Third-party Logistics—Key to Rail Freight Development in China

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Introduction

In light of today's trends in logistics, this article analyzes the special role and functions of logistics from both micro- and macro-economic viewpoints, pointing out that third-party logistics is the key to future development of rail freight in China. It examines the feasibility of and necessity for outsourcing China's rail freight, and outlines a concrete plan.

Before the 1970s, the term 'logistics' was hardly ever used in economic studies in China. Research on logistics did not start until the early 1980s when the concept was imported from Japan. After 20 years of research and implementation, logistics has become a pivotal element in China's economic development, not to mention a valuable source of corporate profits.

Supply Chain Management—Core of Modern Logistics

The study of logistics in China originated with the material management system. However, since the concept of logistics is still vague, many people still confuse logistics with material management.

Logistics is composed primarily of functions such as transportation, warehousing, packing, shipping, customized processing, delivery, logistics information services, and other operations. However, it is not a mere aggregation of the above-mentioned functions and activities. Today, logistics synthesizes these relatively independent traditional functions into a closely linked supply chain. It employs an integrated management approach using modern management concepts, methodology, and technological tools. Supply chain management is the backbone of today's logistics services.

There is a major difference between traditional and modern logistics. Modern logistics is not just a process made up of a series of activities. More importantly, it is the process of a logistics provider participating in the management and administration of a manufacturer's business. From the viewpoint of the manufacturer's customers, the logistics provider designs the logistics plan and offers comprehensive services related to the supply chain. While reducing the operation costs and maximizing the overall profit for the manufacturer, the logistics provider also creates a profit margin for itself. There is a fundamental difference in the perception of modern logistics theories and traditional logistics concepts. For example, in order to increase revenue income from warehousing, a traditional warehouse operator holds as much inventory as possible for as long as possible. However, when warehousing functions as a link in modern logistics, the aim is to minimize inventory and speed turnover. A modern warehousing operator tries to achieve almost zero inventory for customers while striving to transform its facilities from a simple, passive storage space into a comprehensive and dynamic distribution centre, with the ultimate goal of optimizing the whole logistics process. A traditional logistics operator manages with the objective to maximize profits and minimize operation costs. However, a modern logistics operator aims to offer services that meet customer needs, optimize overall performance of logistics functions, and maximize profits and minimize costs across all logistics activities. Thus, modern logistics is about service and integrated management of the whole supply chain.

Unique Position of Logistics in Micro- and Macro-economics

From the micro-economic view, companies have little room to manoeuvre in cutting production and sales costs as production technologies have improved and management know-how has grown on a global level. However, there is still ample potential to cut costs in logistics operations such as transportation, warehousing, delivery, and inventory. Thus, companies begin to change the emphasis from the dominance of capital and product differentiation to logistics. In general, logistics costs are a significant part of operating expenses, accounting

Hauling coals on Datong–Qinhuangdao Line (China's Railways Press)

for 5%–35% of sales revenue. Today's integrated supply chain has made logistics management a priority for many companies. In the early 1960s, American management specialist Peter Deruke described logistics as the 'dark continent' of economic development, the 'last frontier for cost reduction,' and the 'third profit source.' Generally, managers emphasize cutting costs as the first source of profits and improving productivity as the second source. Wu Bangguo, the Vice Premier of China's State Council, also pointed out that today's logistics has become an advanced form of organization and a management technology. In addition to cutting costs and raising productivity, logistics is widely recognized as an important source of revenue.

From the macro-economic viewpoint, China's economy and industrial structure are at historical turning point, requiring adjustment and integration. Most of China's traditional industries are in financial difficulty due to fierce competition. The malfunctioning supply chain has become the major weak link of industrial development and many industries are gradually shifting the focus of their competition to distribution channels. Since logistics spearheads the entire supply chain, there are great expectations that revitalization of China's logistics will resolve the widespread problems arising from the decentralized and divided distribution. Modern logistics can open the door to China's future industries as well as to economic integration. Development of logistics is a prerequisite for overhauling China's economic structure. In a planned economy, logistics and railways are quite similar because they are both arteries of the national economy. Industries that can grasp the opportunities offered by logistics will steer the Chinese economy into the future.

Future Third-party Logistics

Logistics is an unavoidable part of all business. A company can perform its own logistics (self-operated logistics), obtain outside logistics services, or outsource logistics functions to a logistics company (third-party logistics).

Logistics management has become a specialized field as markets have become more extensive. Consequently, many businesses favour outsourcing their logistics functions to specialized third-party logistics providers. In doing so, they free themselves to concentrate on their core business, while making full use of the specialized knowledge, technology, and information networks of the third-party providers to obtain services or production factors that are not available within their own organizations.

At present, third-party logistics providers handle 57% of logistics services in the USA and about 80% in Japan. Third-party logistics providers include warehousing, transportation, and logistics. Before the 1950s, only third-party warehousing and third-party transportation were common, but today, third-party logistics has become an industry leader that shoulders major functions.

Third-party logistics providers are characterized by the fact that not only do they provide customers with physical movement of goods, they also engage in the customers' overall corporate strategic and operational management. In order to cut the total costs of logistics and to ensure proper functioning of the supply chain, they put themselves in the customer's shoes to design comprehensive logistics systems, formulate general plans for managing the supply chain, and take charge of operational decisions and activities. Third-party logistics providers play a dual role by designing the logistics systems and performing the logistics operations.

Table 1 Third-party Logistics Market Share in Europe

France	26.9%
UK	34.5%
Italy	12.8%
Spain	18.0%
Netherlands	25.0%
Belgium	25.0%
Austria	18.0%
Switzerland	22.0%
Denmark	20.0%
Finland	20.0%
Ireland	24.0%
Portugal	16.0%
Greece	11.0%
Luxembourg	25.0%

Consequently, the relationship between a third-party logistics provider and the company it serves is both long term and collaborative, and is not based on piecemeal operational activities. Such relationship creates a win–win situation because it guarantees the company stability, systematization and continuity in the planning and management of its supply chain, while creating a stable, long-term customer base for the logistics provider.

Third-party logistics is growing rapidly in Europe. For example, the German logistics market totals US$34.6 billion and third-party logistics providers have 23.33% of the market worth over US$8 billion. The figures for other European countries are shown in Table 1. To summarize, third-party logistics accounts for 10%–35% of the whole logistics market in Europe, a figure that is high compared to other countries.

Feasibility and Necessity for Third-party Logistics in Chinese Rail Freight

Logistics is a new concept for most companies in China. The two conventional production models of 'large

Large gantry crane in busy freight reloading yard at Manzhouli Station on Russian border (China's Railways Press)

scale and fully fledged' and 'small scale and fully fledged' have created a self-sufficient structure that has stifled the logistics market. However, since opening the door to reform, the Chinese economy has sustained rapid growth over 20 years. The resultant dramatic improvement in productivity has created a buyer's market that further aggravates competition. Competition between businesses has expanded from manufacturing to non-manufacturing industries, offering logistics management a window of opportunity for companies to cut costs, upgrade service quality, and create an competitively advantageous position. In China today, after a product leaves the factory, the distribution cost including the various logistics functions such as shipping, warehousing, transportation, and delivery to the end user is about 50% of the price. In the case of fresh fruit and vegetables, perishables, and some chemical products, it can be as high as 70%. In manufacturing of automobile parts in China, warehousing, shipping, and transporting of raw materials and component parts occupies more than 90% of the manufacturing time. Large amounts of raw materials, components, and finished goods are held as inventory at the production and distribution ends. Such wastefulness of time, money and inventory presents a huge opportunity for logistics development.

Commonality of modern logistics and traditional rail freight

Modern logistics systems span many industries and operations but the two most important are transportation and warehousing. Many well-known logistics companies in the USA, Europe and Japan have their origins in transportation and there are strong ties between logistics and transportation. The transportation industry is the basic logistics carrier and transportation costs represents a large part (about 45%) of logistics costs. Rationalizing transport methods, minimizing costs, shortening transit times, and delivering products punctually and accurately are all prerequisites for cutting logistics costs and improving logistics efficiency. Transportation is the core of modern logistics and barrier-free rail freight is a key part of modern logistics.

Providing infrastructure for transition to modern logistics

Railways are the main mode of transport in China where they enjoy an extensive network, adequate warehousing, well-located stations, large-scale container systems, special transport services, courier services for luggage and parcels, etc. The facilities and equipment used by traditional rail freight are well positioned to develop modern logistics. Furthermore, railways have comparatively high brand recognition in the domestic market, a skilled staff, a stable client base and a dominant market share. The advantages of railways are unlikely to be matched by other transport modes, logistics companies, and newcomers to the logistics industry for a long time.

The top priority in developing China's logistics is building large-scale integrated logistics centres offering services over a wide area. Since railways dominate long-distance transport of bulk freight, existing large railway hubs and marshalling yards present an ideal infrastructure for building integrated logistics centres.

Clearly, modern logistics in China does not mean the high-tech fully automated logistics systems found in many overseas countries. Logistics systems in China must match the current state of China's transport industry while accommodating world trends in logistics. The major difference from modern logistics overseas is that China must pursue modernization of both the organization and management of modern logistics rather than just modernization of facilities and equipment.

Requirements for favourable development of rail freight

Modern logistics emphasizes provision of fully-fledged services to customers rather than just physical movement of goods.

Therefore, development of rail freight in the direction of third-party logistics could greatly improve rail transport by introducing new management concepts and enhanced services. Furthermore, modern logistics is a high-technology industry based on information technology (IT) and the Internet. It requires systems facilitating information exchange including advanced electronics technology (global positioning satellite (GPS) systems, telecommunications, bar-coding, electronic data interchange (EDI) system) automated warehousing, automated shipping, inter-modal transport, etc. As a result, it has the potential to drive rail transport, especially rail freight, to new heights.

WTO Membership to trigger severe competition

In the last 20 or so years, famous international shipping companies like P&O Nedlloyd and Maersk-sealand have successfully entered the field of integrated logistics services. They have developed large-scale operations and have gained the high ground in terms of networks, IT, management know-how, and skilled workforce. These pioneers have turned their eyes to China's rapidly expanding logistics market and have formed relatively stable partnerships with Chinese and foreign joint ventures and manufacturers using foreign capital. When China becomes a member of the World Trade Organization (WTO), its logistics market will open up rapidly and foreign companies will use their experienced workforce and financial advantages to quickly establish logistics networks and capture market share. Nevertheless, establishing any large-scale logistics systems in China will take time and Chinese railways might still have the advantage of a long tradition in domestic land transport. Today, Chinese railways are faced with a rare opportunity and a severe challenge.

Action Plan for China's Rail Freight Transport to Develop Third-party Logistics

Since China opened up to reform, the government has augmented investment in railway construction and increased the number of track-km by opening new railway lines, rapidly improving the transport infrastructure and raising capacity. However, overall railway development has still not caught up with the demand of China's economy. As a result, the transport capacity of railways in China is still relatively constrained; the level of transport companies is still low, especially in the level of specialization and lack of efficiency. Chinese railways still lack the mindset for logistics management and fall short of integrated transport networks with large-scale integrated logistics centres, distribution centres, and systematic and rational planning. Therefore, there is still a large gap between China's rail freight transport and third-party logistics benchmark. To make steady progress in closing the gap, China needs to be systematic.

Promote third-party logistics for all rail freight

The standard of quality for today's logistics services is based on delivering the right product, in the right place, in the right quantity, at the right time, and at the right price, or the so-called 'Five Rights.'

Under a planned economy, Chinese railways transported mainly bulk freight such as coal, minerals, and agricultural products. Rail freight only meant physical movement of goods—services and logistics were out of the question. Following the transformation of China's socio-economic structure, the product logistics market and the transport market have also undergone fundamental structural changes. Today, they provide a wide range of services including deliveries to supermarkets, shopping centres, and chain stores. Logistics services are supplied to manufacturers and companies selling automobiles, electric appliances, daily necessities, clothing, etc., along with transportation, warehousing, and delivery of fresh, frozen and refrigerated foods. These are the areas with the greatest growth potential for specialty logistics services. The market demand has

Freight train passing through environmentally sensitive sand dunes on Baotou–Langzhou Line
(China's Railways Press)

changed from a few low-value product varieties in high volumes with few batches in a long cycle, to many high-value product varieties in low volumes with many batches in a short cycle.

Due to the above-mentioned characteristics and market demand, national specialty transportation companies set up after the separation of railway infrastructure from operations must take the lead in the direction of modern logistics. Transportation companies in containerized transport, courier services carrying luggage and parcels, specialty transport, and rail express will find themselves faced with a specific and elaborately divided market and customer groups. These customers will require transportation companies to offer not only door-to-door delivery and other basic services, but also value-added logistics services, using them as a standard to gauge the service quality. Due to the diversity of product categories and the special nature of products, it is convenient and necessary for these companies to find a market niche by offering single-type customized transport services. As a consequence, they will integrate into the supply chains of manufacturing companies and grow into third-party logistics providers capable of offering customized as well as general logistics services.

Restructure rail freight to use transport agents

Most of China's rail freight is still based on direct consignment by customers. This relatively old-fashioned method is a major impediment to rail freight development. I must say Chinese railways have made great efforts to reform and simplify consignment procedures with excellent results. However, the problem with complex consignment procedures has not been resolved completely. We must also realize that as the modern transport structure becomes more and more specialized and complex, many procedures cannot be simplified. Setting up a transport-agent system is the only way to get to the root of the problem.

Transport agents serve as an intermediary between the cargo owners and the companies supplying the transport services. A transport agent takes care of all the procedures including consignment, interconnection, multiple-journey transport, and delivery to the final destination, fulfilling the goal of one consignment, one account settlement, one contract, and one freight bill to the final destination. The transport-agent system can bring a fundamental change to the relationship between cargo owners and transport companies. Throughout the entire transport process, cargo owners and transport companies will no longer need to deal with each other directly, but can go mainly through agents providing services to both parties. The agents can also create profit margins in transport by cutting costs through economies of scale and specialization.

From the above, we can see that direct consignment by owners only performs the railways' function of physically moving the goods. The transport-agent system adds the service function to the physical movement of goods.

In fact, modern logistics services already include the transport agent's functions such as offering services in transport consultation, selecting the most appropriate combination of transport methods, customized routing, consigning cargoes on customers' behalf, and providing door-to-door delivery services. The services provided by transport agents constitute an important part of the modern logistics services, a necessary step that rail freight companies must take to advance to modern logistics. For this reason, China's rail freight must first complete the transition from the direct-consignment system to the transport-agent system, and then change direction to modern logistics.

The new Eurasian land bridge starts from Lianyungang Harbour on Yellow Sea (China's Railways Press)

Building logistics base using station freight terminals and enhancing value-added services

Infrastructure must be upgraded in tandem with growth in logistics. Logistics bases or industrial parks provide the infrastructure for implementation of

Sino–Mongolian Railway at Erenhot, an important international reloading yard on Mongolian border (China's Railways Press)

Chinese and Russian crew checking reloading tickets (China's Railways Press)

intensive logistics, and serve as the incubator for nurturing modern integrated logistics. The construction of a centralized and specialized logistics base can provide services to logistics companies in the area and attract more newcomers.

The freight terminal at a Chinese railway station is the centre for collecting and dispatching goods and for exchange of information. Building logistics bases at station freight terminals would be effective in terms of location and time. In addition to its traditional functions, a station freight terminal can make use of its advantage in traditional shipping and warehousing functions to expand the scope of services to augment the added-value of products. These services include product packaging, labelling, assembling, repair, processing of returned merchandise, and simple product processing. The availability of such services makes logistics truly a part of the customer's manufacturing and sales. By the same token, information exchange centred on station freight terminals must also undergo a value-adding process to change from dispersion to concentration. Station freight terminals will have to be equipped with large-capacity, high-performance electronic information systems to provide a basic information platform so that they can integrate, process, manage, and transmit information from various sources such as logistics companies and customers. Maximizing the use of information resources will enhance the value-adding functions of logistics.

Speeding investment in railway information infrastructure

Modern logistics uses cutting-edge technology and sophisticated management to provide services. As the scale and extent of production, distribution, and sales expand, the technology, equipment, and management of logistics also become more advanced. Technologies related to computers, telecommunications, mechatronics, and voice recognition are used widely in logistics management. The world's most advanced logistics systems use GPS, satellite communications, radio-frequency recognition, and robotics to achieve automation, mechanization, paperless operation, and artificial intelligence. These technologies are being perfected in the West. Lately, a considerable amount of logistics and distribution technologies have been introduced into China and have gained wide acceptance. They include bar-coding, computerized information management technology, EDI, materials requirements planning (MRP), etc.

Chinese rail freight is speeding up its effort to construct and apply information systems. Based on the transport management information system (TMIS), it is optimizing and integrating the various conventional information systems to establish an automatic freight wagon recognition system. It is also leading container transport companies and China Railway Express in research and testing e-commerce models and logistics management for container transport, rail freight, and warehousing. This will provide the information and technology framework to enable traditional rail freight to develop and integrate into modern logistics. ■

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