CMU Academy Journal of Management and Business Education
Journal Homepage: https://cmu-my.com/cmu-academy-journal-of-management-and-business-education

Research of Chinese Internet Enterprise Supply Chain Strategy

Wang Yu

Linton University, Bandar Universiti Teknologi Legenda (BUTL), Batu 12, 71700 Mantin, Negeri Sembilan, MALAYSIA

Email Address:
yuwang22@hotmail.com

To Cite This Article:
Wang Yu. (2022). Research of Chinese Internet Enterprise Supply Chain Strategy. *CMU Academy Journal of Management and Business Education*, *1*(1), 24–28. https://doi.org/10.53797/cjmbe.v1i1.6.2022

Abstract: The level of informationization of the supply chain management strategy of Internet companies is crucial and an effective means to test the competitiveness of enterprises. In this paper, based on the factors affecting the informationization level of Internet enterprise supply chain management, this paper proposes a method based on improved gray correlation degree, which is the combination of analytic hierarchy process and entropy weight method to determine the index weight, and the informationization strategy of supply chain management for Internet enterprises. put in order. Through the analysis of examples, it can be known that the improved gray correlation method using comprehensive confirmation can avoid the subjectivity of weight setting, and thus can more objectively and accurately evaluate the supply chain strategy information level of Internet enterprises. At present, this method provides new ideas for the strategic management of enterprises.

Keywords: Improved grey correlation method; analytic hierarchy process; entropy weight method, strategic analysis, internet enterprise, information construction

1. Introduction

Today, with the rapid development of science and technology, the globalization of the market is accelerating, and the individualization of customer demand promotes the competition of enterprises (Carlin et al., 2021). If enterprises want to develop rapidly in the torrent of competition and gain more living space, they must establish supply chain management ideas, starting with the source of management, with minimum cost, from workflow, logistics, capital flow, information. Starting from four angles, the company will operate at a high speed under the supply chain thinking, and timely deliver the reasonable price and personalized products to the consumers. Internet companies are no exception (Lizhu, 2014; Caixia, 2012).

At present, the evaluation of Internet enterprise information is generally based on other components of the enterprise's supply chain, but based on the enterprise's main body. In the upstream and downstream of the supply chain in the Internet enterprise, including technology suppliers, material suppliers, service customers, intermediate agents, etc., any problem in one link will lead to a decrease in the efficiency of the entire supply chain (Ting, 2015). To this end, from the perspective of the Internet supply chain, the paper establishes a comprehensive index weighting method based on the analytic hierarchy process and the entropy method based on the grey correlation method, and evaluates the informational level of the supply chain strategy of Internet companies to help enterprises find the inadequacies in the construction of supply chain management information and establish the correct development goals.

2. Internet enterprise supply chain management strategy informational level establishment and evaluation index system

The determination of the information level evaluation indicators of the Internet enterprise supply chain management strategy must be based on the principles of science, dynamics, comprehensiveness, system city, contrast and orientation (Xijie, 2014). Focusing on the nature of the work of Internet companies and the target audience, the following information index evaluation system has been established. The indicator system is shown in Fig. 1.

**Corresponding author: yuwang22@hotmail.com*
Journal Homepage: https://cmu-my.com/cmu-academy-journal-of-management-and-business-education
All right reserved.

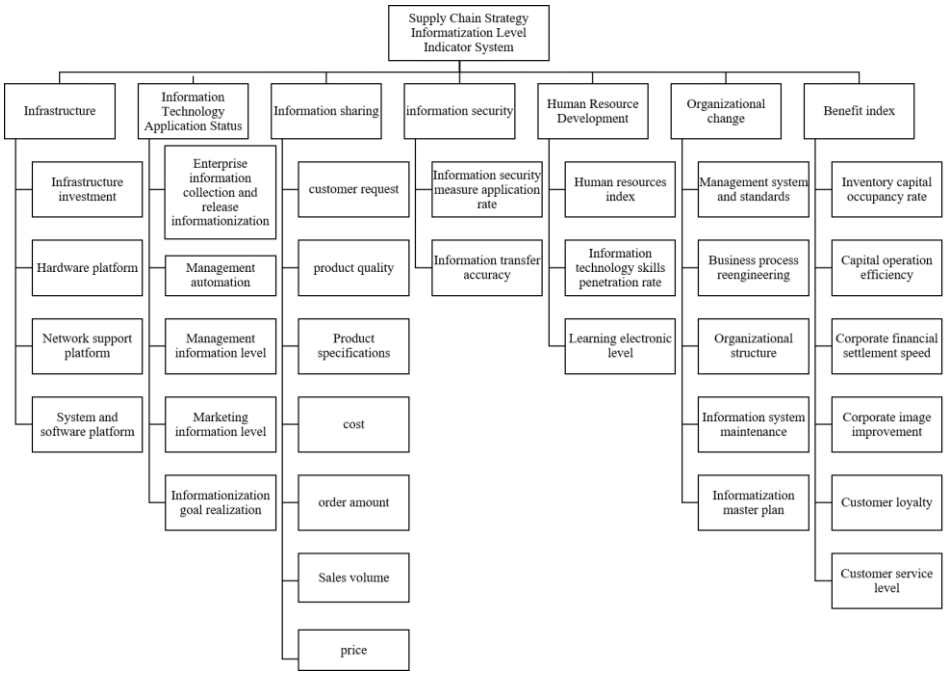

Fig. 1: Internet enterprise supply chain management strategy informational level establishment and evaluation index system

3. Application of analytic hierarchy process and entropy method in evaluation index system

The analytic hierarchy process is a commonly used method for the evaluation of informatization level at present, and the paper will also adopt this method as the core usage method of this paper. However, in view of the fact that the index weighting of the analytic hierarchy process has strong subjectivity, the calculation results are not accurate. In order to make up for the incompleteness of the method and the excessive subjectivity, this paper firstly uses the AHP to determine the subjective weight of each evaluation index, then assists in using the entropy weight method to obtain the objective weight, and obtains the comprehensive weight in the weight weighted way (Yingying, 2017).

3.1 Analytic hierarchy process to determine indicator weights

Assuming that the top element of the index weight is used as criterion B, then the next level of B1, B2, ..., Bn is governed by the criteria of the previous layer. The judgment established at the level of the layer is to assign the importance of B1, B2, ..., Bn. After repeated trade-offs, the relative importance between two elements, such as B1 and B2, needs to be weighted by the 9-point scale method. In general, we specify that if element I is more important than element J, then Aij is obtained, then element J is compared with element I to get 1/Aij. Then the corresponding evaluation result has a formula for consistency test, and the expression is as follows:

$$CI = \frac{\lambda_{max}}{n-1} \tag{1}$$

Then determine the indicator weights, there are formulas as follows.

$$\bar{w}_i = n\sqrt{\prod_{j=1}^{n} a_{ij}} \qquad (i = 1,2,3\ldots,n) \tag{2}$$

Then, the normalized judgment matrices are added by columns according to formula (3), and then the entire column vector is normalized to obtain the normalized relative importance of the elements relative to the upper layer criterion (Peng, 2015).

$$w_i = \frac{\bar{w}_i}{\sum_{i=1}^{n} \bar{w}_i} \qquad (i = 1,2,3\ldots,n) \tag{3}$$

Calculate the weight of each dimension of the criterion layer relative to the informational level of the Internet enterprise supply chain strategy, and obtain Table 1.

Table 1: Internet enterprise supply chain strategy informational level judgment matrix and weight

A	B1	B2	B3	B4	B5	B6	B7	Wi
B1	1	1/2	1/2	4	2	3	1/2	0.283
B2	2	1	3	1/2	2	1/2	1/3	0.031
B3	2	1/3	1	4	1/2	1/4	4	0.056
B4	4	2	1/4	1	1/3	3	2	0.504
B5	1/2	1/2	2	3	1	1/4	4	0.071
B6	1/3	2	4	1/3	4	1	1/3	0.044
B7	2	3	1/4	1/2	1/4	3	1	0.010

Consistency test results: lmax = 6.329; CI = 0.065 8; RI = 1.24; CR = 0.053 1 < 0.1.

3.2 Entropy method to determine the index weight

a) Raw data standardization processing. Converted as follows:

$$x_{ij} = \frac{\max\limits_{i}\{a_{ij}\} - a_{ij}}{\max\limits_{i}\{a_{ij}\} - \min\limits_{i}\{a_{ij}\}} \ (i = 1,2,3\ldots,n) \tag{4}$$

In the formula, $\max\limits_{i}\{a_{ij}\}$ and $\min\limits_{i}\{a_{ij}\}$ respectively represent the maximum value and the minimum value among all the evaluation objects under the same indicator.

b) Calculate the characteristic weight of the i-th evaluated object under the j-th index.

$$P_{ij} = \frac{x_{ij}}{\sum_{i=1}^{n} x_{ij}} \qquad (i = 1,2,3\ldots,n) \tag{5}$$

c) Calculate the entropy value A of the j-th index, with the expression:

$$e_j = -(\ln n)^{-1} \sum_{i=1}^{m} p_{ij} \ln p_{ij} \tag{6}$$

If $p_{ij}=0$, define $\lim\limits_{p_{ij}\to 0} p_{ij}\ln p_{ij}=0$. If x_{ij} is equal for a given j, then $p_{ij}=1/n$, then $e_j=1$. Where n is the number of objects to be evaluated and m is the number of indicators.

d) Calculate the difference coefficient of index x_j. The greater the difference coefficient $q_j = 1-e_j$, q_j more attention should be paid to the role of this indicator.

e) Determine the weight. Using the entropy value to calculate the objective weighting expression of each indicator is:

$$w_j = q_j / \sum_{j=0}^{m} q_j \qquad (j=0,1,2\ldots,m) \tag{7}$$

According to the above steps, the weights of the indicators under the various dimensions of the informational level of the Internet enterprise supply chain are obtained, as shown in Table 2.

Table 2: Fuzzy indicator weights determined by entropy weight method

Guidelines	Index	Weights
Infrastructure (B1) 0.132	Infrastructure Investment (B11)	0.123
	Hardware platform (B12)	0.345

	Network support platform (B13)	0.235
	System and Software Platform (B14)	0.297
Information Technology Application Status (B2) 0.178	Enterprise information collection and release informational (B21)	0.143
	Management Automation (B22)	0.234
	Marketing Informatization Level (B23)	0.564
	Management information level (B24)	0.014
	Informational goal realization (B25)	0.045
Information sharing level (B3) 0.213	Customer demand (B31)	0.054
	Product quality (B32)	0.031
	Product specifications (B33)	0.253
	Cost (B34)	0.113
	Order quantity (B35)	0.234
	Sales volume (B36)	0.215
	Price (B37)	0.100
Information Security (B4) 0.158	Information Security Measures Application Rate (B41)	0.213
	Information transfer accuracy (B42)	0.787
Human Resources Development (B5) 0.078	Human Resources Index (B51)	0.128
	Information Technology Skills Popularization Rate (B52)	0.119
	Learning the electronic level (B53)	0.753
Organizational change (B6) 0.201	Management System and Standards (B61)	0.231
	Business Process Reengineering (B62)	0.116
	Organizational Structure (B63)	0.125
	Information System Maintenance (B64)	0.328
	Informatization Master Plan (B65)	0.200
Benefit Index (B7) 0.040	Inventory capital occupancy rate (B71)	0.115
	Capital operation efficiency (B72)	0.231
	Corporate financial settlement speed (B73)	0.225
	Corporate image enhancement (B74)	0.008
	Customer loyalty (B75)	0.105
	Customer Service Level (B76)	0.316

3.3 Comprehensive weight determination

The subjective weight is obtained by the analytic hierarchy process, and the objective weight is obtained by the entropy weight method (Yunhe, 2014). To make the weight determination more scientific, we need to balance the two methods to determine the index weights under each dimension. Given the limited length of the article, this paper sets the weight coefficient of subjective weight and entropy confirmation weight to 0.5, and then gets the final criterion. The comprehensive weights are shown in the table below.

Table 3: Determination of comprehensive indicator weights

Criteria layer	AHP method subjective weight	Entropy weight method objective weight	Comprehensive indicator weight
Infrastructure (B1)	0.283	0.132	0.2075
Information Technology Application Status (B2)	0.031	0.178	0.1045
Information sharing level (B3)	0.056	0.213	0.1345
Information Security (B4)	0.504	0.158	0.331
Human Resources Development (B5)	0.071	0.078	0.0745
Organizational change (B6)	0.044	0.201	0.1225
Benefit Index (B7)	0.01	0.04	0.025

4. Discussion

Through the analysis of the indicators that affect the information level of the Internet enterprise supply chain strategy, enterprises in the information construction do not pay much attention to the benefit index, resulting in a low level of

financial performance in the entire supply chain management. At the same time, the company does not pay attention to personnel training, resulting in more serious brain drain. Talent and finance are two dimensions that Internet companies can't ignore in their management. Talents are the soft power of enterprises, and finance is a major indicator for evaluating the economic benefits of enterprises (Lan-hua, 2013). To this end, the author believes that Internet companies must pay attention to personnel training, and increase financial performance management in corporate asset utilization and operations. The implementation of this measure can have an immediate effect, conform to the trend of the times of talented enterprises, reserve talents and reserve funds for enterprise development, and achieve sustainable development of enterprises (Wei, Na, & Ruoyi, 2015; Dongshu & Desheng, 2012).

Furthermore, the analysis of information technology applications, infrastructure, and security protection of Internet companies have attracted the attention of enterprises. To this end, Internet companies need to strengthen technology research and development to improve the security level of the network platform (Cunbin & Yiyang, 2015). In view of the rapid development of the current Internet supply chain informational, it is necessary to continue to invest funds and introduce high-end technical talents. At the same time, real-time monitoring of the information network background, timely detection of system vulnerabilities, and background protection work to resist Trojans and virus attacks. At the same time, in the operation of the Internet supply chain, it is necessary to strengthen data analysis and management capabilities, improve the overall environment of the Internet supply chain, and thus ensure the safe and stable development of Internet enterprises.

5. Conclusion

The thesis conducts a preliminary study by analyzing the influential indicators of the information supply of the Internet enterprise supply chain, establishes a dynamic and static indicator system, and attempts to judge the informationization level of the Internet enterprise supply chain with a new way of thinking. In view of the limitations of the conditions, further research is needed on the improvement, acquisition and analysis of indicators.

References

Caixia, G. (2012). Research on carbon emission and its performance analysis of industrial energy consumption in Tianjin. 3(7), p. 11-15.

Carlin, W., Fries, S., Schaffer, M. E., & Seabright, P. (2001). Competition and enterprise performance in transition economies: Evidence from a cross-country survey. *Available at SSRN 270320*.

Cunbin, L., & Yiyang, S. (2015). Fuzzy Comprehensive Evaluation of Power Enterprise Information Application Effect Based on AHP-Entropy Weight Method. *Shaanxi Electric Power*, 7(43), p. 48-52.

Dongshu, Y., & Desheng, Y. (2012). Research on Information Technology Vendor Evaluation Based on Entropy Weight Method and Fuzzy Evaluation. *Computer and Modernization*, 9(31), p.154-158.

Lan-hua, D. I. N. G. (2013). Investigation and Analysis of" Talent Zone" Construction Work in Wuxi High-tech Zone: Taking" 530" Enterprise as an Example. *Journal of Jiangsu Vocational and Technical Institute of Economics and Commerce*, 01.

Lizhu, H. (2014). An Empirical Study of the Impact of Financial Performance on Carbon Disclosure: *Based on China's High Carbon Emissions Industry*. 4(28), p. 103-105.

Peng, Y. (2015). Performance Analysis of China's Industrial Carbon Emission Based on Material Balance Principle. *Chinese Journal of Population, Resources and Environment*, 4(25), p. 9-20.

Ting, Z. (2015). Impact of carbon emission constraints on firm performance based on threshold regression. Shandong Normal University, 1(12), p. 88-89.

Wei, S., Na, B., & Ruoyi, Z. (2015). Risk Assessment of Material Misstatement in Information Environment Based on Entropy Weight Method. 7(21), p. 84-87.

Xijie, W. (2014). Research on Financial Performance of Capital Operation of Coal Listed Companies. Heilongjiang University, 12(34), p. 119-125.

Yingying, Z. (2017). Research on the impact of government subsidies on investment behavior and financial performance of new energy companies. 2(18), p. 17-23.

Yunhe, X. (2014). Wang Keliang, Zhang Jing. Analysis of Carbon Emission Performance and Its Influencing Factors in Anhui Province. *Journal of Anhui University of Science and Technology (Social Science Edition)*, 4(16), p. 11-15.