Analysis of Stakeholders and Corporate Social Responsibility in Logistics Enterprises from a Corporate Governance Perspective

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Abstract. In the development of modern enterprises, the fulfilment of corporate social responsibility to stakeholders has received more and more attention. Using the TOPSIS entropy weight method to analyse the social responsibility indicators of logistics enterprises, it is found that there are problems such as bias and insufficient performance of social responsibility to stakeholders other than shareholders in the performance of social responsibility of logistics enterprises. Based on the results of the analysis, it is proposed that the government should provide support in terms of loans, policies and taxes to logistics enterprises that take the initiative to assume social responsibility, and logistics enterprises need to correctly understand the cost of assuming social responsibility and set up a correct management theory of social responsibility.

Keywords: social responsibility; stakeholders; logistics companies; entropy power; TOPSIS

1   INTRODUCTORY

According to the Fourteenth Five-Year Plan for the Development of Modern Logistics, the logistics industry, as a pillar industry of the national economy, has the function of connecting all parts of the national economy. Modern logistics connects production and consumption and plays an important role in building a modernised economic system. As the scale of China's logistics continues to expand, the total social volume of China's logistics will exceed 300 trillion yuan in 2020, with an annual growth rate of 5.6 per cent. China's highway, railway, internal and external civil aviation, pipeline operations, as well as freight volume, turnover, express business volume are in the forefront of the world, and the level of China's social logistics costs steadily declining in 2020, the ratio of logistics costs to gross domestic product to 14.7%, which is sufficient to prove that our country has a huge potential for logistics.[1] China's modern logistics due to the late start, modern logistics enterprises in the social responsibility of the obvious gap with the international logistics enterprises. In the implementation of social responsibility of

logistics enterprises, there are some obvious problems such as the lack of social responsibility of logistics enterprises, logistics enterprises in order to maximize profits to the detriment of consumer interests, logistics enterprises and peers in the malicious competition to destroy the market and other behaviours. Domestic scholars Wu Xingnan (2013)[2] analysed the early stakeholder theory in the United States, arguing that it is in the long-term interests of shareholders to either better appease their employees or satisfy consumers' needs by improving service quality.Hao Ying (2023) [3]also opposes the principle of "putting shareholder interests first" and believes that it belongs to the category of purely economic entities, cutting off the connection between enterprises and society.Li Xinhe (2022) [4] analyzed the shareholder interest theory and pointed out the problems of shareholder interest theory, believing that excessive pursuit of interests by shareholders will lead to the destruction of social interests and the interests of real economic entitiesChe Mi, Jiang Xu, Xu Shan, Yang Tianwen (2022)[5] Analysed the preference of CSR from the perspective of stakeholders, and through the perspective of stakeholders, classified corporate stakeholders into internal responsibility of internal stakeholders and external responsibility of external stakeholders. Che Mi, Jiang Xu, Xu Shan, Yang Tianwen (2022) [6] analyzed the preferences of corporate social responsibility from the perspective of stakeholders, dividing them into internal responsibilities of internal stakeholders and external responsibilities of external stakeholders.Bao Feng (2022) [7] classified the stakeholders of logistics enterprises into six major categories through research, including government, enterprise employees, customers, shareholders, community environment, and value chain partners.Liang Xing and Xiao Lina (2012) [8] believe that entropy is a measure of a system in an unstable state,Huang, Lianqin, Liu, Mingyue and Liang, Chen (2023)[9]The entropy weight TOPSIS method is used to evaluate the level of corporate green governance. Jiang Fuxiu, Wang Ying, and Ma Jia (2023) [10] analyzed the structure of corporate governance in the United States and divided it into internal governance and external governance since the 1970s

2   EVALUATION MODELS

2.1   Evaluation Modelling

According to the perspective of stakeholders, we classify stakeholders into several categories: employees, consumers, shareholders, government, ecology, charity, and consumers. Entropy weighting, a method of evaluating and assigning weights to data, determines the number of weights based on the degree of variation between the values of each evaluation index to feedback the amount of information. The greater the entropy of information displayed in the data, the less information is reflected, and the impact of the data on the comprehensive evaluation is small. =The greater the information entropy in the data, the greater the amount of information it gives, and the greater its influence on the comprehensive evaluation.TOPSIS method (Technique for Order Preference by Similarity to Ideal Solution) refers to the calculation of the weighted Euclidean distance between the positive and negative ideal solutions of the sample, so as to obtain the proximity between the sample and the positive ideal solution, and by virtue of the degree of variability of the sample, we can determine the weights of the data. The TOPSIS

method (Technique for Order Preference by Similarity to Ideal Solution) is a method that calculates the weighted Euclidean distance between the positive and negative ideal solutions of a sample to obtain the proximity of the sample to the positive ideal solution, and analyses the strengths and weaknesses of the sample by virtue of this.

2.2   Determination of the Indicator System

Based on the stakeholder theory, this paper analyses the social responsibility of logistics enterprises to stakeholders and establishes evaluation indexes for the social responsibility of logistics enterprises. The social responsibility of logistics enterprises is not only responsible for shareholders, but also for the government, the public, employees, the environment and consumption. According to the scientific development of CSR (Corporate social responsibility), the selection of objective indicators in this paper builds a three-tier index system of social responsibility, hoping that through the three-tier index system can be more clear and intuitive expression of corporate social responsibility, the establishment of the evaluation system is shown in Table 1.

Table 1. Table of CSR Evaluation Indicator System

target level	normative layer	indicator layer	Explanation of the calculation of indicators
Logistics Corporate Social Responsibility Evaluation Indicator System	Responsibility to the Government	Corporate tax expense ratio	Corporate income tax/corporate business income
		Growth rate of employment absorption	(Number of employees of the enterprise in the current year - Number of employees of the enterprise in the previous year) / Number of persons employed in the enterprise in the previous year
	Responsibility to the public	Growth rate of public welfare donations	(current year's donations - previous year's donations)/previous year's donations of the enterprise
	Responsibility for employees	Growth rate of enterprise payroll inputs	(Current year payroll investment in the enterprise - previous year payroll investment in the enterprise)/prior year payroll investment in the enterprise
	Responsibility to consumers	Enterprise operating cost ratio	Business operating costs/operating income
		Enterprise revenue growth rate	(Revenue of the enterprise in the current year - last year's revenue)/last year's revenue
	Liability to shareholders	Corporate earnings per share growth rate	(Earnings per share for the current year - earnings per share for the previous year)/earnings per share for the previous year

		Corporate sales rate	Enterprise's net profit for the year/Enterprise's sales revenue for the year
		Net interest rate on total corporate assets	Net profit of the enterprise for the year/average total assets
		Enterprise asset turnover	Sales margin/average total assets
		Enterprise R&D investment rate	Enterprise's R&D investment in the year/Enterprise's sales in the year
		Enterprise warehousing scale	Total area under warehouse management of the enterprise in the year (10 million square kilometres)
		Scale of enterprise transport	Total number of vehicles transported by the enterprise during the year (in 10,000 vehicles)
	Responsibility for the environment	Carbon emission reduction rate	-(Carbon emissions of the enterprise in the current year - Carbon emissions of the enterprise in the previous year) / Carbon emissions of the enterprise in the previous year

2.3   Entropy Weight Modelling

Establish a decision matrix. Let the set of programmes involved in decision making be $A=A_1,A_2,A_3,...,A_m$, and its indicator set is $B=B_1,B_2,B_3,...,B_n$, where the value of the indicator B_j corresponding to programme A_i is denoted as x_{ij} ($i=1,2,3,...,n$, $j=1,2,3,...,m$), then the decision matrix is formed:

$$X=\begin{vmatrix} \vdots & B_1 & B_2 & B_3 & \ldots & B_n \\ A_1 & x_{11} & x_{12} & x_{13} & \ldots & x_{1n} \\ A_2 & x_{21} & x_{22} & x_{23} & \ldots & x_{2n} \\ A_3 & x_{31} & x_{32} & x_{33} & \ldots & x_{3n} \\ \ldots & \ldots & \ldots & \ldots & \ldots & \ldots \\ A_m & x_{m1} & x_{m2} & x_{m3} & \ldots & x_{mn} \end{vmatrix} \qquad (1)$$

Normalising the raw data. In the matrix, x_{ij} denotes the value of row i and column j with indicators, x_{max} denotes the largest value in column j, x_{min} denotes the smallest value in column j, and Y_{ij} is the standardised value If the indicator is positive (e.g., a benefit indicator), the treatment formula is:

$$Y_{ij}=\frac{x_{ij}-x_{min}}{x_{max}-x_{min}} \qquad (2)$$

If the indicator is negative (e.g., a cost indicator), the treatment formula is:

$$Y_{ij} = \frac{x_{max} - x_{ij}}{x_{max} - x_{min}} \tag{3}$$

Constructing a Matrix of Specific Gravity Data P_{ij} :

$$P_{ij} = \frac{Y_{ij}}{\sum_{i=1}^{m} Y_{ij}} \tag{4}$$

Calculate the information entropy value of the j information entropy value of the indicator e_j :

$$e_{ij} = -k \sum_{i=1}^{m} P_{ij} \times \ln P_{ij} \tag{5}$$

where k is a constant, and $k = 1/\ln n$
Calculation of the coefficient of variation for j Indicator coefficient of variation g_j :

$$g_j = 1 - e_j \tag{6}$$

Calculate the weight of the j Indicator weights w_j :

$$w_j = \frac{g_j}{\sum_{j=1}^{n} g_j} \tag{7}$$

TOPSIS modelling
Weighted standardised weights are calculated based on the standardisation matrix, and the weights of each indicator:

$$Z_{ij} = w_j Y_{ij} \tag{8}$$

Determine the positive ideal solution S^+ and negative ideal solutions S^- :

$$S^+ = Z_1^+, Z_2^+, Z_3^+, \ldots, Z_n^+ \tag{9}$$

$$S^- = Z_1^-, Z_2^-, Z_3^-, \ldots, Z_n^- \tag{10}$$

Determine the Euclidean distance between the positive and negative ideal solutions of the evaluation object

$$D_i^+ = \sqrt{\sum_j^n (Z_{ij} - z_n^+)} \tag{11}$$

$$D_i^- = \sqrt{\sum_j^n (Z_{ij} - z_n^-)} \tag{12}$$

Calculate progress for each evaluation indicator

$$C_i = \frac{D_i^+}{D_i^+ - D_i^-} i = （1，2，3，\ldots，m) \tag{13}$$

C_i takes values between 0 and 1. The closer the value is to 1, the better the evaluator is, and the closer the value is to 0, the worse the evaluation is.

3   EMPIRICAL ANALYSIS AND CONCLUSIONS

3.1   Data Selection and Sample Sources

On the basis of establishing the completion index system, this paper selects four representative logistics enterprises from the listed logistics enterprises: Shunfeng Holdings (stock code 002352), Jingdong Logistics (stock code 02618), Deppon (stock code 603056), and Rhymex (stock code 002120), and uses them as evaluation objects.

3.2   Data Processing

Due to the different indicators, the difference between the amount of each indicator is large, so we need to dimensionless index matrix, based on the formula(2) (3) for the standardisation of data, and then according to (4) to build a standardised data matrix, through (5) (6) (7) to derive the weight of the indicators, see Table 2

Table 2. CSR weightings

entropy weighting (physics)			
term (in a mathematical formula)	The information entropy value e	Information utility value d	Weighting (%)
Corporate tax expense ratio	0.679	0.321	5.495
Growth rate of employment absorption	0.759	0.241	4.127
Growth rate of public welfare donations	0.433	0.567	9.714
Growth rate of interest per share	0.545	0.455	7.782
Enterprise revenue growth rate	0.751	0.249	4.256
sales rate	0.421	0.579	9.911
Net interest rate on total assets	0.534	0.466	7.98
Asset turnover ratio	0.57	0.43	7.359
R&D investment rate	0.574	0.426	7.291
Growth rate of enterprise labour expenditures	0.499	0.501	8.578
Enterprise carbon dioxide emission reduction rate	0.547	0.453	7.758
Enterprise warehousing scale	0.451	0.549	9.401
Enterprise vehicle size	0.631	0.369	6.325
operating cost ratio	0.765	0.235	4.023

4   CONCLUSION

Conclusion These data show that in the logistics corporate social responsibility, profit is still the main concern of enterprises, and shareholders play an irreplaceable role in the evaluation of corporate social responsibility, which is crucial to the impact of logistics corporate social responsibility. Second is the growth rate of corporate public welfare donations, this indicator accounted for 9.714%, which can most intuitively reflect the enterprise's social responsibility to the public, in the enterprise to fulfill the social

responsibility of the road plays a very important role, so enterprises attach great importance to this, in the implementation of corporate social responsibility, the rate of increase in donations accounted for a very high proportion. Corporate tax expenditure ratio (5.495%), the absorption of employment growth rate (4.127%) in the indicators accounted for the weight is not high, which is also on the side of the surface of the CSR in the government's aspects of the lack of attention, logistics enterprises to improve the ratio of corporate tax expenditure and the importance of employment growth. These are related to the fulfilment of CSR to the government. The lowest weighting is the operating cost ratio (4.023%), which is the responsibility of enterprises to consumers, and the growth rate of enterprise income (4.256%) in the data also accounts for a relatively low proportion. According to the formula(8) The weighted standardised matrix was first calculated using the standardised matrix, and then using the(9) , (10) obtain its positive and negative ideal solutions, and then apply (11) to calculate its weighted normalisation matrix,(12) The Euclidean distance of each evaluated object from the positive and negative ideal solutions is obtained, and finally the (13) Calculate the relative posting progress of each evaluation object, and obtain the analysis results as Table 3

Table 3. Composite Score Index

index value	Positive ideal solution distance(D+)	Negative ideal solution distance (D-)	Composite score index	arrange in order
ShunfengHoldings	0.70343403	0.56592378	0.44583471	2
Jingdong Logistics	0.50916151	0.7406879	0.59262171	1
Debonair	0.87387421	0.42174957	0.32551855	3
Rhymex Shares	0.82723096	0.37858042	0.31396322	4

The highest overall score is given to Jingdong Logistics, which is ranked first and has the best performance in the fulfilment of corporate social responsibility to stakeholders, followed by Shunfeng Holdings and Deppon, and lastly by Rhymex. The overall score of social responsibility fulfilment of Jingdong Logistics is higher than that of Ryda and Deppon, which indicates that there is a gap in the fulfilment of corporate social responsibility among these three companies. Overall, the fulfilment of social responsibility of logistics enterprises is not only related to the interests of stakeholders, but also to the sustainable development of enterprises. Logistics enterprises in the operation process, need to consume a lot of resources, emission of gas, a great impact on the ecological environment, logistics enterprises in the industry competition through a variety of means to obtain benefits will greatly affect the social and economic environment, so the fulfilment of the social responsibility of logistics enterprises for the socioeconomic environment and the ecological environment has a non-negligible impact.

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