

# Study on LSSC network and its influence on the growth of the core enterprise

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## ABSTRACT

This paper reviews the conception of LSSC network, and obtains the characteristics of LSSC network by comparing with industrial cluster and enterprise network, which affect the network structure and relationship properties. The network structure and relationship properties together with network resources affect the growth of the core enterprise of logistics service supply chain. This paper selects several main structures and relationship properties to analyze, and proposes a concept model of “network attributes—dynamic capabilities and—logistics services integrator growth”. This study provides some reference for the construction of LSSC model and the study of network dynamic for logistics enterprise growth.

**Keywords:** : logistics service supply chain, enterprise growth, dynamic capability, network

## INTRODUCTION

Enterprise growth is an important problem in theory and practice, it has been widely concerned. Early scholars more focus on the role of enterprise resource and ability of enterprise growth from the perspective of a single enterprise. Under the background of globalization, the development of enterprise growth is no longer a single independent process, more is dependent on the industry network, so focus of research shifted to research firm growth based on industrial chain or network. Network is a development status of logistics (Cui et al., 2008) and a main channel for logistics enterprises to access to external resources, knowledge, new technology and develop market (Bartha P F, 2008). So logistics enterprises cannot develop without network. China's logistics enterprises are mainly in medium and small logistics enterprises, the shortage of their own resources restricts their growth. It can greatly promote its growth if they have the ability to get the resources they need from outside (Storey D J, 1994). At the same time, China's logistics industry profit is low, the market competition is intense, and we need to change the traditional operation mode to improve logistics service level and reduce the service cost. Network can enhance the competitiveness of logistics enterprises and increase efficiency finally. so logistics service supply chain (referred to LSSC) arises at the historic moment.

With the development of modern enterprise competition, market personalized requirements are also

getting higher and higher. In the face of modern logistics service quality and continuously improve the level of logistics services, mass customization logistics service supply chain is put forward with high quality, agile, flexible and innovative features is becoming more and more important. Logistics service supply chain is a kind of the structure as the core of integration, functional logistics service providers, logistics service integrator, logistics customer and service capability ensure and so on (Ren-long Zhang, 2013).

LSSC has received more and more attention in recent years. It is main researched from the concept, mechanism, evolution and structural model, logistics subcontractor selection, performance evaluation, coordination, incentive and risk control, etc. But how does LSSC network affect the logistics services integrator has few studies. Based on this, this paper combined with characteristics and development status of logistics enterprise industry, studied the nature of the logistics service supply chain network, analyzed how the LSSC network affects the core logistics enterprise growth.

Our research aims to answer two questions: The first one is that what is logistics service supply chain network? The second one is how LSSC network affects the core logistics enterprises to grow?

The reminder of this research is organized as follows. In the next section, the conception of LSSC network is described and reviewed simply. In Sect. 3, influence of

LSSC network on logistics services integrator growth is analyzed. We conduct a concept model of influence of LSSC network on logistics services integrator growth in Sect. 4. Finally, Sect. 5 presents conclusion and discussion.

## CONCEPT DEFINITION

### Definition of LSSC

LSSC is a kind of network connected by competition and cooperation relationship between the members on LSSC in the market (Wu jiebing, 2006). It is to achieve the goal of service performance management and customer value management by optimizing the service process, the integration of logistics resources, the balance of service ability, and to obtain competitive advantage that difficult to imitate (Cui aiping, 2008). Different from product supply chain which the core enterprise is generally defined by the manufacturer, the core enterprise of LSSC is logistics service integrator that to provide integrated logistics services.

### Structure of LSSC

LSSC is a kind of network structure, logistics services integrator (LSI) is the core enterprise of LSSC, whose organization and management ability has important influence on the performance of LSSC (Yan xiuxia,2008). So LSI must have the following abilities:

- (1) Management techniques: including system planning, information processing, logistics resources integration ability and the coordinated ability, etc.;
- (2) Market response ability: can predict the market trend and adjust strategy timely; can provide personalized services accord to different demand;
- (3) Innovate ability. LSSC there are two ways to improve competitiveness and performance, the first one is to reduce logistics costs by integrating and sharing quality resources, the second one is to provide value-added services, which requires constant innovation by LSI, looking for value added point on the supply chain, improving product added value through value-added logistics services.

The logistics service provider plays an intermediate

role, it is generally connected to multiple integrators and subcontractors. It receives outsourcing orders from integrators, and decides whether to subcontract all or part of the order to logistics service subcontractors according to their ability. Functional logistics service subcontractors are all kinds of professional logistics companies to implement specific logistics business activities, such as convoys, warehousing, distribution, etc. They usually offer a single service function, and limited to a particular region. They are likely to develop into suppliers by logistics service providers or integrators in the process of building a national and even global service network (Yan xiuxia,2008).

LSSC is the operation mode of logistics professional division and cooperation. It is to realize seamless connection between various logistics cooperation enterprises crossing organizational boundaries. It emphasizes partnership management and resource integration. LSSC contains both vertical integration network and horizontal cooperation network. The following is a LSSC network diagram

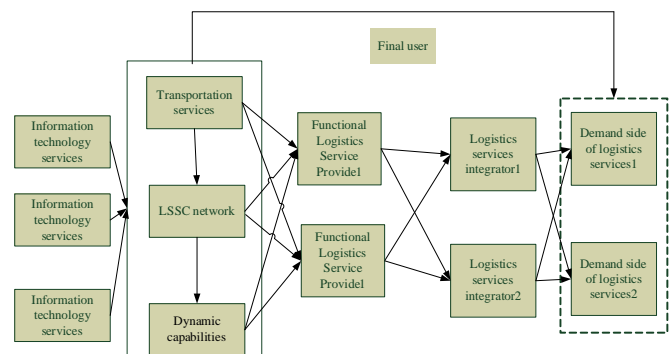


Fig.1 model of logistics service supply chain network

### Features of LSSC

LSSC is service leading system formed based on the principle of complementary advantages, so LSSC is different from the other networks.

Industrial cluster network consists of enterprises, universities and research institutions, government and the public sector, financial institutions and intermediary organizations, etc.; Enterprise network including contact with customers, suppliers and other related businesses, and colleges and universities, research institutes, and technology intermediary organizations, and contact with government departments, Banks, and trade associations. But the entire LSSC network composed of logistics

enterprises and manufacturers, suppliers for manufacturers, distributors, and end users, etc., LSSC have unique properties are as follows:

- (1) Different network node structure. Nodes of cluster network and general enterprise network in addition to the upstream and downstream enterprises, also contains some supporting institutions, such as government, scientific research institutions, financial institutions, etc. LSSC network nodes do not include auxiliary enterprises.
- (2) The structure is short. LSSC is a demand-oriented network, which requires that it must be able to quickly respond to market demand. A short connection structure can meet the requirements of operation flexibility and agility, and be advantageous to the integrated coordination. Short structure is the main coupling form of LSSC currently.
- (3) High complexity of the network. LSSC is a network with consolidation and integration as its operation mode. Although not many node types and the structure is short, but it's complicated. Node enterprises are mostly spatially cross-regional; the content of logistics outsourcing service is complex, add to environmental uncertainty and information asymmetry, which lead to the high complexity of LSSC network.
- (4) Demand oriented. LSSC is demand-oriented based on logistics capability cooperation. And the ultimate purpose of LSSC is to better serve customers.
- (5) Hypostatic and virtual

LSSC connection between upstream and downstream enterprises based on information technology, and so it is a virtual network. And in the process of material flow, there are physical logistics facilities to support material flow, so it is a hypostatic network.

From the above analysis, a focal point of LSSC research is to integrate many scattered logistics resources of node enterprises based on demand. And cooperation and sharing relationship among these enterprises is formed through layers of outsourcing and contractual coordination. The features of LSSC directly affect network structure attributes and relation attributes and thus affect network resource acquisition and utilization.

### **Expansion of LSSC——logistics service public platform**

One direction of LSSC expansion is integration with information or finance. Logistics service public platform is an expansion of the LSSC combination of logistics service mode and information technology. It is to integrate existing logistics resources based on internet (or information technology). It can greatly promote logistics service providers or logistics network platform and upstream and downstream (the seller and the buyer) he can vigorously promote logistics service providers or logistics network platform and upstream and downstream docking to improve logistics efficiency and capability.

But logistics service public platform can not be called logistics service integrator if it only provides a platform for information exchange. It is the real logistics service integrator that must accept customer orders and outsource them to the other logistics enterprises. It is a more complex network and uncertainty about the relationship between the logistics service public platform, customers and logistics providers. But the ability to integrate resources for optimization and utilization is greatly increased than LSSC. it can integrate and optimize LSSC and manufacturing supply chains simultaneously. Currently the platform has been applied in e-commerce, and some logistics parka also moving in this direction.

### **INFLUENCE OF LSSC NETWORK ON THE GROWTH OF LSI**

Over the past 20 years, scholars have studied enterprise network, the relationship between members and their influence on the growth performance of the enterprise (McEvily, B., & Zaheer, A, 1999; Zaheer, A., & Bell, G. G., 2005; Wu aiqi, 2007). Theoretically, most of these studies are based on resource-based View (RBV for short) or network theory or a combination of this two theories.

#### **Network resources affect the growth of LSI**

The behavior and result of the enterprise will be affected by activities, resource creation and resource sharing among the network members. Levie (2008) pointed out that there are three understandings of network resources: First, the network itself is a resource for enterprises to create interests (Gulati, R., et al., 2000; Kogut, B.,

2000); Second, valuable resources that may be obtained by connecting with other enterprises; Third, resources owned by a partner but accessible to other businesses on the network (Lavie, D., 2008). Network influences enterprise growth through network resources. In this paper, the network resources refer to the logistics capability of logistics enterprises. The purpose of LSI component LSSC is to satisfy its development by integrating resources on LSSC because of its lack of capacity. As a result, logistics service integrators promote enterprise growth through the network resources on the LSSC.

### Influence of network structure and relational attributes on enterprise growth

Structural attributes focus on where network participants are in the network, which discuss the social structure reflected by the relationship of two or more actors and the third party, and its formation and evolution; Relationship attributes focus on social adhesion between actors, which illustrate specific behaviors and processes through the density, intensity, symmetry, size, etc. of a social connection (Hansen, E.L., 1995). Obviously, the different network structure affects the flow of logistics ability, and the different relationship affects the information sharing situation and then affects the coordination and integration effect. Network resources are important to the growth of LSI. However, Only after being absorbed and utilized by enterprises can they really promote enterprise growth. Network structure attributes and relational attributes can affect the acquisition and utilization of resources building on enterprise capabilities, and resulting in the “theory of competency base “(The Core Competence-based View of the Firm). The theory of enterprise competence has experienced a logical development process from resource-based theory to core competence theory to knowledge-based theory (Lavie, D, 2008).

From this we can see that LSSC network affects the growth of LSI through network resources, network structure attributes and network relationship attributes, and puts forward a logical model with dynamic ability as intermediary. The logical model of the network affecting the growth of LSI is shown below:

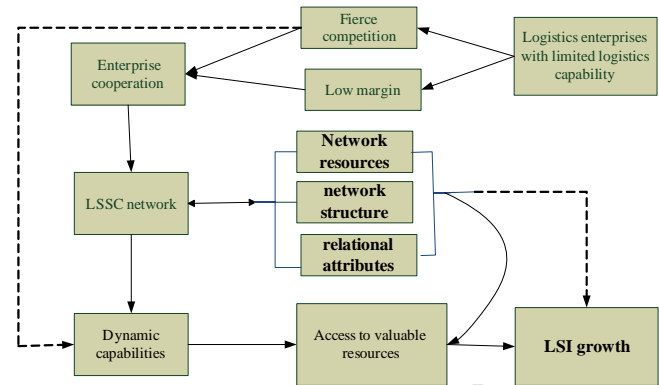


Fig. 2 Relationship model of LSSC network and the growth of LSI

### INFLUENCE OF NETWORK ATTRIBUTE ON THE GROWTH OF LSI

Social network theory is an important theoretical basis for studying LSSC network attributes. Burt(1985) put forward the conceptual analysis framework of “structure-relationship “, which divides network attributes into structural attributes and relational attributes that is accepted by most scholars . But Some scholars believe that resources are the same important dimension of network attribute as network structure and network relation (Galán & Castro, 2004; Granovetter, 1992; Gulati, 1998; Cristobal,2013). From this, we use network attributes to summarize the above three factors that affect LSI growth. And emphatically discuss the structure attributes and the relation attributes to the LSI under the condition that the resource attribute is established.

A suitable network model can help to understand how the logistics process of supply chain system is affected by the network structure. Relationships between network can also provide insights into achieving satisfactory dynamic behavior and improving system-wide efficiency. The structural attributes mainly include network scale, network range, network density, heterogeneity, structure hole and centrality, and the network relationship attributes mainly have indicators such as relationship strength, relationship duration, trust, relationship quality, etc. They have a considerable impact on the acquisition of enterprise resources.

Taking into account LSSC characteristics, this paper will discuss the relationship between network attributes and LSI from four dimensions: network size, network scope, heterogeneity and trust relationship.

### **Network scale and LSI growth**

LSSC network size is the number of LSSC members, the number of connections and geographical coverage that are directly or indirectly associated with LSI. The larger the number of LSSC members, the greater the number of contacts and the greater the geographical coverage, indicating that the larger the LSSC size, the more complex the LSSC structure is, and the greater the impact on the LSI may be. LSI can obtain complementary resources, information and technology from LSSC other members through formal or informal compacts. So LSSC network size represents the degree of LSSC resources LSI can access. The larger the LSSC, the more opportunities LSI have for valuable information and knowledge. the larger the scale, the more frequent LSI communicate and cooperate with other enterprises, and the greater the opportunity to acquire new knowledge. at the same time, these exchanges can inspire LSI to consider problems from different angles and promote their innovation ability. A large network scale can help LSI get market information faster and improve market response ability. Logistics LSI is an integrated enterprise, and its core competitiveness is supply chain planning coordination and information processing ability. The larger the LSSC network scale, the higher the requirements for LSI coordination ability and logistics resources integration ability, the more can motivate LSI overall ability to improve, improving LSI competitiveness and market share, and promoting LSI growth.

### **Network scope and LSI growth**

Network scope refers to the number of types of relationships between core enterprises and partners, representing the size (Freeman, 1999; Katila and Mang, 1999) of the possibility of target resources that core enterprises can mobilize and integrate. Because the network represents the channel of information, knowledge and other important resources flow, the size of the network scope means the flexibility and diversity of the means and ways for the core enterprises to obtain resources, etc. Different from the focus on network size, even for the same partner, there may be multiple modes of collaboration, so the network scope places greater emphasis on the diversity of means or ways in which core enterprises access resources.

A common understanding of the network scope of logistics enterprises is the geographical coverage of the network. Unlike this understanding, this paper defines LSSC network scope from the perspective of social networks. It refers to the number of types of relationships LSI cooperate with customers, logistics service providers and logistics service subcontractors. These relationships include outsourcing logistics service orders, joint improvement, expansion of logistics networks, resource allocation (joint operation), cooperative technology and product development, etc. Because each relationship involves different resources and the content of information exchanged, the number of relationship types represents the size of resource heterogeneity in LSSC to some extent. and the larger the network scope, the richer the heterogeneous network relationship, the more resources and information contained, and the more likely to provide multiple resources and information support for LSI growth. We can see the other dimensions of the network scope joint network structure from the social network angle, which reflects the connection situation of the LSSC as a whole from the point of view of the connection structure, determines the LSI access to resources from the outside, and covers the geographical coverage of logistics. That is, the greater the heterogeneity, the larger the scale, the wider the network scope, LSI the logistics cyberspace coverage obtained through LSSC may be larger.

### **Heterogeneity and LSI growth**

Unlike network size and network-wide indicators, the focus is on measuring the total amount of partners or resources in the network, as well as the diversity or flexibility of means of obtaining resources. Heterogeneity indicators focus on the degree of difference that describes the type of partner or resource type. Enterprises embedded in the network, mainly to seek complementary advantages, and the difference is the premise of complementarity. There is a level of balanced cooperation among network members, and the more significant the heterogeneity among enterprises, the higher the level of balanced cooperation. From the point of view of resource base (Resource based views) theory, the resource and internal ability of enterprises in industry are essentially heterogeneous, and the competitive advantage of enterprises originates from the heterogeneous resources owned by enterprises.

Heterogeneous resources are the root of mutual cooperation among enterprises, and it is precisely because of the existence of resource heterogeneity that the motivation of mutual cooperation is generated between enterprises. Pan Ross (1959) attributed the innovation of enterprises in industry to the heterogeneity of resources in the Theory of Enterprise Growth. LSI provide logistics services to customers by integrating and integrating superior heterogeneous resources, the stronger the LSSC heterogeneity, the more different the resources flowing on the LSSC, the greater the ability difference between enterprises, the greater the integration and absorption ability of LSI resources. At the same time, heterogeneous resources bring non-redundant information and rich knowledge to LSI, which has a positive impact on LSI innovation ability and market response ability. Heterogeneity illustrates the large differences between logistics enterprises that work with integrators, including differences in culture, organization, enterprise size, capability characteristics and resources, LSI to integrate them into an organic whole requires better coordination capabilities.

**Trust relationship and integrator growth**

LSSC network is based on logistics demand-oriented, based on trust and cooperation. in the resource-based view, trust is an important factor in building effective cooperative relationships. good trust relationships are beneficial to supply chain members, including improving relationship satisfaction and enterprise performance, enhancing inter-firm learning capabilities in supply chains, reducing management costs, reducing relationship conflicts, and promoting overall cooperation efficiency.

(i) Trust can facilitate investment in assets. Logistics is a heavy asset industry, the cooperation between logistics enterprises often needs the investment of proprietary assets, trust relationship can make cooperative enterprises willing to invest resources. Trust relationships can reduce transaction costs. Mutual trust between enterprises can reduce opportunistic and supervisory costs and reduce transaction costs. Institutional economics believes that the lack of trust between the two parties in the market will lead to higher transaction costs, trust is the lubricant of economic communication, which is conducive to an efficient and flexible structure, but also the formation of a system without integration malpractice. Trust relationships can

facilitate knowledge sharing. Trust relationships allow resources or information that are difficult to obtain through market exchange to flow between enterprises, and enterprises can make deeper use of each other’s complementary resources and sensitive information, which has a positive effect on the improvement of cooperation performance. Trust relationships can share risks. A trust relationship can maintain LSSC system stability. Can narrow the differences, member enterprises willing to compromise with integrators to stabilize cooperation, can alleviate short-term conflicts of interest and local inequality caused by friction; Trust relationship can improve the efficiency of integrator coordination and resource integration. Trust can improve the reliability of knowledge resources during interaction, as well as the enthusiasm and cooperation opportunities between nodes. Trust can improve the flexibility of enterprises and adapt to the changes of dynamic environment.

**Conceptual Model LSSC the Influence of Network Attribute on Enterprise Growth**

Based on the above theoretical basis, this paper constructs the following research conceptual model:

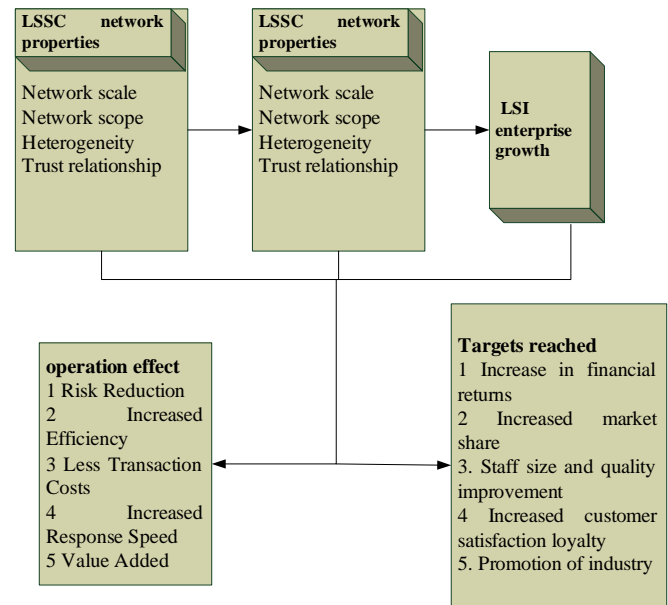


Fig. 3 Conceptual model of "LSSC network properties—dynamic capabilities – LSI enterprise growth"

**CONCLUSIONS**

LSSC operation mode in logistics industry has developed rapidly in theory and practice. LSSC network has its own unique properties compared with industrial cluster

network and general enterprise network. Based on this, this paper analyzes the LSSC network and its influence on the growth of logistics core enterprises in depth and qualitatively. LSSC influence the growth of logistics service integrators through network resources, network structure and relationship attributes, while the influence of network structure and relationship attributes on LSI growth is mediated by dynamic capabilities such as market response ability, innovation ability, logistics resource integration ability and coordination ability. network size represents LSI degree of possible access to resources, network scope represents the flexibility of means and methods of LSI access to resources, new additional knowledge and information are obtained, heterogeneity represents the effectiveness of access to knowledge and information, and indicates whether the knowledge and information that may be acquired is not redundant or rich. The good trust relationship ensures the smooth degree of the access to knowledge and information, and has an impact on all four dynamic abilities, thus affecting the acquisition and utilization of resources on the LSSC network, thus affecting the growth of LSI enterprises. Based on the above analysis, this paper gives the conceptual model of “network attribute-dynamic ability- LSI enterprise growth“. Based on the LSSC model construction and empirical or simulation, this study is beneficial to further verify the conclusion and study the network dynamics of logistics enterprise growth.

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