

Recomposing of Industrial Supply Chain and Constructing of Digital CBD

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ABSTRACT

Drawing lessons from the development of cities at home and abroad success and lost experience, through practice research, this paper systemically analysis the evolution of urban economy space. In the scope of global industrial supply chain's recomposing, it is discusses that modern city's function structure characteristic, focusing "integrative logistics management service". According to Dalian's geography and resource advantage in district industry supply chain, this paper also proposes the digital CBD planning of Dalian which focuses integrative logistics management service.

Keywords: industrial supply chain, recomposing, integrative logistics service, digital CBD

1. EVOLUTION OF URBAN ECONOMY SPACE AND RECOMPOSING OF INDUSTRIAL SUPPLY CHAIN

The city is a zone that has high population density and depends on the second and third industries. And as the center of around area, it performs advanced social, economic, and cultural activities and has many organizations that benefit from complicated aims. Thus the city plays important roles in the development of district economy: district manufacture center, district currency center, district service management center, district human resource center, district intercommunion center, and district innovation center⁽¹⁾.

It is proved through investigation that the forming and development of city lies on four factors: relative benefit, intramural scale economy, traffic cost and convergence economy. With the change of ages and the development of society, those factors have different weights, which determines the forming, flourishing and declining of the city.

As the theory of evolution of urban space, the forming and development of modern city basically follows the "equation- convergence- separation-new and advanced equation" evolution course. Because of scale economy and scope economy, the space convergence of some leading industries is higher (the trade cost is lower) in certain districts (cities), which makes many industries concentrate in certain kernel enterprises/industries, and forms the convergence effect of urban space. At the same time, with the increasing of convergence scale, the scarcity of recourses (soil and so on) makes the opportunity cost increase and the diseconomy phenomenon appear, and the advancement of technology makes the structure of scope economy change greatly. In the dynamic "convergence-separation" process of urban development, the scale of city is increasing, and population flow accordingly direct contact⁽²⁾.

In the analysis of industry system, Dicken's supply

chain theory is more representative. He think that in the producing process of certain manufacture or service, supply chain is the combination of a series of increasing value and interactive and interrelated basic activities, consisting of gathering of raw and processed materials, transportation, storage, gradual process, assembling and distribution of manufacture and service and other functions. In supply chain, every activity relates each other through different technology devotion and traffic and communication, enclosing the economic system that can supply essential management fund. And moreover, all activities should been adjusted, standardized, and controlled⁽³⁾. The industrial creating value process is represented by the value chain that is same to supply chain.

In the traditional economy increasing theory, the economy increasing mainly dues to the actual elements such as capital, soil, labor and so on, and namely the basic activities of supply chain. After 1960s, western nations' economical increasing have obviously changed, in which the status of traditional manufacturing descended, on the other hand, information industry that was represented by finance and information management, rapidly developed, and more and more accelerated the development of GDP. Information industry became the important factor of the development; service economy (producer services) gradually replaced industry economy; besides the basic activities of supply chain structure, elements took more and more weight in industrial increment. Having undergone the phases of resource denseness, labor denseness and capital and technology denseness, western industrialized countries have been the phase of technology and intelligence which is called as "knowledge-based economy" and in which not only science and technology, though the "accumulation-overflow", but also the devotion of capital, labor and other essentials can gain increasing income, so can the hole economy system⁽⁴⁾.

Firstly, this industrial variety (upgrade) represented as the alter of industrial innovation mode, that is to say,

innovation was the continuous and linear process of invention, examination, manufacture and distribution, but now it change the discontinuous and nonlinear process. In the studying economy and soft industry system that the most important resource is knowledge, the innovation always exists in the manufacture process, “studying in practice”. Given as an example, the “modularization” manufacture based on decentralization and centralization and recomposing knowledge just is an innovation of the manufacture mode and the consumption mode⁽⁵⁾.

According as the space benefit and the accessibility that are gained by the manufacturing space benefit and cost, we can separate the space structure into three types: central cluster, decentralized cluster and random spread. It has been proved that whichever type of recomposing supply chain has the “direct separation-pervasion-second convergence” characteristics⁽⁶⁾:

Firstly, the supply chain changed from the lengthwise unification that takes products as core and enterprises as cell to the supply chain one that takes cooperating management as core and relative industries as cell, and the logistics was separated from the manufacture and distribution⁽⁷⁾.

Secondly, considering that the urban center has higher rent and more expensive accessibility, only the factors of the supply chain that have the highest boundary benefit can be gathered. But the urban center district has the advantages in cooperation management, public service, information communion, sharing knowledge, and manpower resource, so industries always locate management center and distribution center on this district.

Thirdly, according to the cost counting, with the descending of rent, the manufacture center of industries diffuses from urban center district to qui-center district. Generally, core enterprise locates its manufacture base on the urban qui-center district and the accessional enterprise encloses the core one.

Fourthly, the substance of soft manufacture is “Just-In-Time (JIT)” mode, which demands that the reaction between producer and consumers is in time, and thus the logistics activities must focus on the manufacture and distribution. The development of traffic technologies makes the transportation cost generally lower and the increasing of urban rent makes the storage cost more and more higher. Accordingly, physical distribution closes up the manufacture center and distribution center, services the manufacture and distribution of goods, and the logistics center or the distribution center is located around or near the urban center.

Fifthly, the final aim of recomposing supply chain is to apply the “integer supply chain—through specialized

dividing work, achieving the increasing of scale benefit”, which is represented by the cooperation management of supply chain elements, what is called “cooperation manufacture”⁽⁸⁾. In the steps of supply chain, the logistics needs more information and higher supply level of the public property, so information management and cooperation activities give the shape of the center of logistics service center, which mostly is located at urban center districts.

2. SPACE CHARACTERISTICS AND FUNCTIONS OF MODERN URBAN CBD

The modern urban CBD (Central Business District), generally is the urban center district. It refers to the most convenient joint, and commonly is recognized by people, and is relatively certain.

With the development of technology and the advancement of global economy, CBD has more and more been the center of complicated economy activities and the support of economy increasing, in big cities and even bigger districts. Because of the standing “convergence- separation” action, supply chain’s elements lie on the top of the value chain, mostly concentrate in CBD. So the situation affects exclusive economic effect, communion effect, and space effect, which enhances the convergence and takes bigger appeal. Therefore, the urban CBD is not only the symbol of glory and development, but also the support of extending influence. As an urban space modality, CBD has following characteristics:

Firstly, the district economy center. Geographically, CBD is generally on the center of a city, and economically, it is the most convenient spot. The frequency of communion that CBD provides determines its role in the city and more abroad zone.

Secondly, the third industries intensity. The third industries are gathered at CBD, and the relative enterprises are dense. Generally, the intensity index of the third industries at the CBD is hardly lower to II, that is to say, the whole area of the third industries is more than 40% of the CBD’s area.

Thirdly, high convenience and strong crowding. The outer and inner traffic of CBD is three-dimensional, and the traffic area is commonly 20% of the whole area. CBD has the most developed inner and outer traffic, and can form a convenient traffic net. Which offer people the good opportunity to pass. Relatively, the crowding degree is the highest in the city.

Fourthly, using of the space is developing vertically, and has high modern and intelligence level. Most buildings are high and even super-high. Using the advanced structural material, equipment, and communication products, the constructions of CBD is intelligent, so they can satisfy the require of modern official business.

Fifthly, rent is expensive. The area of CBD is scarce and the house cost is expensive.

Recomposing supply chain results in the change of industrial elements' structure. Accordingly, the space layout and the function of cities has altered⁽⁹⁾.

Firstly, manufacturing spreads to the urban qui-center district. Before the middle phase of industrialization, most office buildings, storages, factories, and shops are lied at CBD. But in the last industrialization ages, most manufacturers begin to move to the qui-center districts of the city.

Secondly, the unmanned trend. That mainly refers to the population density of urban center is lower and lower, and the house area is reducing.

Thirdly, the advanced development of the service industry. Service economy weights more in the value chain. The advantage of the CBD in service industry makes it competitive in the service industry and it can function the big scope and scale management of supply chain.

Fourthly, the structure of the material services adjusts. The type, service object, scale and quality of the material services at CBD have great changes. The internationalization and intelligent are current. The business hotels are the main force of restraints and traditional hotels, and super-markets are abundant.

Fifthly, commonality goods' importance is obvious. Because the CBD functions the economy cooperation and management, social economy security is more and more important. The government, tipstaff, chamber of commerce, and other functional departments have higher efficiency than those in other districts.

Those changes directly result in the reorientation of urban CBD. Because the core of industry benefit has transferred from physical elements to intelligent elements, from manufacture to management, the functions of urban CBD are restricted by the "cost-benefit" curve, and transfer from the manufacture center to the management center.

The industrial increment generally consists of four parts: value in shape, value on time, value in space, and value on possess. It is obvious that the industry management center and distribution center base the "integration of supply chain" theory. According to modern logistics conception, the logistics is a industrial system; is the integration and optimization of transport, storage, loading and unloading, conveying, packing, current processing, distribution, information disposing and other elements. Society economy activity is an integration of material distribution, information current, manpower resource, and capital. From the scope, the economic function of urban CBD is represented by

management of information, manpower resource and economic services.

3. ANALYSIS OF THE EVOLUTION OF DALIAN'S CBD

Such as the former depiction, most western cities takes CBD as the general management, distribution, and service center, which many business, economy, office activities. According to foreign CBD, our native urban CBD has developed through different path. Native CBD developed on the base of traditional center district. Traditionally, the center of a city usually is the geometrical center or the axes of the urban area. In the latter-days, with the invading of western capitalism and the slow development of national economy, the rudiment of CBD appeared in the seashore cities. At the same time, the retail commerce took shape in traditional commerce and handicraft industry areas. In the planned economy ages, the structural elements and layout of urban CBD had obvious changes, and effected by Soviet model, CBD's function is the center of administration management and public campaign. Since the Reform, the inner impetus of market economy promoted our native city internationalization development⁽¹⁰⁾. But the general service function is still lack. The reasons are following:

Firstly, the reconstructing of old city zone mostly is physical reform and compensation. It can hardly aim to renew and develop the city function, and cannot practice multi-objective, multi-factor and multi-approach reform. Secondly, the imbalance of our native industries development behaves as the lag of the construction of public physical and economic services. With the rapid development of native economy and the distinctness of that China becomes the manufacture center of the world, Chinese economy development has involved in the global situation⁽¹¹⁾. It has been proved by investigation that our nation can not afford the demand of recomposing supply chain in the logistics management services⁽¹²⁾.

Thirdly, the low density of CBD became the inanition. The development of urban service function is slower than the demand of society economy developing, so manufacturing move out of the CBD, at the same time, the supply of service industry is not enough. And the government's compulsive policy make it worse. Fourthly, the bad circle of physical market of CBD formed. The lag of general services makes the layout and constructing of many public business buildings straggled.

The history of Dalian city is relatively short, and the programming and constructing not only has seashore structure characteristic, but also has been influenced by the colonial age when Dalian was colonized by Russia and Japan. After almost one hundred years constructing, a CBD distribution has formed in Dalian that centers on

the “Qinniwa bridge-Zhongshan square-Bay square” triangular district. Since 1990, with the rebuilding of old city zone, enclosing the former CBD and aiming at achieving the international level, Dalian government has weightily programmed and constructed a 2.8 sq.km. area from Bay square to Civil aviation mansion. And obviously a functional distribution has basically formed, which emporiums, office buildings and hotels .

In general, the layout and functional characteristics of Dalian CDB, is same to the problems of other cities. But Dalian CDB has its characteristics:

Firstly, the competition of retail trade is too serious. Many big bazaars have higher sale but lower benefit. The situation is worse in the super-markets such as Wal-Mart.

Secondly, the restaurants hardly analysis the clients. Service has no otherness and the service level is relatively lower.

Thirdly, the competition of general services is too weak. The scale economy and scope economy cannot form. It is difficult that achieving higher services to supply the demand of clients. Those are the reasons why many office buildings leave unused.

Fourthly, the lag of public physical services is serious. Because the local benefits bring the public resources waste and the trade charge is too high, the public resources cannot be shared.

Modern economy is the typical “seashore” economy, and the port is the hinge and core of an economic chain. With the global development of the world economy, markets have managed elements and not managed products. The development of nations more and more lies in the outer trade and international exchange. This trend directly accelerates the “tertiary port” forming. This sort of port combines the advantages of container transport, multi-type transport, international trade, general logistics management.

The “tertiary port” not only should have traditional services, such as loading and unloading goods, distribution of information, providing services for the clients, but also should supply many modern services:

Firstly, providing industrial services.

Secondly, providing distribution services.

Thirdly, providing general logistics services of supply chain.

In the above services, the last one is the most important, whose level directly influences the using of port⁽³⁾. Port industry is one of the important industries of logistics. The “tertiary port” has been the core element of modern logistics, which takes the global supply chain management as aim and emphasizes on the general logistics management.

As the estimate of World Bank, the last year, the logistics cost of China National Economy is 1,600 billion RMB, and the logistics of China has been shaped. According to the statistics, in 2001, the total amount of commodity is 3,760 billion RMB in China, that of yield material is 5,500 billion RMB, and that of imports and exports is 500 billion dollars. The bigger overseas demand provides wide marketable space.

As the hinge port of northeast Asia, Dalian is one of the important cities that are taken as national logistics basic constructions, and Dalian takes the domain role in the district industry supply chain. The advantage of Dalian is just its ports, likes Singapore and Hong Kong. So the development of Dalian city lies on the interplay of port economy and city function⁽⁴⁾.

As one leading industry, the general services industry should aim at the “port economy”. Recent years, the depression of many hotels and office buildings that are primary elements of general services industry can prove this point.

After China entered WTO, with the flourish of native and international trade and the gradual opening of native market, Dalian logistics industry has advanced opportunity and great potential. Dalian has taken logistics as support industry and put forward the stratagem that constructing Dalian port as international ship center⁽⁵⁾.

But in the layout and programming of district logistics, mainly emphasizing on “hard” devotion, and less considering the “soft” devotion, which may waste much capital and substance. The development of Dalian logistics should take the district advantage as bases, and take the demand of global industry supply chain as criterion. This logistics system has following characteristics:

- Space: shorter traffic distance and better traffic conditions
- Time: shortcut and efficiency
- Circumstances: comprehensive living and business establishments and grace sights
- Commerce: comprehensive administration and information services, reducing cost and increasing efficiency

Not only from district resources advantage and the demand of marketing circumstances, but also perfecting the competition and driving the whole district economy, it is necessitous that constructing the comprehensive logistics services stage to strengthen Dalian CBD’s functions.

It is obvious that at present, rare services are the effective supply, regulation and conformity following functions:

Firstly, public physical services

Secondly, comprehensive society logistics management

services

Thirdly, logistics clients, physical logistics recourses

4. CONCLUSIONS AND SIGNIFICATION OF RESEARCH

Constructing digital CBD, can strengthen the services functions of comprehensive logistics management of Dalian, and absolutely combine the district advantage and resource advantage of Dalian. So Dalian urban CBD's functions can rapidly adapt the press of global economic, and the CBD becomes the competitive center of city or the area and accelerates the recomposing of district industry supply chain.

ACKNOWLEDGEMENT

This paper is supported by the National Natural Science Foundation of China (No: 70031020).

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