African Journal of Business Management Vol. 6(36), pp. 9989-10002, 12 September, 2012
Available online at http://www.academicjournals.org/AJBM
DOI: 10.5897/AJBM11.1952
ISSN 1993-8233 ©2012 Academic Journals

Full Length Research Paper

The composing elements and development path of China logistics enterprise competitiveness from a life cycle point of view

Wei-hua Liu[1]*, Bing-lian Liu[2], Wei-bo Chen[2] and Hai-peng Wang[2]

[1]School of Management, Tianjin University, Tianjin, China.
[2]Modern Logistics Research Center, Nankai University, Tianjin, China.

Accepted 26 September, 2011

The research about the composing elements and development path of logistics enterprise competitiveness (LEC) will improve the logistics services level. Based on the survey of China's logistics enterprises, the enterprises are divided into four types included platform logistics companies, universal logistics companies, professional logistics companies and supply chain management companies. The paper analyzes the composing elements of LEC from the dimension of corporate capabilities, corporate resources and dynamic mechanism, and the life cycle of the enterprises are combined with four stages, which are initial stage, growth stage, maturity stage and regeneration stage. In addition, the research analyzes the composing elements and development path of China LEC. SPSS software and factor analysis model are employed to analyze the survey data, which concluded the important impact of the elements to LEC. The research compared the difference of the composing elements of company's competitiveness between four types of logistics enterprises. Furthermore, the development paths of the corporate capabilities, corporate resources and dynamic mechanism in companies' different stages were compared. The results show that managers must understand that there are some differences in the composing elements of LEC at different life cycle stage. Therefore, LEC should be developed dynamically. The composing elements of LEC should be cultivated according to different types of logistics enterprise and different life cycle stage.

Key words: Logistics enterprises competitiveness, composing elements, development path, empirical research.

INTRODUCTION

In recent years, China logistics enterprises have been improving the logistics management and logistics services. These enterprises play an important role in accelerating the development of the logistics industry. According to the data of "top 50 Chinese logistics enterprises" which is released by the China Federation of Logistics and Purchasing, the 50th logistics company's turnover is 360 million in 2005, this value has been increased to 1.22 billion in 2010 demonstrating a 35.7% year-on-year increase.

In 2010, the 1st China logistics company had a turnover of 104.6 billion, which represents the rising trend of the China's logistics company's competitiveness. Based on this background, the empirical research on the composing elements and development path of China logistics enterprise competitiveness (LEC) will help to understand and manage China logistics industry better.

According to the difference of business scopes, the logistics companies can be divided into platform logistics companies, universal logistics companies, professional logistics companies and supply chain management companies from the view of the customer style and the integration of logistics service. The platform logistics companies is the companies that provide the large-scale

*Corresponding author. E-mail: lwhliu@yahoo.com.cn.

and universal services which include port enterprises, railway logistics enterprises, highway freight station, air cargo station, distribution center, logistics center and logistics park companies which provide the platform-based services and station facilities.

The universal logistics companies include transport enterprises, warehousing enterprises and integrated logistics enterprises. The professional logistics companies often focus on the personalized and professional service which is suitable to a certain industry, which includes automotive logistics companies, medical logistics companies and appliance logistics companies. The supply chain management companies could integrate and optimize the logistics flow, information flow and capital flow of the supply chain. The research analyzes the composing elements and development path of four types of LEC in the view of the four development stages based on the survey data.

LITERATURE REVIEW

The enterprise competitiveness is a comprehensive capabilities system that consists of the strategic capability, development capability, resources integrate capability and so on. These capabilities could make the enterprise have a good performance on customer service, corporate earnings and long-term development (Catherine and Pervaiz, 2007). In recent years, so many researches of LEC have been conducted by domestic and foreign scholars. Most of the researches concentrated in the field of logistics competitiveness content, logistics competitiveness evaluation and logistics competitiveness cultivation.

The definition and composing elements of LEC

A clear description or precise definition about the logistics company's competitiveness content is very important, which will affect the reliability and rationality of the research. The concept of LEC is derived from the company's competitiveness, and it also has some unique characteristics about logistics industry. Prahalad and Hamel (1990) proposed a theory of core competitiveness of enterprises, in which they concluded that the competitiveness should be valuable, hard to imitation and ingenious. Barney (1991) regarded the unique resources as the source of enterprise competitiveness, and defined the competitiveness in an angle of the resources. Snyder (1992) thought that the competitiveness of enterprises is the source of the enterprise competitive advantage, and it is a capability that will bring a long-time competitive advantage to the company. The three scholars' views have gradually become the main views of enterprise competitiveness.

The enterprise competitiveness is a comprehensive capability system that consists of the strategic capability, development capability, resources integrate capability and so on. These capabilities could make the enterprise have a good performance on customer service, corporate earnings and long-term development. Many scholars have researched the composing elements of LEC in different aspects. Richey and Daugherty (2007) conducted a research based on resource theory and the results demonstrated that the technological readiness and technological complementarities are two important capabilities for supply chain enterprises to improve the competitiveness. Feng and Zhao (2008) analyzed the concept of logistics capability from the perspective of customer satisfaction, and a model was built in which the method of marginal utility was used and found out when logistics capability met a certain condition the customer satisfaction was maximized.

Mo and Wang (2008) analyzed the concept of logistics capability from the perspective of logistics capability and financial performance. The data was collected from an empirical research of 74 logistics enterprises, and the results showed that: there are obvious positive correlations between logistics capability, service performance, and financial performance of logistics enterprises and there was also significant moderating effect of supply chain management strategy on the relationships between logistics capability and service performance, as well as logistics capability and financial performance. Qiao and Zhao (2008) brought out the third party logistics service capability maturity model (3PL-SCMM), and the model divided the company development cycle into five ranks. The key logistics capability of each rank was described in the research.

The evaluation of LEC

Many scholars conduct the research on the logistics competitiveness evaluation index system and method based on the research of the content and composing elements of the logistics company competitiveness. Han and Huang (2008) built a quantitative model to identify the life cycle stage of logistics enterprise's core competence based on the composing elements of logistics enterprise's core competence-core resources, organization elements and ability elements. Xiao and Chen (2008) designed a professional logistics evaluation model which suits the coal port logistics. Lu and Yang (2010) evaluated the performance of the logistics company from the aspects of innovation capability, customer response capability and flexible operation capability. The respondents' firms were divided into three groups using the cluster analysis model, and the result showed that the customer response and innovation capabilities-oriented firms had the best performance.

As for the evaluation model, there are analytic hierarchy process, multidimensional comprehensive

evaluation model, structural equation model, empirical analysis and so on. Shao et al. (2008) established a hybrid index overall evaluation method by applying the hierarchy analysis thought and fuzzy pattern recognition principles. This model has considered the quantitative and qualitative indexes of the evaluation index system, so it could objectively and truly reflect the evaluation object. Ding (2009) conducted a comprehensive evaluation model by integrating the threshold and importance analysis (TIA) approach, matrix analysis (MA) approach, and fuzzy multi-criteria decision making (FMCDM) approach to evaluate LEC, and the result turned out that the responsiveness to customer needs, safety, and value-added service are the three most important element for LEC. Mohamed and Gilbert (2010) assessed the role of flexibility in satisfying competitive opportunities while dealing with the supply chain uncertainties, and made an empirical case to test the model. Tan et al. (2007) analyzed the importance of the operations, flexibility and distribution elements in logistics capabilities, and the structure equation modeling (SEM) had been used to verify the hypothesis.

Though there are some differences about the evaluation index system and evaluation model, the scholars analyze the enterprise competitiveness from the perspectives of the organizational capability, innovation capability, flexible capability, customer responsiveness capability, technical level and have achieved some good results. Most of the existing research analyzes the company's competitiveness at a certain moment, and the research which is based on the whole life-cycle of the company is rather rare. Besides, the research based on the dynamic perspective has never been seen.

The cultivation of LEC

There are many researches on the cultivation of LEC, but most of them are qualitative research, only a few of them are based on empirical case. According to the characteristics of the multinational logistics enterprises, Canen (2004) proposed a viewpoint that the cultivation of LEC should be adjusted to the local cultural environment. They were of the opinion that the cultivation of LEC should be based on the multi-cultural integration. Esper et al. (2007) highlighted the importance of studying, in his opinion a good study system will contribute to the improvement of LEC. Using a theoretical framework based on the resource-based view of the firm, Sandberg (2011) elaborates the links between operational and dynamic logistics capabilities and sustainable competitive advantage, and he finds out that the IT system will enhance the development of LEC.

According to the literature review, we find that the research about the composing elements and development path of LEC is very rare, especially the research about the development path of LEC based on the analysis of the difference of the composing elements between four development life-cycle stages. Therefore, the research will analyze the composing elements of LEC, and then based on the survey data we try to explore the difference of the logistics company's competitiveness composing elements between four stages, so as to find out the development path of LEC.

General framework for the rest of this article is organized as follows. Subsequently, the paper analyzed the composing elements of LEC and the four different development stages of the company, so as to make a good foundation for the dynamic analysis of LEC. This was followed by a discussion about the survey, and then characteristic and the reliability of the survey was analyzed. Thereafter, the study compared the different composing elements of competitiveness between four types of logistics enterprises. More so, the study analyzed the development path of different stages. Finally, the main conclusions of this study are given and future research prospects are discussed.

THE COMPOSING ELEMENTS OF LEC AND THE DEVELOPMENT STAGES OF THE LOGISTICS ENTERPRISE

According to the dynamic capability theory (Teece et al., 1997; Luo, 2000; Zollo and Winter, 2002; Zoot, 2003; Catherine and Pervaiz, 2007), the enterprise competitiveness lies in organizational mechanisms, and it could adapt to the external environment, promote the reform, change and development of the enterprise. Therefore, we conduct that the competitiveness consists of the capabilities, resources and dynamic mechanism. The resources are the basis, the capabilities are the subject, and the dynamic mechanism is used to adapt to the external environment, so as to accumulate the resources and capabilities and promote the development of the enterprises.

Drawing on the existing research of the composing elements of LEC (Lai, 2004; Richey and Daugherty, 2007), we think that LEC is consist of corporate capabilities, corporate resources and dynamic mechanism, and each category of elements is consist of several sub- elements, as shown in Table 1.

Haire (1959) regarded the development of organization as the growth of organism. He thought that there are obvious growth curve and cyclical phenomenon in the whole life cycle of organization, and the management level in enterprises has become the bottlenecks to the development of the enterprises. According to the existed studies, Leontiades (1980) and Cameron and Whetten (1981) think it is common and suitable to divide the company's life cycle into initial stage, growth stage, maturity stage and regeneration stage. In different stage, there are different main opportunities, challenges and environment for companies, as a result, the composing

Table 1. The composing elements of LEC.

The first layer of elements	The second layer of elements	The third layer of elements	The explain of the third layer elements
Corporate capability	Main capabilities	Entrepreneur capability	Professional dedication, risk awareness and organizational coordination ability of the entrepreneur
		Learning capability	The capabilities of getting, absorbing and using knowledge
		Innovation capability	Innovation awareness, innovation investment, innovation organizational capability and innovation support capability
	Strategic capability	Strategic capability	Strategic foreseeing capability, strategic positioning capability and strategic organizational capability
	Capabilities based on the value chain	Logistics solutions design capability	The solutions designing of capital investment, management system and staff numbers
		Logistics cost control capability	The foreseeing capability, decision capability and evaluation capability about the logistics cost
		Logistics quality control capability	The comprehensive involvement and management of the logistics service quality controlling, and continuous improvement capability
		Logistics resources integrated capability	The integrate capabilities of customer resource, operating resource and information resource
		Logistics risk control capability	The capabilities of risk warning, risk avoidance, risk response and risk summary
		Logistics marketing capability	The capabilities of collecting market information, sales planning, customer channels controlling and after-sales supporting
		Departmental coordination capability	The coordination capabilities of business sector, market sector, quality sector, information support sector, human resource sector and finance sector
		External interface coordination capability	The coordination capabilities of customers and enterprise, suppliers and enterprise, government and enterprise
		Human resource management capability	The human resource system planning, development mechanism, rewards and penalties system and promotion system
		Financial management capability	Financial analysis capability and corporate finance capability
Corporate resources	Static resources	Logistics facilities and equipment resources	Advanced equipments and the equipment scales
		Logistics information technology resources	Advanced logistics information technology
		Logistics network resources	The number, density and scale of the logistics network

Table 1. contd.

	Dynamic resources	Logistics customer resources	Customer number, customer brand and customer relationship
		Corporate financial resources	The registered capital, net assets and financing channels of the corporate
		Corporate human resources	Advanced staffs and managers
		Knowledge and information resources	the experience of management, the information network and the special information channel
		Corporate culture	The operation principle, cohesive force and shared vision of the corporate
Dynamic mechanism	Dynamic mechanism	Motive mechanism	Organization structure mechanism, decision mechanism and incentive and restraint mechanism
		Learning mechanism	The learning organization, the number of corporation training and the corporate learning system
		Reaction mechanism	The quick response to the customer, competitor and market

elements of LEC differs in every stage. We study in the development path of the whole life cycle based on the characteristics of every stage.

Based on the previous analysis, LEC could be divided into three dimensions, which includes enterprises type dimension, life cycle dimension and competitiveness element dimension, as shown in Figure 1. The composing elements of LEC in four types of logistics companies are different in each stage, and we will focus on the detailed research in the rest of the article.

THE SURVEY OF THE DEVELOPMENT PATH OF LEC

Questionnaire design and variable measurement

The research adopt a self-designed questionnaire, and the questionnaire design is based on the research of Shmuel and Noga (2003), Frenandez et al. (2000), Zahra and Neubaum (2003), Thomas and Harritngton (2003), Calantone and Cavusgil (2003), Lai (2004) and Wang (2010). The contents of the questionnaire includes the survey of LEC, the survey of the important impact of the capabilities, resources and dynamic mechanism to LEC, and the survey of the company's development stages. The survey adopts the Likert scoring method (Lai, 2004), that the score is between 1 and 7, and the respondents select the score of each question directly. According to the whole questionnaires, a statistical analysis is conducted.

Data sampling

The survey area

The survey research is ongoing from December 2010 to May 2011 funded by National Natural Science Foundation of China. The survey conducts in three ways in order to gain a comprehensive understanding of the competitiveness of China's logistics enterprises:

(1) The survey questionnaire had been emailed to 660 companies which spread different areas of China including northeast, northwest, north, central, east, south, southwest, and 58 questionnaires have been returned.
(2) 300 questionnaires were issued in the conference of "2011 China Logistics Development Conference", "2011 China Logistics University-Industry-Science Institute Partnership Conference" and "2011 Beijing Global Purchasing and Supply Chain Conference", and 54 questionnaires have been returned.
(3) 200 questionnaires were issued to the on-job postgraduates of Logistics in Tianjin University and Nankai University, and 124 questionnaires have been returned.

1160 questionnaires had been issued in all, and 236 questionnaires returned, of which 220 valid. The recovery rate is 20.34%, and the effective rate is 93.22%. The response rate of the east, south and north area is higher, and it is a result of the imbalance of economic development in different regions of China. The east, south and north area of China are the most economically developed regions, where the logistics enterprises is also relatively mature, so as to have a higher enthusiasm to returning questionnaire.

The characteristics of the survey data

According to the survey data, a statistics of the respondents' information has been done, as shown in Table 2.

The sampling unbiased test and the reliability test

In order to test whether the survey is representative, sampling

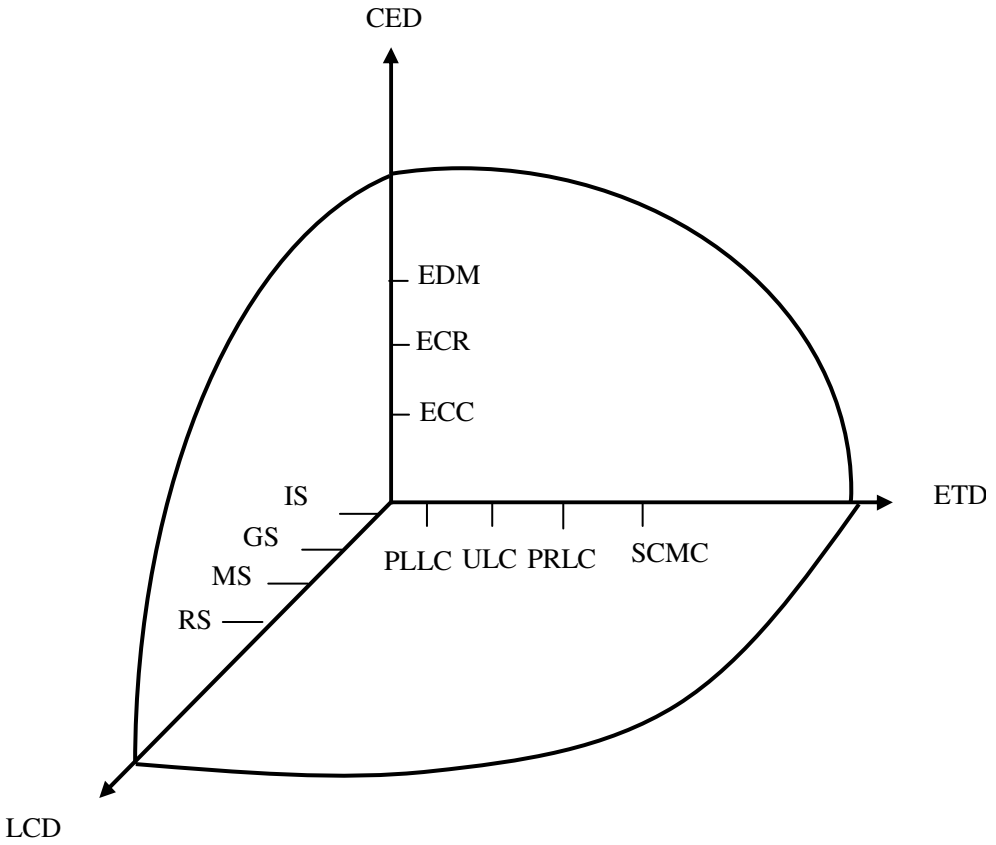

Figure 1. Three dimensions space diagram of LEC. CED=competitiveness element dimension; EDM = elements of dynamic mechanism; ECR = elements of corporate resources; ECC = elements of corporate capabilities. ETD = enterprises type dimension; PLLC = platform logistics companies; ULC = universal logistics companies; PRLC = professional logistics companies; SCMC = supply chain management companies. LCD = life cycle dimension; IS = initial stage; GS = growth stage; MS = maturity stage; RS = regeneration stage.

unbiased test with SPSS software is needed. Unbiased test is to test whether there is statistical deviation among the responders and non-responders of survey targets.

One approach of unbiased test is to sample twice. The approach performs the first time sampling, then performs second sampling for the no-response (do not participate in the survey) sample group. Then we use t test to examine whether the responses of two samples (participated in the survey and not participate in the survey) to the questionnaire are different. The other approach is to divide samples into two sample groups (two waves) by the natural wave dividing line of sample response time, and performs comparison test (t test) to determine whether there exist differences.

In this paper, the second approach is adopted. The test results show that t values of all indexes are greater than 0.5 and the value of significance (2-tailed) are greater than 0.45. Test results show that the sample is not statistically significant difference ($P < 0.05$), which is unbiased.

The validity analysis of the questionnaires is performed after the response of questionnaires. It is the reliability test that used for the questionnaires. In this paper, the reliability test method "Cronbach a" coefficient is adopted. With software SPSS 15.0, the reliability test is executed for the assumption variables in Table 1. The reliability degree of all variables in Table 1 is more than 0.8. The overall reliability was 0.854 which is acceptable. The result shows the design of assumption variables in questionnaires and results are consistent and reliable.

THE COMPARISON OF THE COMPOSING ELEMENTS OF LEC AMONG DIFFERENT TYPES OF LOGISTICS ENTERPRISES

The research make a empirical statistical analysis based on the 220 valid questionnaires, which gives a score rank of the four type enterprises in the dimensions of corporate capabilities, corporate resources and dynamic mechanism.

The comparison of the composing elements of the corporate capabilities

According to the survey data, the rank of the capabilities of four type enterprises is shown in Table 3. The platform logistics companies and supply chain management companies pay more attention to strategic capability, which shows that the strategic capability has the most important influence on the development of these two type enterprises. The universal logistics companies pay attention to the entrepreneur capability because the entrepreneur capability will directly decide the enterprises' development since Chinese logistics companies are mainly private business in small

Table 2. The basic information of the data.

Parameter	Type	Number	Percent (%)
The type of the enterprises	PLLC	48	21.82
	ULC	82	37.27
	PRLC	47	21.36
	SCMC	43	19.55
Development stages	Initial stage	12	5.45
	Growth stage	100	45.45
	Maturity stage	62	28.19
	Regeneration stage	46	20.91
Area	Northeast china	15	9.09
	North china	38	21.82
	Central China	10	12.73
	South China...	40	18.18
	East China	46	20.91
	Southwest China	20	11.36
	Northwest China	12	5.91
Business income in logistics field	Less than 10 million	42	19.09
	10-50million	75	34.09
	50-100 million	19	8.64
	More than 100 million	70	31.82
	Others	14	6.36
Staff number	Less than 100	52	23.64
	100-500	41	18.64
	500-1000	72	32.73
	1000-5000	33	15.00
	5000-10000	12	5.45
	More than10000	10	4.55
The working age of the investigators	Less than2 years	55	25.00
	3-5 years	51	23.18
	5-7 years	47	21.36
	More than 8 years	67	30.45
The position of the investigators	Staff	55	25.00
	Supervisor	43	19.55
	Manager	63	28.64
	Senior manager	59	26.82

PLLC = platform logistics companies; ULC = universal logistics companies; PRLC = professional logistics companies; SCMC = supply chain management companies.

scale and are in great numbers with a wide distribution. In addition, the professional logistics companies pay more attention to the logistics quality control capability.

The comparison of the composing elements of the corporate resources

According to the survey data, the rank of the resources of four type enterprises is shown in Table 4. All the four type enterprises regard the logistics customer resources as the most important element in their resource system. The platform logistics companies and universal logistics companies regard the logistics network resources as the second important resource, and the professional logistics companies regard the corporate financial resources as the second important element. Since the professional logistics companies need more capital to purchase sets, the corporate financial resources is more important than the logistics network resources in the

Table 3. The top 7 enterprises capabilities of LEC.

Rank	Platform logistics companies	Universal logistics companies	Professional logistics companies	Supply chain management companies
1	Strategic capability	Entrepreneur capability	Logistics quality control capability	Strategic capability
2	Innovation capability	Strategic capability	Logistics resources integrate capability	Logistics quality control capability
3	Learning capability	Innovation capability	Logistics cost control capability	Financial management capability
4	Entrepreneur capability	Logistics quality control capability	Departmental coordination capability	Departmental coordination capability
5	Logistics cost control capability	External interface coordination capability	Innovation capability	Innovation capability
6	Logistics quality control capability	Learning capability	Logistics risk control capability	Entrepreneur capability
7	Logistics resources integrate capability	Logistics resources integrate capability	Logistics marketing capability	Learning capability

Table 4. The top 4 corporate resource of LEC.

Rank	Platform logistics companies	Universal logistics companies	Professional logistics companies	Supply chain management companies
1	Logistics customer resources	Logistics customer resources	Logistics customer resources	Logistics customer resources
2	Logistics network resources	Logistics network resources	Corporate financial resources	Logistics network resources
3	Logistics information technology resources	Corporate financial resources	Logistics network resources	Logistics information technology resources
4	Corporate financial resources	Logistics information technology resources	Logistics information technology resources	Corporate human resources

professional logistics companies. The logistics information technology resource is at the top 4 position in the resource system of four type enterprises.

The comparison of the composing elements of the dynamic mechanism

According to the survey data, the rank of the dynamic mechanism of four type enterprises is shown in Table 5. All the four type enterprises regard the reaction mechanism as the most important element in their dynamic mechanism system. The platform logistics companies, universal logistics companies and professional logistics companies regard the dynamic mechanism as the second important element, but the supply chain management companies regard the learning mechanism as the second important element. It is because that the supply chain management companies pay more attention to the learning capability of the external knowledge, and emphasize the integration of the whole supply chain members' knowledge.

The comparison of the three types of competitiveness elements

According to the survey data, the rank of the competitiveness elements of three type enterprises is shown in Table 6. The platform logistics companies and universal logistics companies regard the corporate resources as the most important element of the competitiveness, and the professional logistics companies and supply chain management companies regard the corporate capabilities as the most important element of the competitiveness. More so, all the four types of enterprises regard the dynamic mechanism as the last important element, and this conclusion is consistent with the conclusion of the impact of composing elements

Table 5. The rank of the dynamic mechanisms.

Rank	Platform logistics companies	Universal logistics companies	Professional logistics companies	Supply chain management companies
1	Reaction mechanism	Reaction mechanism	Reaction mechanism	Reaction mechanism
2	Motive mechanism	Motive mechanism	Motive mechanism	Learning mechanism
3	Learning mechanism	Learning mechanism	Learning mechanism	Motive mechanism

Table 6. The rank of the competitiveness element.

Rank	Platform logistics companies	Universal logistics companies	Professional logistics companies	Supply chain management companies
1	Corporate resources	Corporate resources	Corporate capability	Corporate capability
2	Corporate capability	Corporate capability	Corporate resources	Corporate resources
3	Dynamic mechanism	Dynamic mechanism	Dynamic mechanism	Dynamic mechanism

to LEC.

THE DEVELOPMENT PATH OF LEC IN DIFFERENT DEVELOPMENT STAGES

The research make an empirical statistical analysis based on the 220 valid questionnaires, which gives the score rank of the four type enterprises in the dimensions of corporate capabilities, corporate resources and dynamic mechanism in four stages.

The comparison of the composing element of corporate capabilities

The Table 10 is the score and the rank of the top 7 corporate capabilities in different stages, and the Figure 2 is the corresponding figure of the Table 7. The strategic capability is the most important element in the initial stage, and it becomes less insignificant along with the development of the enterprises. But the logistics quality control capability and innovation capability become more and more important. The strategic capability and departmental coordination capability are necessary to the logistics enterprises, and they are at top 7 in all stages.

The entrepreneur capability is very important in all the stages, especially in initial stage and maturity stage. The conclusion shows that the entrepreneur capability is the guarantee of the continuous development of the enterprises.

The function of the resources integrate capability is very obvious in the maturity stage. The personalized service is the major element of LEC in initial stage and growth stage. Because there is no size effect in the initial stage and growth stage, so the integration effects of the low-cost and the flexible operation shows only in the maturity stage.

The comparison of the composing element of corporate resources

The Table 8 is the score and the rank of the top 4 corporate resources in different stages, and the Figure 3 is the corresponding figure of the Table 8. The logistics customer resource is very important in the initial stage, growth stage and regeneration stage. Since the customer resource and market environment are very stable in the maturity stage, the logistics information technology resource become the most important element in the maturity stage to improve the logistics service quality.

The logistics network resource is at top 3 in the initial stage and growth stage, which reflects that the network resource is very necessary before the enterprises step into the maturity stage. The corporate financial resource is very important in the initial stage, growth stage and maturity stage. The function of the corporate culture begins to be shown from the maturity stage, and the corporate culture is the second important element in the regeneration stage. The result shows that the corporate culture has a great influence in the next enterprises development cycle.

The comparison of the composing element of dynamic mechanism

The Table 9 is the score and the rank of the dynamic mechanism in different stages, and the Figure 4 is the corresponding figure of the Table 9. The reaction mechanism is the most important element of the dynamic mechanism system in all stages, especially in the regeneration stage. The result shows that the enterprises pay more attention to the quick reaction to the customers, competitors and environment.

The rank of the dynamic mechanism system is reaction mechanism, motive mechanism and learning mechanism in initial stage, growth stage and maturity stage. The influence of the motive mechanism is always greater than the learning mechanism, which reflects that the incentive measures are more important than learning in China logistics enterprises. The influence of the learning mechanism is greater than the motive mechanism in the regeneration stage, which shows that the learning mechanism is conducive to enhance the adaptability of enterprises in a new life cycle.

The comparison of the three main elements of LEC

The Table 10 is the score and the rank of the three elements in different stages, and the Figure 5 is the corresponding figure of the Table 10. The rank of the three main elements is corporate capabilities, dynamic mechanism and corporate resources in initial stage, growth stage and regeneration stage. The motive mechanism become the most important element in the maturity

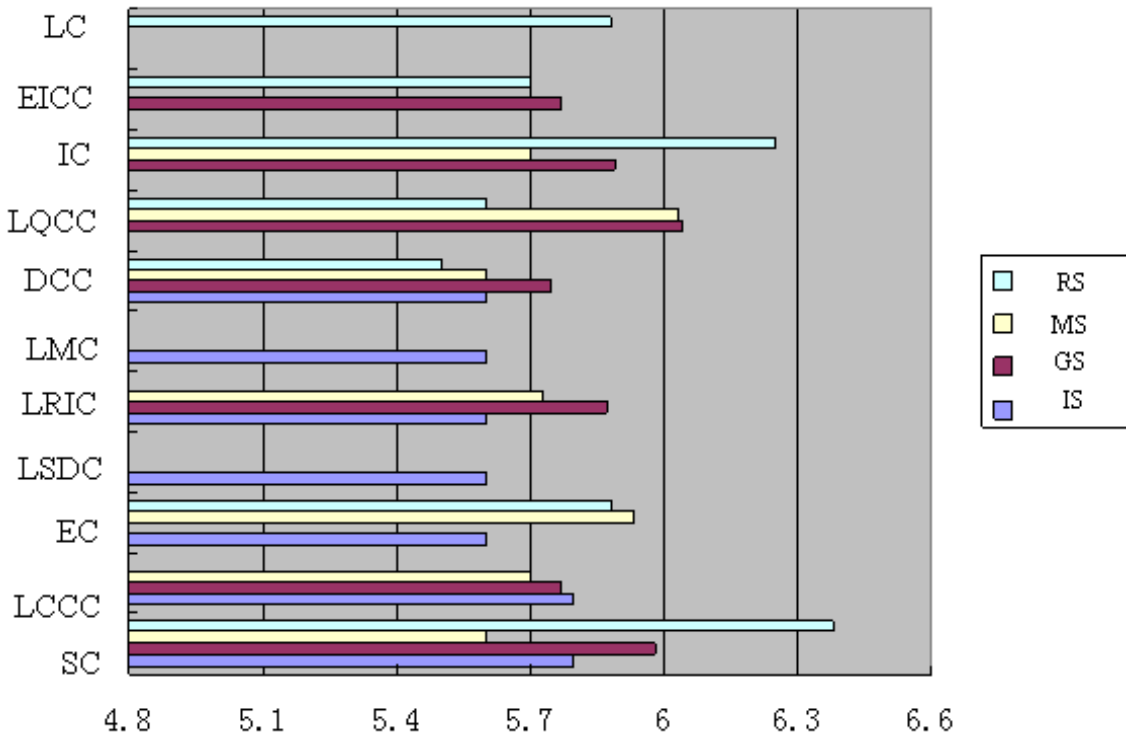

Figure 2. The score of the corporate capabilities in different stages. IS = initial stage; GS = growth stage; MS = maturity stage; RS = regeneration stage. SC = strategic capability; IC = innovation capability; LC = learning capability; EC = entrepreneur capability; LRIC = logistics resources integrate capability; LCCC = logistics cost control capability; LQCC = logistics quality control capability; EICC = external interface coordination capability; LSDC = logistics solutions design capability; LMC = logistics marketing capability; DCC = departmental coordination capability.

Table 7. The score rank of top 7 the corporate capabilities in different stages.

Rank	Initial stage	Growth stage	Maturity stage	Regeneration stage
1	Strategic capability (5.85)	Logistics quality control capability (6.04)	Logistics quality control capability (6.03)	Strategic capability (6.38)
2	Logistics cost control capability force (5.8)	Strategic capability (5.98)	Entrepreneur capability (5.93)	Innovation capability (6.250
3	Entrepreneur capability (5.7)	Innovation capability (5.89)	Logistics resources integrate capability (5.73)	Entrepreneur capability(5.88)
4	Logistics solutions design capability (5.65)	Logistics resources integrate capability (5.87)	Innovation capability (5.7)	Learning capability(5.88)
5	Logistics resources integrate capability (5.55)	Logistics cost control capability (5.77)	Logistics cost control capability (5.65)	External interface coordination capability(5.70)
6	Logistics marketing capability (5.45)	External interface coordination capability (5.75)	Strategic capability (5.6)	Logistics quality control capability(5.63)
7	Departmental coordination capability (5.4)	Departmental coordination capability (5.70)	Departmental coordination capability (5.53)	Departmental coordination capability(5.5)

The figures between brackets are the score of the elements.

Table 8. The score rank of the top 4 corporate resources in different stages.

Rank	Initial stage	Growth stage	Maturity stage	Regeneration stage
1	Logistics customer resources (6.4)	Logistics customer resources (6.16)	Logistics information technology resources (5.83)	Logistics customer resources (6.0)
2	Corporate financial resources (6.2)	Logistics network resources (6.06)	Logistics customer resources (5.7)	Corporate culture (5.79)
3	Logistics network resources (6.0)	Logistics information technology resources (5.77)	Corporate financial resources (5.65)	Knowledge and information resources (5.58)
4	Logistics facilities and equipment resources (5.8)	Corporate financial resources (5.73)	Corporate culture (5.6)	Corporate human resources (5.54)

The figures between brackets are the score of the elements.

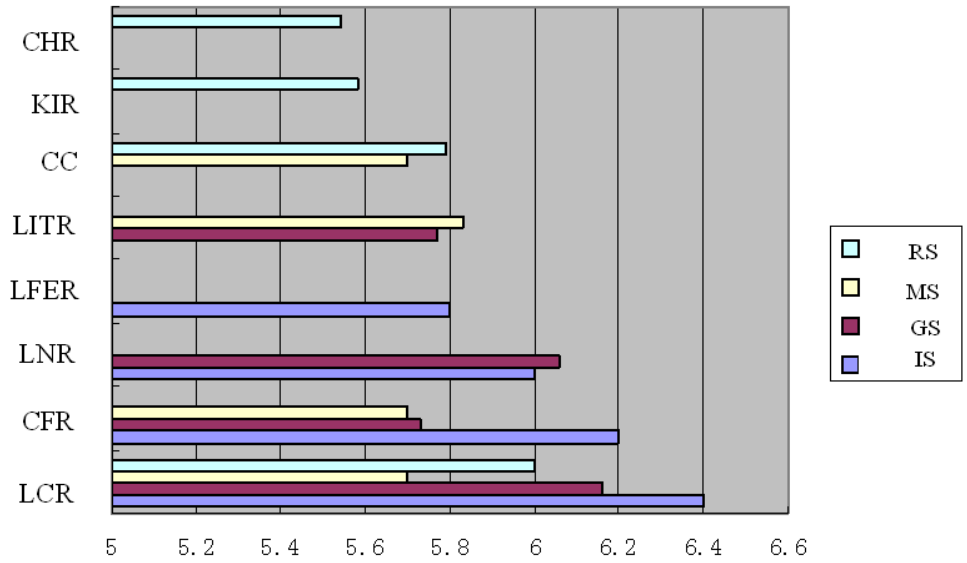

Figure 3. The score of the corporate resources in different stages. IS = initial stage; GS = growth stage; MS = maturity stage; RS = regeneration stage. LNR = logistics network resources; CC = corporate culture; CHR = corporate human resources; LITR = logistics information technology resources; KIR = knowledge and information resources; LFER = logistics facilities and equipment resources; LCR = logistics customer resources; CFR = corporate financial resources.

stage, which shows that the enterprises pay more attention to the transformation of the enterprises and the reaction to the customers, competitors and market environment in the maturity stage.

MAIN FINDINGS

The research about the development path of LEC could bring out some advices to the improvement of the service quality for global logistics enterprises. Different from existing studies, our research divides the life cycle of logistics enterprises into four stages, and explores the composing elements and the development path of the logistics enterprises. This research arrives at the following three main conclusions.

1) LEC is formed by corporate capabilities, corporate resources and dynamic mechanism. The basis is the resources, the subject is the capabilities, and the dynamic mechanism is used to adapt to the external environment, so as to accumulate the resources and capabilities and promote the development of the enterprises. There are some differences about opportunity, challenge and environment between different stages, as a result, the composing elements of LEC is

Table 9. The score rank of the dynamic mechanism in different stages.

Rank	Initial stage	Growth stage	Maturity stage	Regeneration stage
1	Reaction mechanism (6)	Reaction mechanism (6)	Reaction mechanism (5.97)	Reaction mechanism (6.04)
2	Motvie mechanism (5.6)	Motvie mechanism (5.63)	Motvie mechanism (5.58)	Learning mechanism (5.45)
3	Learning mechanism (5.5)	Learning mechanism (5.3)	Learning mechanism (5.36)	Motive mechanism (5.25)

The figures between brackets are the score of the elements.

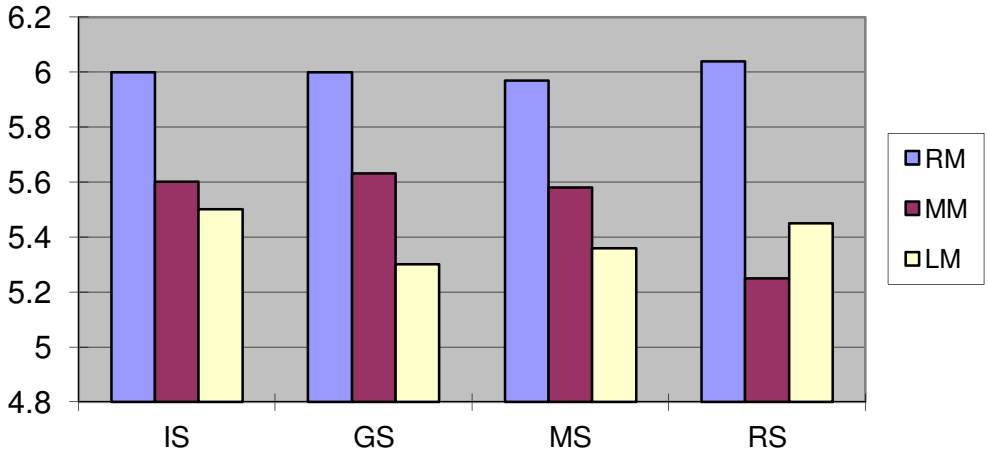

Figure 4. The score of the dynamic mechanism in different stages. IS = initial stage; GS = growth stage; MS = maturity stage; RS = regeneration stage. MM = Motive mechanism stage; RM = reaction mechanism; LM = learning mechanism.

Table 10. The score rank of three main elements of competitiveness in different stages.

Rank	Initial stage	Growth stage	Maturity stage	Regeneration stage
1	Corporate capability (5.6)	Corporate capability (5.93)	Motive mechanism (5.76)	Corporate capability (5.88)
2	Motive mechanism (5.4)	Motive mechanism (5.77)	Corporate capability (5.73)	Motive mechanism (5.75)
3	Corporate resources (5.3)	Corporate resources (5.70)	Corporate resources (5.57)	Corporate resources (5.67)

The figures between brackets are the score of the elements.

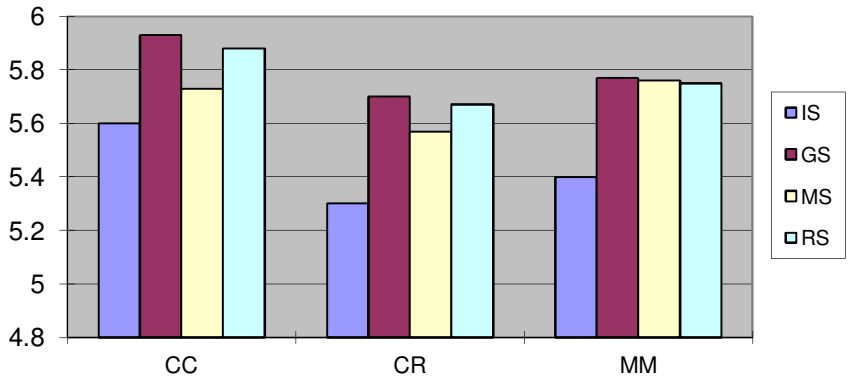

Figure 5. The score of three main elements of competitiveness in different stages. IS = initial stage; GS = growth stage; MS = maturity stage; RS = regeneration stage. MM = motive mechanism stage; CC = corporate capability; CR = corporate resource.

different in every stages.
2) From the different composing elements of four types of enterprises, we can find that the platform logistics companies and supply chain management companies pay more attention to the strategic capability, the universal logistics companies pay more attention to the universal logistics companies and the professional logistics companies try more efforts on the logistics quality control capability. All the four type enterprises regard the logistics customer resources as the most important element in their resource system. The platform logistics companies, universal logistics companies and supply chain management companies regard the logistics network resources as the second important resource, and the professional logistics companies regard the corporate financial resources as the second important element. All the four type enterprises regard the reaction mechanism as the most important element in their dynamic mechanism system. The platform logistics companies and universal logistics companies regard the corporate resource as the most important element of the competitiveness, and the professional logistics companies and supply chain management companies regard the corporate capability as the most important element of the competitiveness.
3) From the view of the life cycle, the strategic capability is the most important element in the initial stage, and it becomes less insignificant in other three stages. But the logistics quality control capability and innovation capability become more and more important along with the development of the enterprises. The logistics customer resource is very important in the initial stage, growth stage and regeneration stage, and the logistics information technology resource becomes the most important element in the maturity stage. The reaction mechanism is the most important element of the dynamic mechanism system in all stages, especially in the regeneration stage. The importance rank of the three main elements is corporate capability, dynamic mechanism and corporate resource in initial stage, growth stage and regeneration stage. The dynamic mechanism becomes the most important element in the maturity stage.

MANAGEMENT IMPLICATIONS

Implications for researchers

From a research perspective, understanding the composing elements and development path of LEC opens up new avenues to develop theories about logistics enterprise management. For instance, how can they play the positive factors in the development of logistics enterprise? How to choose the best development path of LEC for a certain logistics enterprise? To enhance the competitiveness of logistics enterprises, what suggestions may be concluded based on the perspectives of enterprises management and industrial policy? This study provides benefit thinking for further research on China logistics enterprise competitiveness and also provides a necessary theoretical basis for future empirical study and policy design.

Implications for managers

Managers of logistics enterprise must understand that there are some differences in the composing elements of LEC at different life cycle stage. Therefore, LEC should be developed dynamically. The composing elements of LEC should be cultivated according to different types of logistics enterprise and different life cycle stage. Meanwhile, managers of government should understand these laws of development in LEC when they draft the policy of logistics industrial development. They should design the scientific encouragement logistics according to the different logistics enterprise types and different life cycle stage.

LIMITATIONS AND FUTURE RESEARCH

There are some limitations in this research, and future research may also be conducted on these related issues. For example, there are some associations between logistics performance and LEC, so the research could be conducted in the field of the composing elements and development path of LEC based on the logistics business performance. In addition, the research did not conduct the correlation analysis of the competitiveness' composing elements, and the Person correlation analysis and structural equation model could be used to analyze the correlation analysis of the competitiveness' composing elements in the future research. Finally, the survey sample is not very sufficient, so it is possible that there can be some impreciseness in the conclusion. Therefore, further research will make a continued investigation so as to get a more comprehensive understanding of the development trend of LEC in China.

ACKNOWLEDGEMENT

This research is supported by the National Natural Science Foundation of China (Grant No.70902044) and sponsored by Seed Foundation of Tianjin University.

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