

Comprehensive Analysis of Profitability of Modern Logistics Enterprise

An Example of Transportation, Warehousing, Postal Service Listed Company

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Abstract—Modern logistics enterprise is a collection of transportation, storage, handling, packaging, circulation processing, and distribution. Factor analysis method and the financial data of modern logistics company, such as transportation, warehousing and postal service, has been used to comprehensively analyse the profitability of 73 listed companies. The results show that the comprehensive profitability of transportation industry is stronger than others, and the stronger transportation enterprises are mainly located in coastal and economically developed areas, such as Guangdong, Hainan, Fujian, Shandong, Jiangsu, Shanghai, and so on.

Keywords-modern logistics enterprises; profitability; comprehensive analysis; KMO test; Bartlett sphericity test

I INTRODUCTION

Modern Logistics Enterprises is based on traditional logistics enterprises, brings in high technology, such as information, to meet the logistics needs of customers, and has functions of transportation, storage, handling, packaging, circulation processing, distribution, etc. Logistics distribution mode of modern logistics enterprises has characteristics of informatization, automation, modernization, socialization, intelligent, rationalization and simplistic. This can reduce inventory of production enterprises, accelerate the capital turnover, improve the efficiency of logistics, reduce logistics cost, and stimulate the social demand.

II FINANCIAL EVALUATION INDEX OF PROFITABILITY OF MODERN LOGISTICS ENTERPRISE

A. Index Selection

Corporate profitability can be reflected from multiple perspectives and multiple profiles. The selection of index should follow the principle as comprehensive, scientific, comprehensive, systematic, operability, and dynamic and static combination to comprehensively and correctly reflect the profitability of enterprises. In this study, 10 indexes have been selected, including Netprfrt、ROA、ROE、ROAgrrt、Netassgrrt、Netprfgrrt、Currat、Totassrat、Currt and Qckrt.

B. Sample Index Data Source

Since the 2013 annual report data was reported in late April or early May in 2014, this study selected all listed companies of modern logistics enterprises as sample, acquired data from RESSET for three consecutive years from 2010 to 2012. ST and listed company that the data is incomplete was rejected. The data is analysed by SPSS 19.0.

III FACTOR ANALYSIS OF PROFITABILITY OF MODERN LOGISTICS ENTERPRISE NONDIMENSIONALIZED THE ORIGINAL DATA FIRST.

A. KMO and Bartlett sphericity test.

KMO value was used to verify the applicability of factor analysis (see Table 1).

TABLE I. KMO AND BARTLETT'S TEST

		20	20	20
		10	11	12
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.753	0.739	0.789
Bartlett's Test of Sphericity	Approx. Chi-Square	75.05	72.8	82.65
	df	46	46	46
	Sig.	0.000	0.000	0.000

KMO values were respectively 0.753, 0.739, 0.789 from 2010 to 2012, in line with the requirements of factor analysis and concomitant probability of Bartlett sphericity test was 0.00, $p < 0.05$, which showed that indexes used in the study had strong correlation, and the factor analysis was effective.

B The Determination of Common Factor

The result of factor analysis of were presented in Table 2, Table 3, Table 4.

TABLE II. TOTAL VARIANCE EXPLAINED OF FACTOR ANALYSIS IN 2010

Component	Initial Eigenvalues			Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
1	28.360	28.360	28.360	28.360	28.360	28.360	28.360	28.360	28.360
2	24.939	24.939	53.300	24.939	24.939	53.300	24.939	24.939	53.300
3	15.600	15.600	69.000	15.600	15.600	69.000	15.600	15.600	69.000
4	11.030	11.030	80.630	11.030	11.030	80.630	11.030	11.030	80.630
5	8.005	8.005	88.635						
6	5.509	5.509	94.144						
7	3.247	3.247	97.391						
8	2.215	2.215	99.596						
9	0.390	0.390	99.986						
10	0.110	0.110	100.000						

1	28.360	28.360	28.360	28.360	28.360	28.360	28.360	28.360	28.360
2	24.939	24.939	53.300	24.939	24.939	53.300	24.939	24.939	53.300
3	15.600	15.600	69.000	15.600	15.600	69.000	15.600	15.600	69.000
4	11.030	11.030	80.630	11.030	11.030	80.630	11.030	11.030	80.630
5	8.005	8.005	88.635						
6	5.509	5.509	94.144						
7	3.247	3.247	97.391						
8	2.215	2.215	99.596						
9	0.390	0.390	99.986						
10	0.110	0.110	100.000						

TABLE III. TOTAL VARIANCE EXPLAINED OF FACTOR ANALYSIS IN 2011

Component	Initial Eigenvalues			Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
1	26.128	26.128	26.128	26.128	26.128	26.128	23.260	23.260	23.260
2	24.071	24.071	50.198	24.071	24.071	50.198	21.831	21.831	45.091
3	19.439	19.439	69.637	19.439	19.439	69.637	20.513	20.513	65.604
4	12.222	12.222	81.855	12.222	12.222	81.855	16.515	16.515	81.855
5	8.042	8.042	89.898						
6	5.080	5.080	94.977						
7	2.277	2.277	97.764						

Component	Initial Eigenvalues			Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
8	2.019	2.019	99.863						
9	0.088	0.088	99.944						
10	0.056	0.056	100.000						

TABLE IV. TOTAL VARIANCE EXPLAINED OF FACTOR ANALYSIS IN 2012

Component	Initial Eigenvalues			Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
1	33.338	33.338	33.338	33.338	33.338	33.338	32.732	32.732	32.732
2	22.783	22.783	56.121	22.783	22.783	56.121	21.822	21.822	54.554

	Initial Eigenvalues			Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	1	16	73.0	1	16	73.0	1	18	73.0
3	.	.9	38	.	.9	38	.	.4	38
	6	17		6	17		8	84	
	9			9			4		
	2			2			8		
4	1	9.	82.9	1	9.	82.9	1	9.	82.9
	.	.88	18	.	.88	18	.	.88	18
	1	0		1	0		3	0	
	8			8			2		
5	8			8			5		
	.	6.	89.2						
	6	28	01						
	2	3							
6	8								
	.	5.	94.2						
	5	00	06						
	0	5							
7	1								
	.	4.	98.2						
	4	02	32						
	0	6							
8	3								
	.	1.	99.4						
	1	22	53						
	2	1							
9	2								
	.	.3	99.8						
	0	69	22						
	3								
10	7								
	.	.1	100.						
	0	78	000						
	1								
8									

We can see that, four eigenvalues of common factors were greater than 1.00, and the cumulative variance contribution rates of them for three consecutive years were 80.616%, 81.855% and 82.918% respectively,

which indicated that these four common factors could describe the profitability of modern logistics enterprise comprehensively.

C Comprehensive Analysis of the Profitability of Modern Logistics Enterprise

Component score coefficient matrix for three years were shown in Table 5. Four common factors are operational management capacity, profitability, debt repayment capacity and capacity of future development. We could see that there was a cross between different factors in different degrees, these factors reflected the comprehensive profitability of listed company, and using any common factor alone could not make a comprehensive analysis of the profitability of listed companies in modern logistics enterprise.

TABLE V. COMPONENT COEFFICIENT MATRIX FROM 2010 TO 2012

	2010				2011				2012			
	1	2	3	4	1	2	3	4	1	2	3	4
Net prfrit	0	-	0	0	.	.	-	-	.	.	.	.
	.	0	.	.	2	6	.	.	2	2	7	2
	8	.	1	2	6	2	6	0	1	9	3	9
	1	0	6	2	9	1	2	1	9	6	9	1
RO A												
	0	0	0	0	-.	.	-	-	.	.	-	.
	.	.	.	.	1	7	.	.	9	0	.	8
	5	4	0	6	2	6	4	1	4	8	0	4
RO E	4	2	3	0	4	4	2	4	5	9	1	5
							5	1			7	
	-	0	0	-	-.	.	-	-	.	-	-	.
	0	.	.	0	4	4	.	.	9	.	.	7
RO E	.	8	4	.	6	6	0	5	0	1	1	9
	1	5	6	1	5	2	4	9	7	1	7	7
	2			2			9	1		8	8	

RO	-	0	0	-	-	.	.	.	.	-	.	.
Ag	0	.	.	0	5	5	4	4	1	.	4	1
rt	.	8	4	.	2	9	3	0	8	8	3	9
	1	6	5	1	7	9	7	6	6	4	9	6
	1			4						3		
Net	0	0	-	-	-	.	.	.	.	-	.	.
assg	.	.	0	0	5	5	4	4	1	.	4	1
rrt	7	2	.	.	2	9	3	0	9	8	4	8
	6	3	4	1	8	5	6	7	1	3	0	1
			1	7						6		
Net	0	-	0	-	.	.	.	-	.	.	.	.
prfg	.	0	.	0	7	3	5	.	4	1	4	5
rrt	4	.	2	.	1	7	0	2	7	5	7	7
	7	1	9	6	6	7	6	3	4	6	8	4
		1		1				7				
Curr	0	-	0	0	.	.	.	-	.	.	-	.
at	.	0	.	.	7	3	5	.	8	1	.	8
	3	.	2	3	0	5	4	2	7	2	3	5
	2	3	6	3	1	9	5	3	5	5	2	5
		2						7			3	
Tota	0	-	0	0	.	.	-	.	.	.	.	.
ssrat	.	0	.	.	2	4	.	1	6	3	0	5
	4	.	5	1	4	0	5	1	8	6	3	8
	8	3	9	6	9	8	5	3	0	9	6	0
		5					9					
Curr	0	0	-	0	.	-	-	-	-	.	.	-
t	.	.	0	.	3	.	.	5	.	6	3	.
	0	7	.	2	3	1	3	1	1	1	4	2
	6	2	4	0	6	1	3	3	8	0	7	1
			8			2	4		5			5
Qck	0	0	-	-	.	.	.	-	-	.	.	-
rt	.	.	0	0	7	2	0	3	.	4	5	.
	8	1	.	.	5	4	8	6	1	5	2	1
	6	1	2	3	6	7	2	5	0	9	3	2
			4	7					4			4

We use the variance contribution rates as a weight for the weighted average calculation to carry on the comprehensive analysis and evaluation of the profitability of modern logistics enterprise. The top 15 of 73 in the comprehensive factor scores for three consecutive years were showed in Table 6. Most of them were in transportation (road, rail, aviation, marine transportation), and were mainly located in coastal and economically developed areas, such as Guangdong, Hainan, Fujian, Shandong, Jiangsu, Shanghai, which indicated that the modern logistics enterprises in marine transportation had the strongest comprehensive profitability.

TABLE VI. THE COMPARISON OF MODERN LOGISTICS ENTERPRISE PROFITABILITY

Rank	2010		2011		2012	
	1	Hainan Strait Shipping	1967	Wuhu Port Storage	3522	Tianjin Marine Shipping
2	Shenzhen Yantian Port	169	Hainan Strait Shipping	154	Shandong Airlines	1087
3	Hubei Yichang Transportation Group	0820	Zhongchu developme nt	0830	Bohai Ferry	0901
4	Shandong Airlines	0789	Shandong Airlines	0474	Zhangjia gang Bonded Technology	0723

	Citroen Railway Container Logistics	7 8 1	Hubei Yichang Transportati on Group	4 0 3	Fujia Longzho u transpo rt	5 5 5
6	Xiamen International Airport	0 7 2 7	Fujian Longzhou t ransport	0 3 6 9	Wuhu Port Storage	0 4 7 0
7	China Eastern Airlines	0 6 7 2	Jiangsu Aoyang Sh unchang	0 3 6 7	Zhongch u developm ent	0 4 6 0
8	China Southern Airlines	0 6 2 2	Citroen Railway Container Logistics	0 3 0 2	Beihai Port	0 4 3 0
9	China International Aviation	0 5 6 0	Beihai Port	0 2 7 5	Daqin Railway	0 4 2 4
10	Bohai Ferry	0 4 8 9	North Freeway	0 2 4 2	Jiangsu Aoyang Shunchan g	0 3 9 0
11	Zhuhai Hengji Daxin international chemical storag e	0 4 5 7	China Eastern Airlines	0 1 7 6	Xiamen Internatio nal Airport	0 3 8 6
12	Jiangsu Aoyang Shunc hang	0 4 4 4	Sinotrans Air Transportat ion Developme nt	0 1 7 2	China Eastern Airlines	0 3 5 1

13	Modern Investment	0 4 4 3	Xiamen Port Developme nt	0 1 5 8	Shanghai Shentong Metro	0 3 1 7
14	Zhangjiagang Bonded Technology	0 4 3 2	Shanghai Shentong Metro	0 1 3 8	Xiamen Port Develop ment	0 2 6 5
15	Shenzhen Chiwan Wharf	0 4 2 2	Jiangxi Changyun	0 1 3 1	Jiangxi Changyu n	0 2 1 9

IV CONCLUSIONS

From the results of factor analysis for three consecutive years(from 2010 to 2012), we can conclude that the comprehensive factors affecting the profitability of modern logistics enterprise include four aspects (ie., operational management capacity, profitability, debt repayment capacity and capacity of future development).Most of modern logistics enterprises that have the stronger profitability were in transportation (road, rail, aviation, marine transportation), and the strongest is in marine transportation. They are mainly located in coastal and economically developed areas, such as Guangdong, Hainan, Fujian, Shandong, Jiangsu, Shanghai , which shows that regional factors is one of the main factors affecting the profitability of modern logistics enterprises.

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