activity[12].

Distribute Investment Funds Rationally

Two aspects are included: first, to minimize the total investment of logistics system, which based on the maximization of return on investment; second, logistics infrastructure investment should not only focus on hardware but also on software like information system. Because logistics management system is not simply combined by logistics facilities. A functional logistics system needs lots of information and advanced conception of logistics management, which ensure the maximum amount reinvest.

Improve the Service for Customer Constantly

Logistics is directly facing upstream suppliers and downstream customers, so logistics is always a service which enterprise gives. Customer who receives the service directly will feel timeliness, reliability and economy from logistics. Therefore, the ultimate strategic goal of logistics management is to meet the requirement of customers, which is the overall target of logistics strategy.
INDICATORS SYSTEM OF THE RESULT EVALUATION OF LOGISTICS STRATEGIC PLANNING

According to the characteristics of logistics strategy planning of SMEs, we set indicators on the basis of principles for establishing indicators that fewer but better, differential and independent, the indicators include 3 first-level and 12 second-level evaluation indicators. As shown in Table 1 below.

<table>
<thead>
<tr>
<th>First-level indicators</th>
<th>Second-level indicators</th>
<th>The explanation of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>The direction of logistics development</td>
<td>The globalization of logistics strategy</td>
<td>Logistics strategy breaks through the limitation of region and profession, takes the nation even the whole world as the objective point</td>
</tr>
<tr>
<td></td>
<td>The foresightedness of logistics strategy</td>
<td>Logistics strategy permits logistics activities of enterprise to develop creatively, but also limits the risk motion reasonably</td>
</tr>
<tr>
<td></td>
<td>The extraordinary of logistics pattern</td>
<td>Logistics strategy makes logistics pattern difference between this enterprise and other similar enterprises</td>
</tr>
<tr>
<td></td>
<td>The advance of logistics management idea</td>
<td>Logistics strategy owns the modern idea of logistics, the idea of supply chain, the idea of green logistics and so on</td>
</tr>
<tr>
<td>The rationality of logistics strategic target</td>
<td>The consistent with target of enterprise</td>
<td>The compactness of relation between target of logistics and goal of management and production</td>
</tr>
<tr>
<td></td>
<td>The match of cost and service</td>
<td>Lower cost, but higher quality of service</td>
</tr>
<tr>
<td></td>
<td>The rationality of facility investment</td>
<td>The construction of the facility aims at getting the biggest investment repayment but paying the smallest total investment</td>
</tr>
<tr>
<td></td>
<td>The high quality of logistics service</td>
<td>Logistics supplies service of the promptness, reliability and efficiency through goods transmission</td>
</tr>
<tr>
<td>The execution of logistics strategy</td>
<td>The integrity of logistics planning system</td>
<td>The unity of the various departments in organization of enterprise logistics</td>
</tr>
<tr>
<td></td>
<td>The rationality of resource distribution</td>
<td>The rationality of resources distribution among the different services, the different departments and different logistics activities</td>
</tr>
<tr>
<td></td>
<td>The integrity of logistics organization</td>
<td>The conformity and effectiveness of the logistics organization</td>
</tr>
<tr>
<td></td>
<td>The completement of logistics information system</td>
<td>The obtain, liability and promptness of logistics information</td>
</tr>
</tbody>
</table>
THE EVALUATION METHOD FOR RESULT OF LOGISTICS STRATEGIC PLANNING

There are many methods to evaluate the logistics strategic planning of SMEs, various methods have their own characteristics, and we can find the fuzzy evaluation is the most practical one through the comparison research. Using fuzzy evaluation can avoid damages in work because of fault coming from subjective decision-making when in the face of complex programs. Using AHP (Analytic Hierarchy Process) to determine weights of every evaluation indicators can enhance scientific nature of decision-making.

The Basic Idea of AHP

AHP is a draw up quota method, which transfers semi-qualitative and semi-quantitative question into quantitative question. The main ideas are as follows: decomposition, a complex system object is expressed as a ordered and step-level structural model, namely levels the question; judgment, firstly compare the relative importance between every two evaluation indicators in the same level, then establish judgment matrix, finally the relative weights of each evaluation indicators is gained; integration, calculate the combination weights of each indicator in each level in order to get the priority relative to general target. Indicator system is a standard sequence formed of evaluation factors; weights system is a weights table, which expresses orderly the level correspondence.

The Basic Principle of Fuzzy Evaluation

Fuzzy evaluation namely fuzzy judgment, first of all, makes fuzzy matrix multiplication using Zade on the base of establishing mathematical model, then, makes a comprehensive conclusion of evaluation according to “maximum degree principle “, the dates needed in fuzzy comprehensive evaluation are weights factor and evaluation level of indicators. For example, the traditional eight levels are(first-level, second-level…eighth-level) or four levels are (excellent, good, pass, fail). After evaluating comprehensively factors system, inspection system and evaluation system, we can judge level and make comprehensive evaluation using the principle of greatest proximity. Fuzzy evaluation can be described as

(1) to determine the factors system U=(u1,u2,…,un); (2)to determine the level system V=(v1,v2,…,vn);
(3) to establish fuzzy matrix based on simulation information, which comes from level table, namely
\[ R = \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1m} \\ r_{21} & r_{22} & \cdots & r_{2m} \\ \vdots & \vdots & \cdots & \vdots \\ r_{n1} & r_{n2} & \cdots & r_{nm} \end{bmatrix} \]

(4) determine the weights system of indicators \( A = (a_1, a_2, \cdots a_n) \);
(5) come to judgment result after evaluating comprehensively,

\[ S = A \cdot R = (a_1, a_2, \cdots a_n) \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1m} \\ r_{21} & r_{22} & \cdots & r_{2m} \\ \vdots & \vdots & \cdots & \vdots \\ r_{n1} & r_{n2} & \cdots & r_{nm} \end{bmatrix} \]

EXAMPLE FOR SIMULATION EVALUATION

Take the direction of logistics development for example, the judgment matrix which is established according to basic principal of AHP are as shown in the Table II below.

Here: \( F \) — for the foresightedness of logistics strategy; \( G \) — for the globalization of logistics strategy; \( D \) — for the differences of logistics pattern; \( A \) — for the advance of logistics management idea.

TABLE 2. THE JUDGMENT MATRIX OF THE DIRECTION OF LOGISTICS DEVELOPMENT.

<table>
<thead>
<tr>
<th></th>
<th>( F )</th>
<th>( G )</th>
<th>( D )</th>
<th>( A )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( F )</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>( G )</td>
<td>1/3</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>( D )</td>
<td>1/5</td>
<td>1/3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>( A )</td>
<td>1/7</td>
<td>1/5</td>
<td>1/3</td>
<td>1</td>
</tr>
</tbody>
</table>

Nth root the multiplication results of every row as follows:

\[ A_1 = \sqrt[105]{3.2} = 3.2 \]

Similarly: \( A_2 = 1.50, A_3 = 0.67, A_4 = 0.31 \)
Get second-levels weight from normalization:

\[ A_{11} = (0.56, 0.26, 0.12, 0.06) \]

Evaluate in term of excellent, good, medium and poor using expert evaluation:
Fuzzy matrix multiplication and regulation:

\[ R_{11} = \begin{bmatrix} 0.40 & 0.30 & 0.20 & 0.10 \\ 0.35 & 0.25 & 0.25 & 0.15 \\ 0.35 & 0.30 & 0.20 & 0.15 \\ 0.30 & 0.25 & 0.25 & 0.20 \end{bmatrix} \]

Similarly, fuzzy judgment of the rationality indicators of logistics strategic target is:

\[ S_1 = \{0.38, 0.28, 0.22, 0.12\} \]

Fuzzy judgment of the execution indicators of logistics strategy is:

\[ S_2 = \{0.60, 0.21, 0.14, 0.05\} \]

Fuzzy judgment of the implementation effect of science and technology development strategy is:

\[ S_3 = \{0.61, 0.16, 0.13, 0.10\} \]

The fuzzy judgment of implementation effect of science and technology development strategy is:

\[ A = (0.40, 0.30, 0.30) \]

\[ R = \begin{bmatrix} 0.38 & 0.28 & 0.22 & 0.12 \\ 0.60 & 0.21 & 0.14 & 0.05 \\ 0.61 & 0.16 & 0.13 & 0.10 \end{bmatrix} \]

\[ S = A \cdot R = \{0.52, 0.22, 0.17, 0.09\} \]

So the implementation effect of science and technology development strategy for enterprise is of excellence according to “maximum degree principle”.

**REFERENCES**