The Evaluation of Economic Management in the Field of Cross-border E-commerce

Jia Su[1], Lijing Zha[1*], Yan Zhang[1], Xuanchen Liu[1], Shiduo Liu[2, a]

[1]*Changqing Oilfield Company CNPC, Xi'an, China*
[2]*School of Management of Xi'an Polytechnic University*
[*]*clj9998@126.com*
[a]*lsd819@163.com*

ABSTRACT
In this paper, seven listed cross-border e-commerce companies are selected as samples to build the economic management evaluation index system, which consists of four aspects, profitability, solvency, operating ability and growth ability. Furthermore, analytic hierarchy process (AHP) is used to evaluate the economic management, analyse the constraints, and inspire corresponding suggestions for further improvement.

Keywords: *Economic Management, E-commerce, Profitability, Solvency, Analytic Hierarchy Process (AHP).*

1. INTRODUCTION

The economic management evaluation index system, which consists of four aspects, profitability, solvency, operating ability and growth ability is based on the data from 7 selected sample companies. The four initial indicators could expand to 12 secondary indicators, including return on equity, gross profit margin on sales, net interest rate, current ratio, quick ratio, asset-liability ratio, total asset turnover, inventory turnover rate, receivable turnover, main business growth rate, net profit growth rate, and main profit growth rate.

By comparing the scientific data, the suggestions for future improvement will be given.

2. EVALUATION INDEX SYSTEM

2.1 Profitability Index

The primary goal of such companies is to pursuit the profit maximization during their operation and development, and profitability could essentially reflect their economic management. In this paper, the return on equity, gross profit margin on sales and net profit margin on sales are selected to measure the profitability of these enterprises.

a. Return on equity: comprehensively reflects the return on investment of listed cross-border e-commerce companies. The higher index means the greater return generated by the investment, while the lower the index is, the weaker the profitability is [3].

b. Gross profit margin on sales: reflects the gross profit generated by the minimum measuring unit of goods, in other words, gross margin on sales is equal to revenue from sales minus cost of sales. A higher gross margin on sales indicates profitable prospects of the company in the future.

c. Net profit margin on sales: reflects the profit contained in the minimum measuring unit of goods which manifests the ultimate profitability of the commodity.

2.2 Solvency Index

The solvency of companies is aimed to reflect their economic status and operational security, and importantly indicates the ability to bear and guarantee the repayment of maturing debts. For listed enterprises of cross-border e-commerce, liability for operation is a successful way to look for outside support for future scale up and excess returns [1]. In this paper, current ratio, quick ratio and asset-liability ratio are selected to measure the solvency of these companies.

a. Current ratio: the short-term solvency of listed cross-border e-commerce enterprises can be clearly compared by this index, accord with the principle of practicality and appropriateness. Theoretically, the lower the liquidity ratio is, the weaker the solvency of

S. A. R. Khan et al. (Eds.): ICMSSE 2022, AHCS 12, pp. 651–657, 2023.
https://doi.org/10.2991/978-94-6463-056-5_95

the enterprise is. However, for the developing companies in the capital market, the recent current ratio should be determined according to their own situation. The excessively high current ratio means that these companies have a large number of idle funds without excellent asset management, may cause greater opportunity cost, which could harm the operation and development of the companies. Conversely, the excessively high current ratio means that listed enterprises have poor liquidity of assets and low liquidity which indicates there may be a failure to make clear the short-term debt on time and greatly increases the economic risk of the company.

b. Quick ratio: is studied based on quick assets and current liabilities. Quick assets are highly liquid, such as cash and marketable securities with high convertibility. The quick ratio measures whether a company's current assets are immediately available to repay current liabilities. The company has sufficient ability to repay short-term debts if the index is greater than 1.

c. Asset-liability ratio: can explain the long-term solvency of listed companies, that is, the ratio of total liabilities to total assets. In other words, it represents the part of total assets provided for creditors. From the perspective of creditors, the higher asset-liability ratio is more conducive to the protection of their rights and interests, and the company could avoid more risks for them, too. From the perspective of the company, it is expected to make full use of economic leverage with the help of debt financing tools. The company expects a higher asset-liability ratio facing no economic risk actually [2].

2.3 Operating Ability Index

There are several steps to analyse the operating capacity of cross-border e-commerce companies. First, the hidden problems existing in the process of asset utilization should be found. Second, the profitability and solvency of the company should be supplemented. Third, certain reference for investors should be provided, explaining the operating conditions for the investors. Finally, the guidance for companies to formulate corresponding business strategies and improve their economic management should be given. This paper adopts indicators such as total asset turnover, inventory turnover and receivable turnover to represent the operating capacity [5].

a. Total asset turnover: By this index, the management of asset allocation and use efficiency could be analysed, furthermore, the total assets operation efficiency and change between current and past could be reflected, which is beneficial to find the gap on the asset utilization compared with other enterprises of the same type, promote its potential and profits, expand the product market share and improve the asset utilization efficiency.

b. Inventory turnover: The high level of the inventory liquidity of companies means the high efficiency of the inventory and self-owned funds turnover, and then shows the strong economic management of enterprises.

c. Receivable turnover: reflects the liquidity and management efficiency of accounts receivable. The enterprise's liquidity will decrease If the receivables cannot be received within the specified period. The normal production and operation activities of enterprises will be further affected. On the contrary, if the receivables are paid off in time, the use efficiency of funds will be greatly improved, and the economic management will also be improved. Meanwhile, this index is related to the company’s economic status.

2.4 Growth Ability Index

The growth capacity explains the development direction and process of international e-commerce companies, which includes the expansion of company scale, improvement of profit and owner's equity, and the growth of asset, profitability and market share. Facing with stiff competition in this industry meanwhile, enterprises must enhance their overall strength, which is related to the growth capacity, to maintain the sustainable development. This paper evaluates the company's growth capacity by the following three indicators.

a. Main business growth rate: The growth rate of main business income is comprehensive to measure the growth status of multinational e-commerce companies. The high level of this index shows the market requirement is great and the business expansion is prominent. The growth of the business can be analysed and evaluated by the proportion of year-on-year growth of the main business income in the current period, which also manifests the status and influence of the company in this industry [6].

b. Net profit growth rate: as a fundamental index, shows the earnings growth. The high net profit growth rate explains the dominant position of the company in the market competition. Otherwise, the growth capacity is depressing if this index is low.

c. main profit growth rate: reflects the increasement of total annual profit and the measurement of the performance, and can also be used to evaluate the development ability and profitability. Under the circumstance that the annual total profit increases greatly, but the main business profit keeps unchanged or even decreases, the company is not competitive accordingly [4].

3. EVALUATION OF ECONOMIC MANAGEMENT

3.1 Data Selection

The data of economic statement are the crucial support to evaluate the economic management, which requires the authenticity and objectivity, therefore the selected data and the screening methods should be scientific.

The data used in this paper are all from the economic statements disclosed by listed companies, which conform to the criterion. In view of the widespread emergence of international e-commerce enterprises in recent years, the data will contain the annual reports, yearbooks and economic statements. The data selection is based on the economic data of 2021, to guarantee the comparability and the consistency of data statistics.

3.2 Data Processing

The sample companies are Anker Innovations Co., Ltd, KJTONG Co., Ltd, Tianze Information Industry Inc., Huading Co., Ltd, Lianluo Co., Ltd, Guangbo Group Stock Co., Ltd, LightInTheBox Holding Co., Ltd.. The paper focuses on the horizontal comparative analysis of each company's economic management.

Table 1 Basic information of 7 companies Unit: %

	Anker Innovations	KJTONG	Tianze	Huading	Lianluo	Guangbo	LightInTheBox
Gross profit margin on sales	35.72%	16.81	7.24	20.54	14.84	11.94	46.34
Net interest rate	8.15	7.68	-153.40	-7.12	-1.87	0.64	3.02
Return on equity	16.23	-0.70	-151.26	-15.45	-23.15	2.31	29.27
Current ratio	3.83	1.10	0.83	1.37	0.88	1.45	0.76
Quick ratio	2.71	0.93	0.53	0.92	0.65	1.14	0.65
Asset-liability ratio	27.52	62.76	68.73	38.32	80.37	54.95	67.30
Total asset turnover	1.63	0.38	0.61	1.30	1.62	1.64	2.52
Inventory turnover rate	4.43	3.73	2.21	6.60	10.24	11.52	21.85
Receivable turnover	12.83	13.91	2.86	10.16	15.46	5.38	304.82
Main business growth rate	34.43	-46.29	-64.91	-11.36	2.43	9.64	12
Net profit growth rate	14.71	130.79	-209.37	-225.62	-249.89	107.66	29.37
Main profit growth rate	8.48	148.98	-258.50	-408.38	-192.94	106.11	-517.95

3.3 The weight of each indicator

3.3.1 The construction of the index judgment matrix

The core of analytic hierarchy process (AHP) is the pairwise comparison. Based on the expert scoring and questionnaire survey, the judgment matrix of index is constructed, as shown in table 2.

Table 2 Initial Index: each index's weight and approximate maximum eigenvalue

index	profitability	Solvency	Operating ability	growth ability	ω_1	λ
Profitability	1	1/2	3	1/2	0.210	
Solvency	2	1	3	1/2	0.295	
operating ability	1/3	1/3	1	1/2	0.112	4.215
growth ability	2	2	2	1	0.384	

The results tested for consistency are as follows,

$$CI=(\lambda-n)/(n-1)=0.215/3=0.072 \quad (1)$$

Check the Table RI. When n=4 RI=0.89

$$CR = CI/CR \quad CR = 0.072/0.89 = 0.080 \quad (2)$$

Since CR is less than 0.1, the matrix consistency meets the requirements.

Table 3 Secondary Index: each profitability index's weight and approximate maximum eigenvalue

profitability index	Return on equity	gross profit margin	net interest rate	ω_2	λ
Return on equity	1	4	3	0.634	
Gross profit margin	1/4	1	1	0.174	3.009
Net interest rate	1/3	1	1	0.192	

The results tested for consistency are as follows,

$$CI= (\lambda-n)/(n-1)=0.009/2=0.005 \quad (3)$$

Check the Table RI. When n=3 RI=0.52

$$CR=CI/CR=0.005/0.52=0.010<0.1 \quad (4)$$

Since CR is less than 0.1, the matrix consistency meets the requirements.

Table 4 Secondary Index: each Solvency index's weight and approximate maximum eigenvalue

Solvency index	current ratio	quick ratio	asset-liability ratio	ω_3	λ
current ratio	1	1/3	1/2	0.169	
quick ratio	3	1	1	0.443	3.019
asset-liability ratio	2	1	1	0.387	

The results tested for consistency are as follows,

$$CI=(\lambda-n)/(n-1)=0.019/2=0.010 \quad (5)$$

Check the Table RI. When n=3 RI=0.52

$$CR=CI/CR=0.005/0.52=0.010<0.1 \quad (6)$$

Since CR is less than 0.1, the matrix consistency meets the requirements.

Table 5 Secondary Index: each operating ability index's weight and approximate maximum eigenvalue

operating ability index	total asset turnover	inventory turnover rate	receivable turnover	ω_3	λ
total asset turnover	1	4	1/2	0.345	3.053
inventory turnover rate	1/4	1	1/4	0.109	
receivable turnover	2	4	1	0.547	

The results tested for consistency are as follows,

$$CI=(\lambda-n)/(n-1)=0.053/2=0.027 \quad (7)$$

Check the Table RI. When n=3 RI=0.52

$$CR=CI/CR=0.027/0.52=0.052<0.1 \quad (8)$$

Since CR is less than 0.1, the matrix consistency meets the requirements.

Table 6 Secondary Index: each growth ability index's weight and approximate maximum eigenvalue

growth ability index	main business growth rate	net profit growth rate	main profit growth rate	ω_4	λ
main business growth rate	1	1/4	1	0.160	3.006
net profit growth rate	4	1	5	0.691	
main profit growth rate	1	1/5	1	0.149	

The results tested for consistency are as follows,

$$CI=(\lambda-n)/(n-1)=0.006/2=0.003 \quad (9)$$

Check the Table RI. When n=3 RI=0.52

$$CR=CI/CR=0.003/0.52=0.006<0.1 \quad (10)$$

Since CR is less than 0.1, the matrix consistency meets the requirements.

3.3.2 Weight of index at each level

The approximate maximum approximation eigenvalues calculated by each index meet the requirements with good consistency. The weights of each index are shown in Table 7.

Table 7 The weights of each index

The weight of initial index	The weight of secondary index
profitability (0.210)	return on equity (0.634)
	gross profit margin on sales (0.174)
	net interest rate (0.192)
solvency (0.295)	current ratio (0.170)
	quick ratio (0.443)
	asset-liability ratio (0.387)
operating ability (0.112)	total asset turnover (0.344)
	inventory turnover rate (0.109)
	receivable turnover (0.547)
growth ability (0.383)	main business growth rate (0.160)
	net profit growth rate (0.691)
	main profit growth rate (0.149)

3.4 Standardization of index

Each index cannot be directly compared on account of different dimensions. The original data will be converted into 0 to 1 by extreme method so as to normalize the dimension and magnitude. The steps of index standardization are shown below.

Calculate the maximum value Max (x) and minimum value Min(x) of each data group;

Calculate the difference value between Max(x) and Min(x);

Subtract the Min(x) and divide by the difference value for each data;

$$x' = \frac{x - \min(x)}{\max(x) - \min(x)} \quad (11)$$

Output the standardized values of each index.

3.5 Economic management evaluation of listed multinational e-commerce companies

The economic management of 7 samples is comprehensively evaluated according to the index. The results are shown in Table 8.

Table 8 Evaluation of Economic management

Name	profitability	solvency	operating ability	Growth ability	synthesis score	Ranking
Anker Innovations	0.907	0.612	0.232	0.756	0.687	1
KJTONG	0.763	0.358	0.028	0.870	0.603	4
Tianze	0	0.305	0.037	0.131	0.134	7
Huading	0.710	0.192	0.186	0.154	0.286	6
Lianluo	0.664	0.418	0.267	0.133	0.344	5
Guangbo	0.744	0.363	0.259	0.908	0.641	3
LightInTheBox	0.994	0.316	0.971	0.631	0.653	2

4. CONCLUSION

In terms of profitability, LightInTheBox and Anker Innovations are strongly innovative, while KJTONG, Huading, Lianluo and Guangbo are in the middle level, and Tianze's profitability is relatively weak. The return on equity and gross profit margin on sales of LightInTheBox is remarkable, indicating that the enterprise has the best investment return.

In the respect of solvency, Anker still performs best. And the solvency of KJTONG, Tianze, Guangbo and LightInTheBox is at a medium level, while Huading is weaker in this aspect. None of these companies has a high level of solvency which is worth mentioning. In general, solvency could be enhanced by improving cash liquidity and speed of fund.

In terms of operating ability, LightInTheBox has the strongest operating ability. It not only has a good performance in profitability, but also shows a fast asset turnover speed and a high asset utilization ratio in operating ability. KJTONG and Tianze have the weakest operating ability, which is mainly caused by low total asset turnover and inventory turnover, indicating poor asset utilization.

As for growth ability, KJTONG and Guangbo perform well, among which net profit growth rate, and main profit growth rate of KJTONG is the most outstanding. Anker and LightInTheBox are intermediate, while Tianze and Lianluo are with weak growth ability.

Analyzing from the comprehensive evaluation results, Anker Innovations has the strongest economic management. What's more, three companies, KJTONG, Guangbo and LightInTheBox, obtain the synthesis score also excellently, which indicates that the overall economic management of the market is relatively intense. However, the operating ability of these 7 enterprises is commonly low. It is an obstacle to improve working capital in warehousing, logistics and inventory management for e-commerce enterprises. In the future, the operating ability should be put more focus.

5. SUGGESTIONS

For companies with excellent economic management, it is necessary to improve their growth ability to maintain their advantage positions. Enterprises with medium economic management need to enhance their operating ability, solvency and growth ability. For enterprises whose economic management have no advantages, they

need to improve their profitability and ensure their economic viability.

Focus on the growth ability and improve the overall management.

According to the results, the growth ability has the greatest impact on their management out of all the index, and the weight of the impact is 0.384. On the basis of the industry's characteristics, the blueprint should pay attention to market expansion and scientific research and innovation. Companies could obtain funds through financing, expand operating ability and gain a larger market share, so as to increase the growth ability.

Allocate economic resources rationally and balance short-term and long-term solvency.

The solvency includes short-term solvency and long-term solvency. By comparing the index such as liquidity ratio, quick ratio and asset-liability ratio of 7 companies, the following problems are listed: Current ratios and asset-liability ratios move in opposite directions, that is, a large liquidity ratio always attends with a small asset-liability ratio, and vice versa, which suggests that most companies cannot guarantee both short-term and long-term solvency.

First, inventory management is supposed to be strengthened. Production and sales ought to be organized reasonably. In the context of enough production and sales, enterprises should reduce the in-process inventory and raw materials. Next, it's necessary to make long-term investment and purchase assets scientifically. A comprehensive forecast is required before the investment, along with the risk and income analysis. In order to prevent fixed assets in idle and capital occupied, which damages the economic management, companies should combine the purchase of assets and the actual demand.

Focus on the profitability.

Only by ensuring the continuous profitability can these profit-oriented companies remain their economic management. The profit pattern and business philosophy have differed from what in the past influenced by the e-commerce trend. Considered the traditional methods can no longer meet the needs of modern e-commerce, it's imperative to constantly improve the profitability by reducing the cost through various ways, such as the better construction of logistics system and after-sales service. In the current market situation, competition among enterprises is becoming increasingly fierce. As an online transaction mode, e-commerce is required to ensure the quality of product and service, gain the customer trust and market share, and pursuit more profit.

Strengthen the operating ability and the capital turnover.

Cross-border e-commerce enterprises develop on the Internet platform to provide goods or services. These companies have increased working capital in warehousing, logistics, inventory management and other aspects compared with traditional industries. Consequently, the operating ability is of importance. To improve the capital turnover and reduce inventory, the sales funds can be quickly collected by promotion strategies. In addition, adequate management system is beneficial for enhancement of economic management in daily business activities.

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