

Experience and Enlightenment of Port Intermodal Transport based on the Trend of International Multimodal Transport

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Abstract

In recent years, with the increasing volume of international cargo transport and the gradual improvement of multimodal transport, more and more international multimodal transport is adopted when the mode of transport is selected. In the multimodal transport scheme that takes the port as the transport hub, the traditional modes include airport-port transport, sea-railway transport and so on. In recent years, with the continuous development of air transportation and railway transportation technology, airport combined transportation and sea-railway combined transportation are also booming. With the increasingly complicated transportation of goods, the single mode of transportation can no longer meet the needs of the transportation of goods. Railway transport has strong continuity, reliable transport capacity, transport safety, easy to control; Waterway transportation has the advantages of huge volume, low cost and low energy consumption. As a result, the port - centered joint transport hub is developing vigorously and will bring great influence in the transportation industry.

Keywords

International Multimodal Transport, Port Combined Transport, Revelation.

1. Introduction

The transportation industry is indispensable in the national economy, and the transportation industry connects all parts of the world. People can realize the transportation of goods, travel, etc. through transportation. The traditional modes of transportation include waterways, railways, aviation, roads, and so on. With the deepening of world trade and the increasingly busy transportation of goods, a single mode of transportation can no longer meet the transportation needs. At this time, the advantages of multimodal transportation are becoming more and more obvious. Through multimodal transportation, the advantages of traditional transportation methods can be reflected in the entire transportation process. The most important method of cargo transportation in the world is ship transportation. Therefore, the port has become the main transportation hub for multimodal transportation. From this, transportation methods such as sea-rail transportation, sea-port combined transportation, and road transportation have been developed.

Taking water transportation ports as hubs, relying on airports and railway stations for continuous transportation of goods and passengers, transporting goods or passengers from designated locations to delivery locations, and adding transportation restrictions on the basis of multimodal transport.

2. Background and Significance of Topic Selection

2.1 Background of Topic Selection

Multimodal transportation integrated transportation business first began to develop in the United States, that is, North American Continental Bridge transportation. Later, Canada and Mexico participated in North American Continental Bridge multimodal transportation. The former Soviet

Union Foreign Trade Transportation Company established and operated the Siberian Continental Bridge; Japan was in the 70s of the last century. In the 1990s, multimodal transport was carried out. In the 1990s, super liner technology began to be gradually studied. The main attack direction was mainly high-speed cargo ships; Japan and South Korea participated in my country's new Eurasian Continental Bridge international multimodal transport in the 1990s. transportation. In recent years, with the rapid growth of port cargo transportation and the increasingly complex types of freight transportation, the traditional single transportation method has been unable to meet the needs of cargo transportation. At the same time, with the rapid development of aviation logistics, the railway transportation network is developing towards high-speed and huge transportation volume. With ports as transportation hubs, multimodal transportation methods such as sea-rail combined transportation and air-port combined transportation have been derived.

2.2 Significance of Topic Selection

Air transportation is widely used due to its short construction period, high efficiency, and fast speed; railway transportation will be the backbone and backbone of the transportation network at this stage and even in the foreseeable future; waterway transportation has huge transportation capacity, The advantages of low transportation cost and low energy consumption of ships compared to other transportation methods. The disadvantages of water transportation are slow speed and poor continuity. The advantages of water transportation, air transportation, and railway transportation should be reflected in the process of multimodal transportation. Air transportation, railway transportation, and water transportation should be organically combined according to their technical and economic characteristics to build a division of labor, coordination, and rational layout. A transport system that is connected and has certain functions. Take the waterway transportation port as the hub to build a comprehensive facility with organizational functions, transfer functions, warehousing functions, and loading and unloading functions, and provide information services and other auxiliary functions for the entire system. The logistics area of the sea-rail combined transportation method. The port-centric transportation hub should be part of the integrated transportation system, and theoretically possess the functions and characteristics of the integrated transportation system.

With the continuous upgrading of the industrial structure, the continuous optimization of the internal logistics structure, the globalization of logistics and transportation has become more and more obvious. Under the trend of more and more common international multimodal transportation, combined transportation logistics has developed rapidly in recent years. Contributions are increasing, and economic development requires more and more air-port intermodal transport. For example, South Korea's Incheon International Airport vigorously promotes airport logistics, China's Tianjin has unique geographical advantages, and the prosperity and development of aviation airports and maritime ports. Multimodal transportation is uniquely endowed. On the basis of cargo transportation in Tianjin Port, important ports in the Bohai Rim and Tianjin Airport, it can give full play to its transportation advantages and jointly create a logistics industry for departure. At the same time, Shenzhen, China has also implemented an air-port combined transportation strategy. Shenzhen Yantian Seaport and Bao'an Airport rely on Jihe Expressway to achieve multimodal transportation. In recent years, Jinan Bureau Group Corporation has made great progress in meeting the needs of regional logistics in bulk sea-rail combined transportation and container multimodal transportation. The existing multimodal transport has brought a certain degree of economic growth to the region, and has brought a case for the development of multimodal transport in other regions where port logistics, aviation logistics, and railway transportation are developed. This article studies the experience and enlightenment of combined transportation with ports as hubs from the perspective of international multimodal transportation.

3. Research Status at Home and Abroad

3.1 Status of Foreign Research

At this stage, multimodal transportation in the United States is mainly a "door-to-door" transportation mode, and the intermodal transportation method with ports as transportation hubs as a transit is developed; Canadian multimodal transportation volume accounts for 80% of social transportation volume, and the Canadian government adopts a loose policy. Management, on the basis of analyzing and studying the international situation, adjust the current policies according to the actual situation in a timely manner to create a relaxed environment; John Kasarad concluded from the study of international trade that aviation logistics is the core of economic development; the Port of Hamburg is Germany The largest port, the EU's important maritime transit hub and international shipping center, and the sea-rail combined transport industry is developed; in 1997, EU countries pointed out that the emergence of multimodal transport has problems such as poor coordination and imperfect regulations and systems; the United States is studying multimodal transport. In the process of intermodal transport problems and solutions, it is pointed out that the functional power of government departments should be fully utilized, and the layout of station facilities should be reasonable; when foreign researchers are studying cargo transportation methods, they have pointed out certain issues based on the analysis and evaluation of existing cargo. For some goods, such as the transportation of second-hand vehicles in Central Asia, sea-rail combined transportation can bring the greatest economic benefits.

3.2 Status of Domestic Research

Domestic research on logistics started relatively late, and systematic research was formed at the beginning of this century. The evaluation of logistics capabilities is mainly for enterprises and ports. On the basis of analyzing and studying the advantages of Tianjin Airport logistics development, Dou Guohui established the evaluation indicators for the development of Tianjin Airport logistics; according to the statistics of relevant state agencies, the total volume of cargo transportation in my country in 2015 was 41.76 billion tons, of which the transportation of multimodal transport plan The total volume only accounts for 2.9% of the total freight volume, and the China-sea-rail combined transport accounts for a low proportion of the total multimodal transport. At this stage, there are two main land bridge transportation routes in my country; the current multimodal transport in China is in the middle of the transit process It consumes 30% of the funds in the entire process. Researchers believe that the economic benefits of multimodal transport can be greatly improved to a certain extent; at this stage, the research on multimodal transport is mainly conceptual research, and the multimodal transport process is most in need It is simulation model research; the existing research theories lack examples that can verify the existing cases

4. Basic Conditions for Multimodal Transport

4.1 Transportation

Combined transportation with ports as a hub mainly relies on transportation vehicles such as sea ships, aviation planes, railways, trucks, and transportation vehicles between combined transportation, including trucks, forklifts, and so on. At the same time, the layout and geographical location of airports, ports, and railway stations will also affect the entire transportation process.

4.2 National Policy

The "Belt and Road" development plan should enable specific regions to give play to their geographical advantages, and the plan for accelerating industrial support should be adapted to local conditions and actively expand the development of economic space. The construction of the Maritime Silk Road can improve the economy of the areas along the route through cargo transportation and trade, and make it form an economic community with relevant interests. With the increase in the volume of my country's import and export trade and the increase in productivity, the completion of cargo transportation in the form of multimodal transport will help my country to grasp the market

orientation and increase the economic growth rate. The government authorities should appropriately strengthen legislation to deregulate. At the same time, the government should clearly define policy targets, pay attention to the operational limitations of multimodal transport, and also pay attention to the construction of multimodal transport systems. The strategic plan should have a long-term perspective.

4.3 Economic Hinterland

To achieve higher economic benefits, air-port intermodal transportation depends to a large extent on its geographical location. Generally, the advanced transportation industry of airport combined transportation is located in the economically developed international metropolis. Generally, cities located in international shipping have developed shipping industries, dense water transport channels and shipping-related auxiliary service facilities. The economic hinterland is the center of economic transactions. The continuous economic and trade exchanges have huge demand for transportation. Derived from this, it is difficult for a single mode of transportation to meet the cumbersome cargo transportation requirements. Therefore, the requirements for combined transportation are increasing. The benefits are also obvious. Traditional water transportation is naturally closely related to air transportation and railway transportation. For example, Shanghai, as my country's economic hinterland and international shipping center, is adjacent to Yangshan Deepwater Port. This port has the largest container throughput in recent years, with huge cargo volume; Shanghai Pudong International Airport and Shanghai Hongqiao Airport transport freight and passengers. In the forefront of our country, cases of combined transportation of cargo and passengers are not uncommon, which has brought high economic benefits and made great contributions to the economic development of the Shanghai area.

5. Problems in Port Combined Transport

5.1 Climate

Whether it is air transportation, waterway transportation or railway transportation, the impact of climate on transportation efficiency accounts for a large part. For example, in the case of foggy weather, due to poor visibility, the ship carrying cargo must drop anchor and wait for the weather conditions to change due to safety considerations. The sailing aircraft can also be used. If the navigation encounters foggy weather, a forced landing plan must be adopted. Ensure the safety of navigation. Generally, cities that develop multimodal transportation with ports as hubs are all coastal cities, which are strongly affected by the ocean monsoon and the weather changes greatly, which will affect the effectiveness and efficiency of combined transportation to a certain extent.

5.2 Intermediate Transfer Process

The connection of multimodal transport station hubs still needs to be perfected. Nowadays, railways, highways, aviation, docks and other infrastructures are constantly improving, but there are fewer connections between each other. For example, the transfer efficiency of cargo in the sea-rail combined transport will also indirectly affect the benefits of the entire combined transport. The unreasonable layout of transportation routes between airports and railway stations will increase the time required for cargo transshipment to a large extent, which in turn will increase the time the ship stays in the port, resulting in a series of port charges and demurrage; If the cargo cannot be stacked in the terminal yard, it will also cause a series of cargo costs; if the design of the transshipment route is unreasonable, it will not cause a waste of time, affect the efficiency of other traffic flows in the city, and affect the development of the city's regional economy.

5.3 Management System

According to the principles of management, the combined transportation process can be regarded as a management system, which should have complete planning, coordination, organization, control, and coordination functions. There is a lack of information service system in the whole transportation process of multimodal transportation. A large part of the economic benefits of multimodal transport

depends on proper management. In this process, the work responsibilities of each link and each department should be clarified, the powers and responsibilities should be clear, the commands should be unified, and a complete joint management system should be established. For joint combined transportation, transportation methods are divided according to different regions, which can be divided according to regions. Functional departments, this way of dividing functional departments will have overlapping management costs, which is not conducive to the management of the entire transportation process by senior management, and thus reduces the efficiency and effectiveness of combined transportation.

5.4 Transportation Capacity of Various Transportation Routes

Insufficient railway container capacity will directly restrict the development of sea-rail combined transportation and land-bridge combined transportation. The advantages of railway transportation are large and long transportation distances. However, most of the suitable container cargo sources are railway vehicles or road transportation, thus causing the container Low packing rate

6. Solutions

6.1 Improve the Information Management System

Establish a complete logistics information collection system, even if the real-time situation of transportation, such as weather and transportation status, is to be scientifically predicted and analyzed, all the collected information at the current stage will be scientifically predicted and analyzed. In the next stage, the cargo transportation plan will be adjusted in time to ensure timely cargo transportation and full utilization of capacity to maximize economic benefits. The intelligent transportation system (ITS) and EDI are applied to the airport combined transportation, which can be established on a large scale. Combined transportation safety, transportation system operation efficiency and capacity, combined transportation system that improves transportation comfort.

6.2 Reasonable Layout of Transportation Routes

Various transportation methods, routes and nodes need to be developed and coordinated, increase financial support in key areas, grasp the connection between comprehensive construction and key construction, and accelerate the continuous improvement of transportation infrastructure; the design of transportation routes should be subject to the city The overall economic benefits, the coordinated development of the integrated transportation system, the partial compliance with the whole, the combination of short-term plans and long-term plans, and the combination of theory and practice; the layout of transportation routes should be scientifically analyzed and predicted, and be consistent with the urban industrial and agricultural layout. Adaptation, saving resources, and minimizing the waste of land should be combined with urban planning to promote the formation of a comprehensive urban transportation network. The layout of transportation routes should be compatible with the country's national defense construction; attention should be paid to the construction of nodes and appropriate establishments around the port A large-scale line station; improve the market transportation mechanism to realize the intensive development of the market; properly handle the relationship between cargo storage and cargo transportation, decentralized transportation and centralized transportation in the transportation process.

The planning of regional transportation modes should be adapted to local conditions to achieve the coordinated development of various modes of transportation; rationally arrange the geographical locations of airports and ports, promote the connection of infrastructure to ensure the development of multimodal transport modes; strengthen the integration of different modes of transportation Continuously optimize the sea-rail combined transport and airport combined transport channels, do a good job in optimizing the air-port combined transport structure, and strengthen the development of the river-sea port combined transport; focus on the layout of hub facilities such as ports, airports, railway logistics bases, and logistics parks, and strengthen container centers The construction of the

station, optimize and adjust the existing container handling station, attract suitable container cargo with high added value, and increase the utilization rate of container loading.

6.3 Improving the System of Policies and Regulations

In the construction process, the important role of the government in the development of multimodal transport should be highlighted, and the construction of the multimodal transport legal system should be emphasized; the implementation of various construction measures should be ensured through the use of legal systems, the policy and regulatory system should be continuously improved, and the legal compulsory measures should be used to achieve Ensure the development of multimodal transport.

6.4 Learn from Domestic and Foreign Examples

For the examples already available in the world, we must learn from them and promote the horizontal development of multimodal transportation cooperation; through various modes such as sole proprietorship and joint venture cooperation, the coastal, riverside and inland river ports are connected to each other, and the cooperation is continuously deepened. , Give full play to the port cluster effect, build a comprehensive transportation system interconnected by rivers, seas, and air railways; continue to extend the port hinterland inland to expand the development space of hinterland cities; change unsustainable financing methods including land transfer funds, local loans, etc., Try to use new financial and market means to promote the process of marketization of construction projects; learn from the development experience of international green transportation methods, and increase the sustainable development strategy of intermodal infrastructure.

7. Conclusion and Prospects

Multimodal transport is an important condition and material means for the development of various industries (including manufacturing and industry) in cities. It can increase the city's economic radiation and attractiveness, and is conducive to attracting foreign resources, developing the city's economy, and improving The economic level of the city. Not only that, the port-centric combined transportation can promote the continuous development of science and technology to a certain extent. With the continuous deepening of combined transportation, the economic and cultural exchanges between different regions and countries in the world will also be deepened. The continuous improvement of multimodal transport will drive the transformation of the urban regional economic structure and industrial structure. With the continuous improvement of the continuously upgraded industrial structure, the demand for transportation methods and logistics will continue to increase; the development of transportation methods will promote aviation supporting facilities, water transportation supporting facilities, railway supporting facilities, and high-tech related to aviation, navigation and railway transportation. The rapid development of technology industry, manufacturing industry and modern service industry; port transshipment equipment, front-end loading and unloading transportation machinery, container loading and unloading bridges-the straddle carrier technology program continues to develop; the waterway transportation ships are constantly improving, and the outer dimensions of the transported goods Continuously standardize to adapt to the mode of transportation after transshipment. The transportation mode and its corresponding hardware facilities are continuously optimized and upgraded to achieve the goal of economic growth.

When developing the multimodal transport industry, we must clarify that there is a significant linear relationship between the transportation industry and the economic development of the city in the multimodal transport, and the development of the transportation business needs to be based on the stable development of the regional economy. It is necessary to continuously promote the integration of multimodal transportation and logistics information; on the basis of the airport industrial concentration area and major ports, continuously improve the integrated logistics transportation system and the needs of market construction, continuously improve the industrial structure of combined transportation, and integrate existing advantageous resources , Vigorously develop

shipping-related industries and the development of shipping-related airport manufacturing, regional economy, and bonded logistics business.

When constructing a combined transportation industry chain with ports as the hub, it is necessary to strengthen the demonstration and leadership of related enterprises to accelerate the construction of the main body of the multimodal transportation market; develop innovative capital integration models, increase the amount of investment in infrastructure funds, and establish a shared information To build a shared platform and coordinate the use of intermodal big data; optimize the policy environment to comprehensively enhance the comprehensive soft power of intermodal transportation; use a large number of computer controls to gradually realize the automation of intermodal transportation.

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