Research on Business Model Evaluation of Logistics Enterprise based on Grey Fuzzy Comprehensive Evaluation Method

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Abstract

Business model evaluation is the key problem in the study of the current business model of logistics enterprises, considering the fuzziness and uncertainty of evaluating logistics enterprises' business model, the evaluation index is selected on the basis of the Porter's Competitive Advantage Theory. The G1 method is applied to determine the logistics enterprise business model evaluation index weights, combining the grey theory with the fuzzy theory, grey fuzzy comprehensive evaluation model for logistics enterprise business model is set up, and the logistics enterprises L as sample for validation.

Keywords

Grey Fuzzy Comprehensive Evaluation, Business Model Evaluation, Logistics Enterprises.

1. Introduction

The e-business logistics and mobile Internet have become new drivers in recent years, which bring new opportunities for development to the logistics enterprises. Logistics industry has gradually become a new growth point of China's economy, which aroused governmental considerable attention. Most domestic logistics enterprises are still in the transitional period from traditional logistics to modern logistics, compared with the international famous logistics enterprises such as DHL, UPS, etc., there are still big gap in China's logistics enterprises. The most fundamental is to establish a good business model in order to improve the competitiveness of China's logistics enterprises, which are the key that logistics enterprises gain competitive advantage. A scientific and complete index system must be established in order to accurately evaluate the business model of logistics enterprises, it not only considers the common character that business model evaluations have, but also considers fully the particularity that logistics enterprises have.

2. Related Research and Review

The theory of the business model was first proposed by the American economist Joseph Schumpeter in 1939. He pointed out that the competition between price and product is not important. It is important from the new economy, new technology, new suppliers and new business model competition [1]. There have been many researches on business models, but there are still many categories about the definition of business models, and there is no unified theoretical system. The definition of the existing business model can be understood from four perspectives: the economic angle, operational angle strategic and integrated angle. Economic angle mainly considered business model to be as a means of profit from the surplus value aspect; the operation angle take into account adopted organizational approach that the enterprise in order to achieve the objectives; strategic definition mainly emphasizes corporate strategy, competitive factors and so on, reflects the response program that enterprises in the face of competition, The integrated angle grasp from the overall business model. With the deepening of business model research, the connotation of business model is more substantial and comprehensive.

Many scholars have done in-depth research on the evaluation of business models from different angles, and put forward the indicators and dimensions of evaluation. Hamel (2000) used the idea of strategic management to study business model evaluation, and put forward four dimensions of business model evaluation: uniqueness, effectiveness, profitability and matching [2]. Morris et al.

(2003) think that the business model should be evaluated from internal and external matching, the interior are constitutive elements of the business model, the exterior are constitutive elements and external environment, only the external and internal all achieve the balance, the business model is the best. Alexander Osterwalder&Yves Pigneur (2010) did a SWOT analysis on the business model by evaluation list of building modules [4]. Afuah (2001) et al. assess the potential of the business model from profitability perspective, and the current profitability, profit forecasting factors, business model elements should be investigate [5]. Zhang Bo (2009) evaluated B2C business model based on the value angel, the established evaluation index system including: first level index are customer value, economic value, organizational value, second level index are founded under the first level index, the AHP are used to obtain weight, fuzzy comprehensive evaluation are used to count total score, and Dangdang and Joyo are taken as an example to verify [6]. Bao Fuhua (2010) took Ctrip travel service companies as an example to do business model evaluation of Internet travel enterprises, the questionnaire method are used to propose six evaluation dimensions, Ctrip's profitability are evaluated based on financial data [7]. Sang Xiaolei (2013) used AHP and fuzzy comprehensive evaluation method to evaluate the business model of four real estate companies, after analyzing the evaluation results, problems are found in the existing business model, and finally improvement advice are proposed from the financial, internal operations, strategy and other aspects [8].

In summary, the domestic and foreign scholars' business model evaluation and index evaluation system are gradually comprehensive, in-depth, but the current research more adopt theoretical research method, quantitative evaluation is less; most scholars from a single perspective on construction aspects of business model evaluation index system; for the existing research results, the evaluation research for logistics business model are rare.

3. Evaluation Index Systems and Its Model Construction

3.1 Index system construction

This paper based on the Michael Porter's competitive advantage theory, the business model of the logistics enterprise of evaluation dimension and relevant evaluation index are proposed through relevant literature collection, expert interview and questionnaires. Porter's competitive advantage theory points out that enterprise competitive advantages is based on their own unique resources, and create competitive forces and advantages relative to other competitors, [9]. First of all, competitive advantage is manifested in the cost advantage, so excellent logistics business model is able to create financial value model. The other manifestation of competitive advantage is homogeneity, which is differentiated from other enterprises [9]. Successful business model also reflect that it bring sustained and stable competitive advantage for enterprise, logistics enterprises should have a key business to support this sustainable development needs to bring lasting profits, so the success of business model is also reflected in continuity and development. Through the research on the competitive advantage theory, the evaluation dimensions proposed in this paper are financial dimension, heterogeneous dimension, stability dimension and development dimension; a complete business model evaluation must cover these four dimensions. Finally, combined with expert interviews, literature collection and questionnaire results, four dimensions and eleven second-level evaluation indexes were determined. The index system structure is shown in Table 1.

Table 1. Evaluation index system of business model of logistics enterprise

Dimension	Index	Definition of Indicator
Financial Dimension	Finance status	Intuitively reflect the current situation of enterprises, net profit margin of sales as an interpretation index
	Financial expectation	Reflect the future development prospects of logistics enterprises, the growth rate of annual income are used to measure this indicator

Heterogeneity Dimension	Service category	Enterprises provide various service to meet customers' personalized requirements
	Service network	The network formed by business transshipment center, the service network and transport line
Stable Dimension	Market scale	Reflect the business level and scale logistics enterprises from the overall, market share can be used to explain
	Service quality	Customers' satisfaction on the service process and results of enterprise
	Talent structure	The comprehensive distribution of talent quality, quantity, cultural level and other important elements
	Risk control ability	Whether the logistics enterprises control the risk of enterprise activities timely and effective or not
Developmental Dimension	Innovation capacity	The entreprise acquires resources and organize its own unique products
	Logistics informatization	Logistics technology and management system
	Business modeland strategy matching	Strategy plays a guiding role in the choice of business model of the logistics enterprises

3.2 Determine the weight of the index

The AHP is commonly used method to determine the weight, AHP as an evaluation method for non-quantitative events in multi-objective planning. This method can hierarchize complex problems and have certain advantages in determining the weight, but large computational burden exist, and it takes a lot of time to establish the judgment matrix [10]. The conclusion of AHP is based on a consistent matrix, but it is difficult to meet in practice. Considering the shortcomings of the above-mentioned AHP method, the weight of this article is determined by the G1 method, G1 method is a new method for determining the weight that proposed by Professor Guo Yajun [11], G1 method has a certain improvement on the AHP method, and the calculation is simple [12]. In this paper, business model evaluation index system is divided into two levels, calculation steps of G1 method is used to gain the weight of indicators at all levels. Taking the calculation of first-level index as an example, invites five experts in the field of logistics are invited to determine the order relation of the indicators at the first level in this paper, and the order and the degree of importance are determined by the five experts, as shown in Table 2 below:

Table 2. Order relations and importance degree

Expert	Order Relations	r_2	r_3	r_4
P1	$u_2>u_1>u_3>u_4$	1.6	1.2	1.4
P2	$u_2>u_3>u_1>u_4$	1.6	1.6	1.2
P3	$u_3>u_2>u_1>u_4$	1.6	1.8	1.6
P4	$u_2>u_1>u_4>u_3$	1.6	1.4	1.6
P5	$u_3>u_2>u_4>u_1$	1.2	1.4	1.2

According to the calculation procedure of G1 method, the the expert P1 as an example to elaborate the calculation process of the weight of this paper: the order relation established by expert P1 is $u_2>u_1>u_3>u_4$,则$u_1^*=u_2,u_2^*=u_1,u_3^*=u_3,u_4^*=u_4$, importance degree ration is: $r_2=1.6,r_3=1.2,r_4=1.4$, $W_4=(1+1.6*1.2*1.4+1.2*1.4+1.4)^{-1}=0.148$

The weights of the remaining indicators are:

$W_3=w_4*r_4=0.148*1.4=0.2072$

$W_2=w_3*r_3=0.2072*1.2=0.249$

$W_1=w_2*r_2=0.249*1.6=0.398$

$w=(w_1,w_2,w_3,w_4)=(0.249,0.398,0.207,0.148)$ is determined by the expert P1, similarly, the evaluation of several other experts, and the weights are obtained by the same calculation procedure, as the table 3 shows:

Table 3. First-level indicator weights

Expert	W_1	W_2	W_3	W_4
P1	0.249	0.398	0.207	0.148
P2	0.185	0.401	0.285	0.129
P3	0.245	0.285	0.302	0.168
P4	0.287	0.302	0.202	0.209
P5	0.224	0.267	0.275	0.234
Average Value	0.2975	0.331	0.2542	0.1776

The index system of this paper includes two levels, after the first-level index is obtained, the second-level index is calculated, and the calculation method of second-level index is the same as the above, after calculating: $w_1=(0.412,0.588)$, $w_2=(0.63,0.37)$, $w_3=(0.201,0.341,0.18,0.278)$, $w_4=(0.31,0.257,0.433)$

3.3 Determination of evaluation model

There are many qualitative indicators in the comprehensive evaluation of the business model, in order to realize the scientific processing of qualitative indicators, fuzzy evaluation method must be adopted; On the other hand, the good and bad of business model are evaluated by evaluation subject, it must be influenced by the evaluators' personal knowledge, ability, experience and preference and other uncertainty factors, it cause assessment information often have a certain gray characteristic, thus provide the basis for application of grey theory in the comprehensive evaluation for business model. It can be seen from the above analysis that the business model evaluation of logistics enterprise have fuzzy and a certain grey characteristic in this paper, it is decided to solve the problem with the two theory. If only use any one of both will influence the rationality of the results. In view of this, this article aims at characteristics of fuzzy and grey coexisting in the evaluation of the business model for the logistics enterprises, combined with the characteristics of the grey and fuzzy theory, the gray fuzzy comprehensive evaluation model was established, the fuzzy comprehensive evaluation are used at the same time, the grey statistics is adopted to establish fuzzy membership matrix.

Step 1: Determine the index set U and comment set V for the evaluation object

The established index set of business model in this paper is divided into two levels, the first level indicator is $U=(u_1,u_2,\cdots u_n)$, and the second level indicator is $(u_{i1},u_{i2},u_{i3}\cdots u_{in})$. This article make comment set of business model evaluation to be $V=(v_1,v_2,\cdots v_m)(m=4)$, comment level are is divided into excellent, good, medium and poor.

Step 2: Establish the evaluation matrix R

The fuzzy mapping from U to V is established, and U and V are two finite domains, respectively. $f:U\to F(V)$ can gain evaluation matrix $R=(r_{ij})_{n\times m}$, r_{ij} is membership degree.

1. The establishment of a sample matrix, this paper invited five experts in the logistics industry to form specialized evaluation team, each expert grade the qualitative indicators of this paper, the score values between 0-1, assuming that the score that k experts grade i evaluation index, then established matrix is set as follows:

$$X = \begin{pmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{pmatrix}$$

2. Determine the evaluation gray level and whiten weight function. According to the comment set, the gray level of this paper is set to 4 level, e=1, 2, 3, 4. First, the establishment of the whitening weight function determine threshold of function, there are two methods to determine threshold currently: one is to determine the objective threshold, this value is obtained in accordance with certain criteria or empirical analogy method; the other is the relative threshold, the maximum, minimum, and medium values in this matrix are taked as the upper, lower, and middle values. In this paper, we use the objective threshold method to determine method, the whitening weight function as follows:

When e = 1, the whitening function is:

$$f_1(x_{ij}) = \begin{cases} \frac{x_{ij}}{0.9} & x_{ij} \in (0,0.9) \\ 1 & x_{ij} \in (0.9,1) \end{cases}$$

When e = 2, the whitening function is:

$$f_2(x_{ij}) = \begin{cases} \frac{x_{ij}}{0.7} & x_{ij} \in (0,0.7) \\ \frac{1-x_{ij}}{0.3} & x_{ij} \in (0.7,1) \end{cases}$$

When e = 3, the whitening function is:

$$f_3(x_{ij}) = \begin{cases} \frac{x_{ij}}{0.5} & x_{ij} \in (0,0.5) \\ \frac{1-x_{ij}}{0.5} & x_{ij} \in (0.5,1) \end{cases}$$

When e = 3, the whitening function is:

$$f_4(x_{ij}) = \begin{cases} \frac{1-x_{ij}}{0.7} & x_{ij} \in (0.3,1) \\ 1 & x_{ij} \in (0,0.3) \end{cases}$$

When e = 4, the whitening function is:

$$f_4(x_{ij}) = \begin{cases} \frac{1-x_{ij}}{0.7} & x_{ij} \in (0.3,1) \\ 1 & x_{ij} \in (0,0.3) \end{cases}$$

Calculate the gray statistic, construct the membership matrix. Calculate the gray statistics of x_{ij} for each gray level separately, The normalized vector is The vector is(Rij1, rij2, rij3, rij4). This vector is fuzzy membership of the index, and the fuzzy membership matrix is constructed.

$$R = \begin{pmatrix} r_{11} & r_{12} & \cdots & r_{1n} \\ r_{21} & r_{22} & \cdots & r_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ r_{m1} & r_{m2} & \cdots & r_{mn} \end{pmatrix}$$

Step 3 Fuzzy operation

According to the theory of fuzzy mathematics, the results of comprehensive evaluation can be obtained from the weight vector of evaluation index and fuzzy operation of evaluation matrix. If the evaluation matrix R as a converter, when you input W, you can get B, as shown in Fig.1.

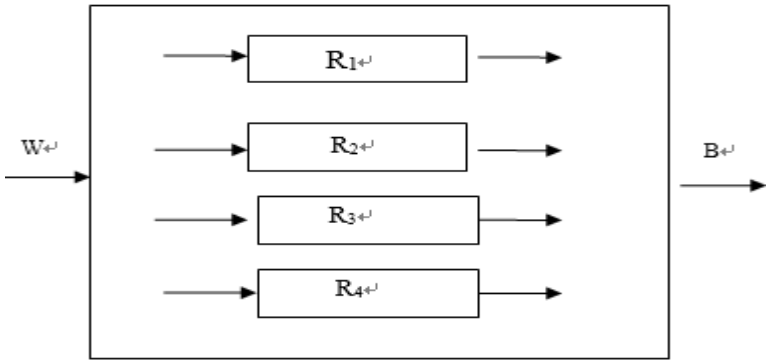

Fig.1 Multi-level fuzzy comprehensive evaluation model

In order to improve the scientific nature of evaluation results, this paper adopts a multi-level fuzzy comprehensive evaluation model, the formula of fuzzy operation is:

$$\mathcal{B} = \mathcal{W} \bullet \mathcal{R}$$

• is a fuzzy operator, common fuzzy operator has four types, they are M(Λ,V), M(;∨), M(∧, ⊕), M (•, ⊕), respectively, the characteristics of the four operators are not identical, as shown in the table below:

Table 4. Comparison of four operators

Characteristic	operator			
	M(Λ,V)	M(;∨)	M(∧, ⊕)	M(·, ⊕)
Reflect the role of weight	Less obvious	Obvious	Less obvious	Obvious
Degree of integration	weak	weak	Strong	Strong
Use R information	Inadequate	Inadequate	Sufficient	Enough
Type	Main factors prominent type	Main factors prominent type	Weighted average type	Weighted average type

According to the above comparison and analysis, this article uses the weighting method (•, ⊕) to reflect the overall characteristics of the object being evaluated.

(1) Second-level comprehensive evaluation

The calculation formula of second-level index is $B_i = w_i \cdot R_i$,, B_i is first level index of fuzzy matrix, where w_i and R_i are weight and judgment matrix of the second-level index.

(2) Comprehensive evaluation of first level

Using the formula to obtain the final comprehensive evaluation value of business model, where R is

$$R = \begin{bmatrix} B_1 \\ B_2 \\ B_3 \\ B_4 \end{bmatrix}$$

Then B is the fuzzy subset B $B = (b_1, b_2 \cdots b_m) \in F(V)$ in evaluation set V, and B is done normalized processing..

4. Example Applications

L Logistics Company is an integrated logistics enterprise that can provide a national vehicle, less-than-carload freight transportation, inter-city distribution and other logistics service. From the establishment and development of L Logistics Company, which has established a sound logistics facilities and management system, L Logistics Company now has a total warehouse area over 600 square meters; and integrates various social vehicles more than 2,000 units. Companies rely on the strength of the parent company, service branch are basically all over the country, more than 500 cities nationwide, with more than 3,000 business outlets. L Logistics Company use advanced logistics information technology in the logistics information system, van, conveyor belt, sorting equipment, hand-held terminals and other equipment has been put into use, there are more than 200 sets of logistics equipment, the automatic sorting are basically realized, GPS of transport vehicles implement the 24-hour tracking of transport vehicles, so that cargo information can always be monitored and queried; in the management system, the enterprise apply advanced logistics information management system to achieve real-time transmission and updates of information, uninterrupted information service can be provided throughout the day.

4.1 Evaluation index and comment set

According to the second-level evaluation index system established above, the index level of first-level is U= (financial dimension, heterogeneity dimension, stability dimension, development dimension). The corresponding second index is U1= (financial status, financial expectations), U2 = (service category, service network), u3 = (market size, service quality, talent structure, risk control capability), u4 = (innovation ability, logistics informatization, business model and strategic matching).

4.2 Fuzzy matric

The quantitative indicators in this paper are as follows: financial status, financial expectation, market size, service quality, innovation capacity, the rest are qualitative indicators, qualitative indicators are determined by the enterprise leading experts to score, quantitative indicators are obtain by the annual statistics of enterprise in 2013, In order to eliminate the impact of different dimensions, the normalization process are made. Five leading experts evaluated the business model of L Logistics; the scores are between (0-1).

Table 5 Experts' scoring

Expert	U_{21}	U_{22}	U_{33}	U_{34}	U_{42}	U_{43}
P1	0.63	0.65	0.82	0.53	0.53	0.71
P2	0.56	0.81	0.69	0.73	0.37	0.63
P3	0.72	0.79	0.63	0.64	0.63	0.83
P4	0.48	0.57	0.53	0.73	0.48	0.52
P5	0.37	0.61	0.75	0.76	0.62	0.68

The following take three second-level indexes for example, grey fuzzy model evaluation is used to count: Innovation ability belongs to the quantitative index obtained by enterprise data survey. The original data are processed and the fuzzy matrices are obtained through relevant calculation. The level of logistics informationization, business model and strategic matching are scored by the leading experts in the enterprise according to the evaluation rules, the scores are between the 0-1, matrix (xij1, xij2, ... xijn), n=5 said which expert scoring. According to the gray level, e = 1, 2, 3, 4 And determine the whitening weight of the index in different gray scales fi (xij)

When E = 1, the calculation process of whitening weights of the business model and strategy (x43) is:

$F_1(x_{43})= 0.71/0.9$

When E = 2, the whitening weight is:

$F_2(x_{43})=1-0.71/0.3$

When E = 3, the whitening weight is:

$F_3(x_{43})=1-0.71/0.5$

When E = 4, the whitening weight is:

$F_4(x_{43})=1-0.71/0.7$

u43 gray statistics that calculates business model and strategic matching:

$U_{431}=\sum_{n=1}^{5} f(x_{43n})=f_1(x_{431})+f_1(x_{432})\ldots+f_1(x_{435})=3.73$

$U_{432}=\sum_{n=1}^{5} f(x_{43n})=f_1(x_{431})+f_1(x_{432})\ldots+f_1(x_{435})=4.14$

$U_{431}=\sum_{n=1}^{5} f(x_{43n})=f_1(x_{431})+f_1(x_{432})\ldots+f_1(x_{435})=3.73$

$U_{432}=\sum_{n=1}^{5} f(x_{43n})=f_1(x_{431})+f_1(x_{432})\ldots+f_1(x_{435})=4.14$

$U_{433}=\sum_{n=1}^{5} f(x_{43n})=f_1(x_{431})+f_1(x_{432})\ldots+f_1(x_{435})=3.26$

$U_{434}=\sum_{n=1}^{5} f(x_{43n})=f_1(x_{431})+f_1(x_{432})\ldots+f_1(x_{435})=2.32$

Calculate the gray evaluation value, determine the membership matrix between index business model and strategic matching (U43)

$U_{43}(r_1)=\frac{u33_1}{\sum_{n=1}^{5} u33_i}=0.277$

$U_{43}(r_2)=\frac{u33_2}{\sum_{n=1}^{5} u33_i}=0.308$

$U_{43}(r_3)=\frac{u33_3}{\sum_{n=1}^{5} u33_i}=0.242$

$U_{43}(r_4)=\frac{u33_4}{\sum_{n=1}^{5} u33_i}=0.172$

According to the method of U43 fuzzy membership matrix, gray statistics of other indicators are obtained; the total gray statistics gain gray membership matrix, and the gray membership matrix of the second index is:

$$R1=\begin{vmatrix}0.371 & 0.24 & 0.283 & 0.106\\ 0.256 & 0.382 & 0.229 & 0.133\end{vmatrix}$$

$$R2=\begin{vmatrix}0.218 & 0.275 & 0.231 & 0.276\\ 0.294 & 0.297 & 0.306 & 0.103\end{vmatrix}$$

$$R3=\begin{vmatrix}0.203 & 0.366 & 0.143 & 0.288\\ 0.28 & 0.306 & 0.24 & 0.17\\ 0.387 & 0.21 & 0.206 & 0.197\\ 0.278 & 0.315 & 0.237 & 0.168\end{vmatrix}$$

$$R4=\begin{vmatrix}0.302 & 0.18 & 0.294 & 0.224\\ 0.206 & 0.263 & 0.292 & 0.238\\ 0.277 & 0.308 & 0.242 & 0.172\end{vmatrix}$$

4.3 Comprehensive evaluation

(1) second-level comprehensive evaluation

Using the formula $B_i = w_i \cdot R_i$ to calculate the evaluation value of the second-level index, the calculation process is as follows:

$$B_1 = W_1 \cdot R_1 = (0.412,0.588)\begin{vmatrix}0.371 & 0.24 & 0.283 & 0.106\\ 0.256 & 0.382 & 0.229 & 0.133\end{vmatrix}$$

$$= (0.303,0.322, 0.251, 0.121)$$

$$B_2 = W_2 \cdot R_2 = (0.63,0.37)\begin{vmatrix}0.218 & 0.275 & 0.231 & 0.276\\ 0.294 & 0.297 & 0.306 & 0.103\end{vmatrix}$$

$$=(0.245,0.282,0.301,0.172)$$

$$B_3 = W_3 \cdot R_3 = (0.201,0.341,0.18,0.278) \begin{vmatrix} 0.203 & 0.366 & 0.143 & 0.288 \\ 0.28 & 0.306 & 0.24 & 0.17 \\ 0.387 & 0.21 & 0.206 & 0.197 \\ 0.278 & 0.315 & 0.237 & 0.168 \end{vmatrix}$$

=(0.283,0.305,0.214,0.198)

$$B_4 = W_4 \cdot R_4 = (0.31,0.257,0.433) \begin{vmatrix} 0.165 & 0.423 & 0.196 & 0.216 \\ 0.206 & 0.263 & 0.292 & 0.238 \\ 0.277 & 0.308 & 0.242 & 0.172 \end{vmatrix}$$

=(0.213,0.331,0.239,0.19)

(2) first-level comprehensive evaluation

According to the above calculation steps, the fuzzy membership matrix of the first-level index can be obtained:

$$\begin{vmatrix} 0.303 & 0.322 & 0.251 & 0.121 \\ 0.245 & 0.282 & 0.301 & 0.172 \\ 0.283 & 0.305 & 0.214 & 0198 \\ 0.213 & 0.331 & 0.239 & 0.19 \end{vmatrix}$$

The weighting method (•, ⊕) are used to obtain the final integrated value of the of L logistics enterprise, the formula is:

$$B = W \cdot R$$

$$= (0.297,0.331,0.254,0.178) \begin{vmatrix} 0.303 & 0.322 & 0.251 & 0.121 \\ 0.245 & 0.282 & 0.301 & 0.172 \\ 0.283 & 0.305 & 0.214 & 0.198 \\ 0.213 & 0.331 & 0.239 & 0.19 \end{vmatrix}$$

= (0.28,0.325,0.269,0.172)

(3) Calculate L the composite score of business model evaluation of logistics company, the corresponding score comment set of reviews is set (90, 80, 70, 60)

$$Z = \sum b v^T = 80.28$$

It can be known from the above final comprehensive evaluation results that the overall evaluation value of L logistics enterprise is 80.28 points, the overall are in good condition, indicating that business model of L logistics is to adapt to the market, but the score of L logistics business is just reached 80 points, only in a good downstream level, indicating that there are still some shortcomings in its business model. From the comprehensive evaluation results of the two indicators, financial dimension and indicators of L logistics enterprise are in good level, the company's total income level is high from business surveys, indicating that logistics costs of L logistics enterprise may be higher, which makes profit capacity level not high, enterprises should focus on strengthening the control of logistics costs later. L logistics enterprise is at the middle level in the aspect of heterogeneous dimension, which shows that the service categories and scope of the enterprise are same or similar to other enterprises, and the uniqueness does not show. The stability and development is good, membership are 0.305 and 0.331, respectively, it may be affected by the domestic economy growth in the process of slowdown, on the other hand, it is necessary to find enterprise own reasons, the various aspects of the enterprise interior are done in-depth analysis, the problems found in the course of business should be improved. The above evaluation results are compared with the present reality of the enterprise, we can see that the evaluation results reflect the actual business condition of the enterprise well.

5. Conclusion

With the development of logistics industry, logistics industry is becoming increasingly important in the economic and social development. Under the increasingly competitive environment, innovation business models have become the key way to enhance competitiveness for logistics enterprises. In this paper, the business model theory, business model evaluation and other related research results are comprehensively applied, the business models of logistics enterprises are comprehensively analyzed,

and more scientific and reasonable evaluation index system of business models are proposed, combining qualitative research with quantitative research, the business evaluation model of the logistics enterprise are established, and the L logistics enterprises are selected as samples for empirical analysis, the scientific nature and validity of the model are tested. We can study the logistics enterprises in different regions, sub-sectors and ownerships in the future pointedly; and further optimize the evaluation index system of business model to make more scientific research achievements.

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