

# Study on the Operation and Management Mode of Terminal on Railway and Water

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**Abstract.** As an important link of container and bulk cargo transport, port station is an important junction between railway and port and port and water transport. The management level and degree of port station directly affect the efficiency and benefit relationship of the combined railway and water transportation. The management level also affects the ability of facilities to connect seamlessly to reduce transport costs and time. Firstly, a hybrid port station management model based on dynamic logistics alliance is established. Then the forms of cooperation among enterprises under the mixed management mode are analyzed. Finally, the structure of hybrid management model is proposed.

## 1. Introduction

The cooperation between railway and water transport is the main mode of operation and management of port station in China. The main drawback is the lack of cooperation degree and efficiency. With the reform of the transportation department system, railway and port can carry out more diversified and three-dimensional cooperation. As the leader of the combined transport of railway and water, the two companies join with other economic entities, such as shipping companies, freight forwarders, carriers, to form dynamic logistics alliance. We will improve the integration of port station operation and management so that each economic entity and department can make up for its own weakness by taking advantage of its advantages, and at the same time, we can pool risks, share resources with each other, improve customer satisfaction and form a large system, which not only promotes operation efficiency but also expands economic benefits.

## 2. The establishment of hybrid port station management mode based on dynamic logistics alliance

### 2.1 Formation of alliances

Dynamic logistics alliance emerges is a new type of logistics enterprise organization form in the 21st century, which refers to a temporary alliance of several logistics enterprises with different key resources and different operation ability through certain agreement provisions. It takes market opportunity as the starting point, takes each participating enterprise's core ability as the basic requirement, takes the common interest and the goal. It is initiated by one or more logistics enterprises with core competence, and combines several logistics enterprises with characteristic business capacity and key resources. Through information network technology, it integrated the existing logistics resources of each region, unified management and monitoring, and completed the integrated transportation task of railway and water transportation[1].



## 2.2 Functional positioning of alliances

The functions of the alliance in the railway and water intermodal transport system include the following aspects. ① According to the change of market demand, the operator adjust shipper's transportation demand and determine the transportation target. ② Transportation operator will divide the transportation tasks according to the customer demand, quantity, days, rate and so on, and select the carrier in each region. ③ The operator makes an overall analysis of the amount of resources that each department has in the transportation link and the size of its function, discusses and formulates a complete transportation plan according to the specific situation of transportation, and then assigns the plan to each department for implementation. ④ The operator shall monitor and manage the whole railway and water combined transport enterprise alliance. ⑤ The operator carries out real-time tracking and monitoring of the entire transport process and gives timely feedback. All units share their real-time information, track the goods dynamically and facilitate the customer inquiry. Operation diagram of railway and water combined transport alliance is shown in Figure 1[2].

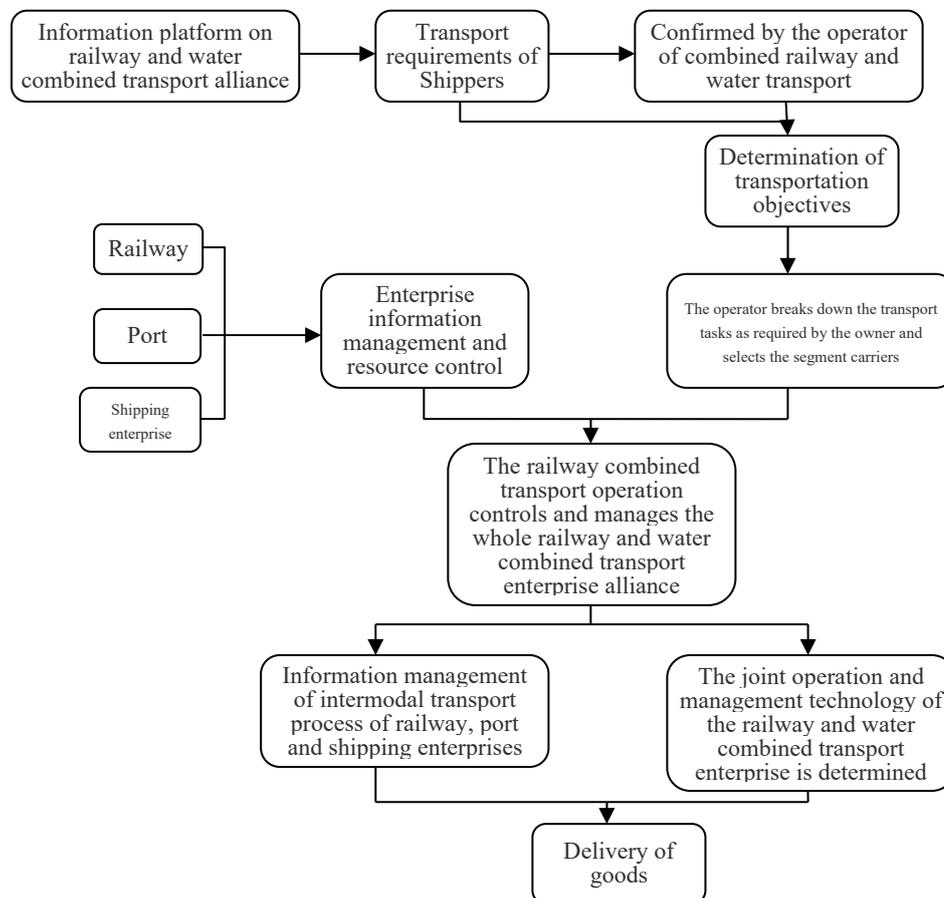


Figure 1. Alliance operation chart of enterprises on railway and water transport

## 3. Cooperation between enterprises under the hybrid management mode

### 3.1 Formation of alliances

When there is demand in the market, the market itself can only provide part of the resources. At this time, enterprises need to cooperate with each other and establish virtual enterprises to achieve the goal after the core enterprise is determined by the cooperative enterprise. Different core resources required by virtual enterprises are provided by each participating enterprise, while all core resources to complete tasks are provided by all enterprises together, which meets the market demand in the context

of market opportunities. All enterprises get their due benefits[3]. Its operation mode is shown in Figure 2.

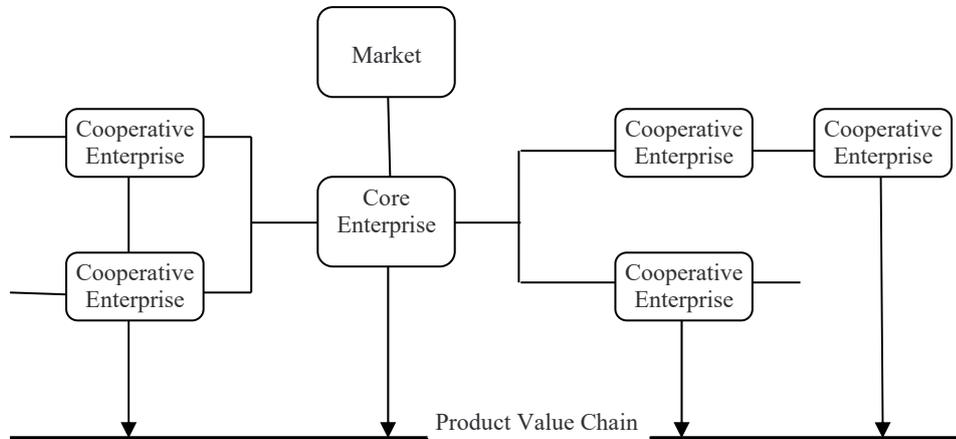


Figure 2. The relationship between the core enterprise and the cooperative enterprise in Alliance

3.2 The rank relationship among the ranks of dynamic alliance

As there are many enterprises and departments involved in the railway and water intermodal transport system, the operation and management mode of the mixed port station is determined according to the task status and work type of each enterprise and department, namely the core layer, operation layer and auxiliary layer. The core layer is the combined transport operator of railway and water. The operating layer is composed of railway enterprises, port enterprises and shipping enterprises. The auxiliary level is composed of one customs, three inspection, financial enterprises, banking enterprises and other enterprises or departments. The hierarchical relationship is shown in Figure 3[4].

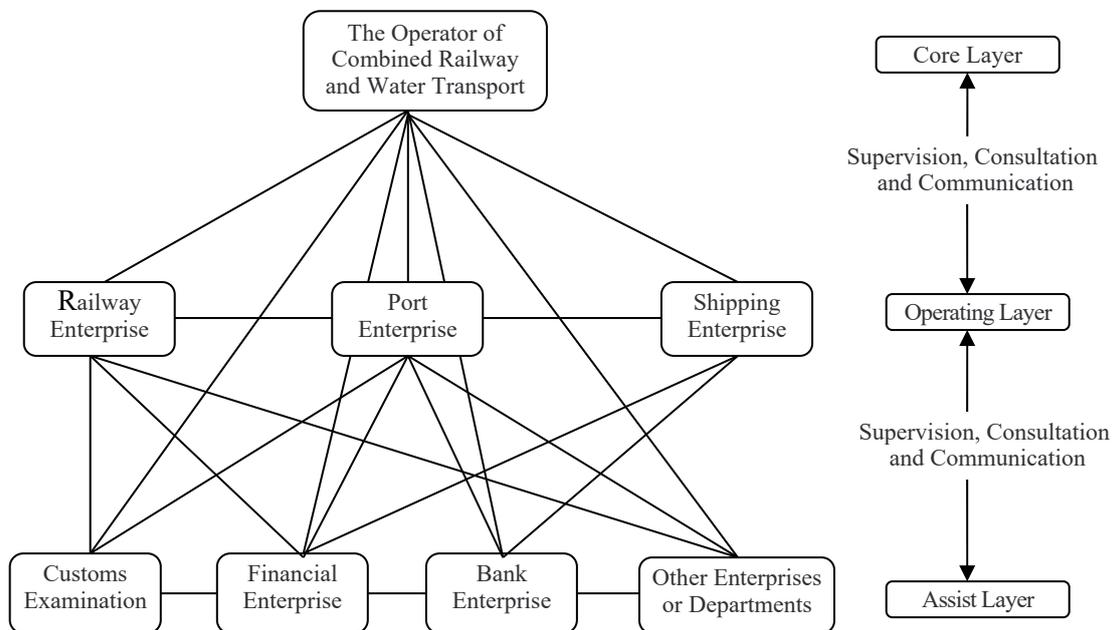


Figure 3. The hierarchical relationship between the various levels of the dynamic alliance

4. Organization structure of hybrid management mode

4.1 Form of dynamic alliance partner

Sections should be numbered with a dot following the number and then separated by a single space: A partner is a group of people or businesses that come together to achieve common goals and interests. They have a common sense of mutual trust and support, and can cooperate and share resources to achieve common goals and interests. Under the operation and management mode of combined railway and water transportation port, dynamic alliance partners are divided into strategic partners, tactical partners and common partners according to the influence on the success of logistics alliance. The first level is a strategic cooperative partner closely related to railway enterprises and port enterprises; The second layer is a semi-compact tactical partner, which includes shipping companies and freight forwarders; The third layer is a loosely connected general partner, which includes other railway and water combined transport related logistics enterprises. The partner relationship is shown in Figure 4.

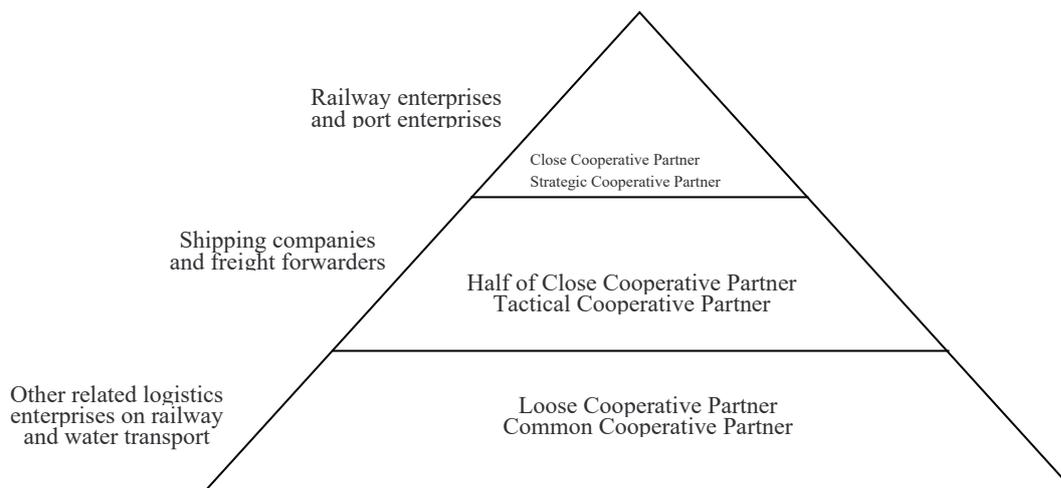


Figure 4. Form of cooperative partner of dynamic alliance

#### 4.2 The Dynamic Logistics Alliance Structure of Master-slave Mode

The master-slave mode is an organizational model for the dynamic alliance design of large and complex logistics projects. It is established in the core enterprise railway port between the stable form of alliance, dealing with how to form a more stable form of alliance with other enterprises and exist. Although dynamic logistics alliance advocates fair and equal cooperation and there is no traditional enterprise hierarchy in the alliance, it does not mean that all member enterprises have the same status. Due to the influence of factors such as the transport capacity and resources of logistics enterprises, the status of different member enterprises varies greatly during the work of the whole alliance, which is also one of the reasons for the emergence of master-slave mode. The model consists of at least two layers of dynamic alliances. According to the market demand, the preliminary decomposition of the overall logistics objectives and the general division of tasks, as well as the identification of the logistics sub-tasks to be completed by each member, are the core of the main dynamic alliance as the whole dynamic logistics alliance. Slave Dynamic alliance realizes the corresponding logistics sub-goals according to the respective logistics tasks and requirements of the main dynamic alliance, which is subject to the arrangement of the corresponding enterprises in the main dynamic alliance. In the railway and water intermodal transport system, the core logistics enterprise should be at least composed of railway enterprise, shipping enterprise and port enterprise. Because they are an integral part of the transport chain. Road transport enterprises or air transport enterprises can be classified according to their core capacity, market share and other factors. The organization structure of dynamic logistics alliance of master-slave mode is shown in Figure 5 [5].

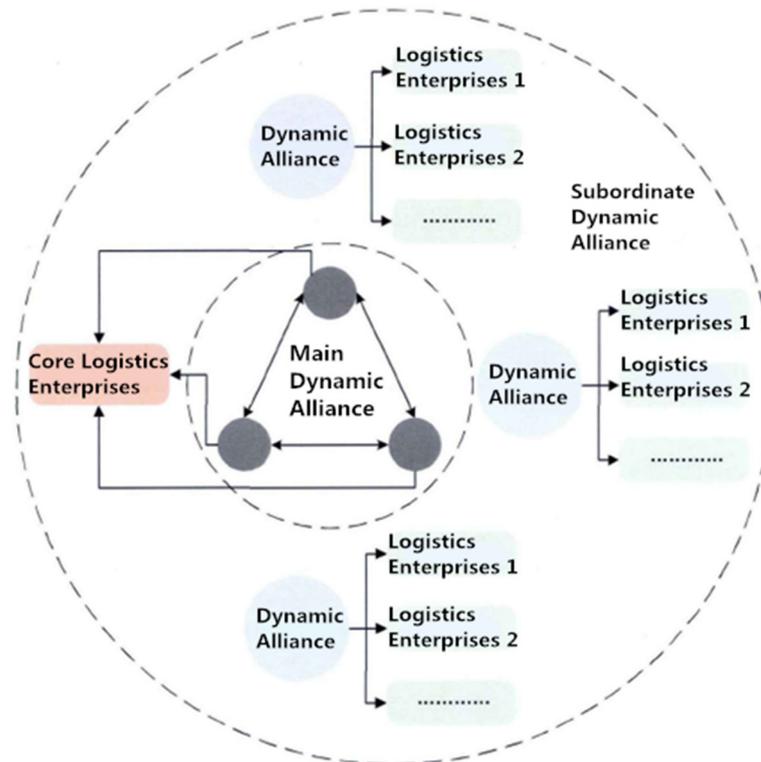


Figure 5. Organization chart of dynamic alliance of railway and water transport

## 5. Conclusion

The goal of the innovative port station operation management mode is to improve the efficiency of loading, unloading, and handling, improve the effective connection of all departments, enhance the overall integrated management, and improve customer satisfaction. Under the premise of the cooperation of China railway and water transportation terminal, a new cooperation mode of railway and water transportation terminal has been constructed. That is the dynamic logistics alliance formed by a number of economic entities such as railways, ports, shipping companies, railway and water transport operators and other logistics enterprises. The cooperation form and organization structure of each enterprise under the mixed management mode are determined. Therefore, operation management mode simplifies the operation process of the port station, strengthens the deepening cooperation of multiple economic entities, improves the overall economic efficiency of the port station, and satisfies the customer integration experience.

## References

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