A logistics company transportation solution research

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Abstract. The operation of the logistics company called A is highly dependent on a steel group. A logistics company's exploration of the external market is not ideal. Especially with similar logistics companies, there is no advantage. As the overcapacity of the steel industry is becoming more and more obvious, freight price rise, the labor cost rises, and the profitability of the enterprise decreases. Therefore, the benefits to logistics have become the key development direction of many steel companies. Other steel logistics companies have also undergone multiple levels of change. First we analyze the problems of A logistics company; Then we find the company's advantages. of A logistics company; Finally, the transportation solution was designed from three aspects: operational process design, transportation mode design and transportation plan implementation.

1. Introduction
A logistics company is a wholly-owned subsidiary of a steel group company. The registered capital is several hundred million yuan. It has four major logistics sectors: automobile transportation, shipping, port and warehousing. National 5A-level integrated service logistics enterprise and national multimodal transport demonstration project unit. The business scope of A logistics company mainly includes: implementing the general service package for the logistics business of the joint stock company; Actively develop multi-category goods market, undertake freight forwarding, shipping agency, logistics warehousing, metal processing, logistics information consultation, steel sales, engineering and equipment bidding agency; Strive to seek social cooperation to further expand the scope of logistics services.

2. A logistics company has problems analysis
2.1 Localization of logistics network layout
At present, A Logistics Company is located in Jinan City and nearby cities around the main business of the Iron and Steel Group. The overall presentation of the regional centralized layout, It is difficult to open up the national market. The ability to develop external markets has not yet been fully realized. And that, A logistics company lacks personalized service, is difficult to get close to the market, and serves customers well.

2.2 Suitcase (container) goods are single, empty return shipping is serious
Due to the decrease in the proportion of the socialized market of A logistics company, the volume of containerized transportation business is relatively small; In order to fully open the multi-category cargo transportation market, A logistics company set up a container company, Carry out container
intermodal business. Since most of A's logistics products are steel products, the characteristics of its goods are high density and heavy quality. The space utilization rate of the standard container transportation in the process is extremely low. Greatly reduced transportation efficiency; And the existing container structure leads to a low degree of assembly of steel cargo transportation. It is impossible to carry out transportation with other kinds of goods during transportation. The simplification of the structure of the container equipment results in a single situation of transporting goods, Containers of the same specification cannot be applied to multiple types of cargo, causing the container to return to the goods without loading;

2.3 Transportation mode problems - invalid connection in various ways, imbalance
At present, the transportation of A logistics company is mainly based on water transportation, and the proportion of railway and road transportation is low. And there is a lack of connection between various modes of transport. Lack of special transportation equipment, So that it is difficult to effectively switch between hang-up and multimodal transport. It is manifested in the difficulty of linking up warehousing services. Railway stations and ports are difficult to convert transportation modes, increasing transportation time and costs. It is inefficient to transfer large cargo between railways and highways, waterways and highways, as well as between waterways and railways, and the social container business lacks integration. Therefore, it is necessary to design a new transportation business model to solve the single problem of A logistics company transportation.

3. Analysis of favorable factors of A logistics company

3.1 Diverse transportation methods
A logistics company is very convenient for road transportation. There is also an inland transportation channel next to it, which provides a basis for A logistics company to develop inland water transportation. Air transportation is also convenient. A logistics company has a superior geographical advantage, and there are many colleges and universities around the ring, providing talent protection for A logistics company. Major universities and A logistics companies interact to allow students to integrate into company internships, help companies find problems, improve programs, etc. A logistics company has four major logistics sectors: automobile transportation, shipping, port and warehousing. It provides logistics services from various aspects and can be flexible in transportation mode.

3.2 National Policy Support
The state attaches great importance to multimedia transport and containerized transport. Please see table 1 .The state attaches great importance to multimedia transport and containerized transport, and has successively promulgated the "Three-Year Action Plan for Promoting Transport Structure Adjustment (2018-2020)" and "Thirteenth Five-Year" Railway Container Multimedia Transport Development Plan and "On Further Encourage Multi-word transport work notice "and other policies. Provide financial incentives for logistics projects that meet the policy construction. At the same time, there will be state-specific funds and policy support from the people's governments and relevant departments of the provincial people's governments and demonstration projects, and support and tilt from the aspects of land, finance and taxation.

| Serial number | Name of policy |
|---------------|----------------|
| 1             | Three-year action plan for promoting transport structural adjustment (2018-2020) |
| 2             | "13th five-year" railway container multimodal transport development plan |
| 3             | Notice on further encouragement of multimodal transport |
| 4             | Catalogue of industries with foreign investment advantages in central and western regions |

3.3 Wide range of business
In addition to the internal and external logistics services of the general agent agency company, it also
has the business qualifications of freight forwarding, shipping agency, logistics warehousing, metal processing, logistics information consultation, steel sales, engineering and equipment bidding agency, etc., and relatively complete storage facilities, logistics vehicles, ships, loading and unloading machinery and other logistics companies indispensable hardware, relatively sound management mechanisms and a broader business base and partners.

4. Transportation solution design

4.1 Transportation solution design

Chongqing logistics planning area, there are many small and medium-sized logistics enterprises. The small and medium-sized logistics enterprises in this area mainly rely on terminal distribution and cargo collection business, and they do not have the long-distance transportation capacity of trunk lines. A logistics company aims at this trunk transportation business demand market and cooperates with small and medium logistics enterprises in the region. The overall flow chart of A logistics company is shown in Figure 1.

(1) Each small and medium-sized logistics company independently leases the first, second and third standard containers provided by A logistics company according to its own business needs, and matches the cargo information with the box number to generate special orders.

(2) The company's scheduled delivery vehicles transport the cargo containers of each small and medium-sized logistics enterprise to the logistics hub of the city and carry out the next step.

(3) In the logistics hub of A Logistics Company, the containers of all small and medium-sized logistics enterprises will be spliced into containers at various levels according to the receiving point, and spliced into standard 40-foot containers for further transportation.

(4) A Logistics Company transports 40-foot standard containers to the next node through its own container truck or directly through the railway in the hub to the next hub. The choice of transportation mode mainly depends on the distance and the timeliness of the goods transported.

(5) Finally, Logistics Company A will "dismantle" 40-foot standard containers at the logistics hub. That is to say, it is decomposed into small containers at all levels, and according to distribution information, small containers are transported to small and medium-sized logistics receiving points through medium-sized city distribution vehicles.
4.2 Transportation mode design
(1) Circulation
According to the number of logistics hubs in the layout of A logistics company and the foreclosed cargo volume and geographical location, the "circular hang" operation mode is adopted. The essence of loop hang is to use the principle of circular scheduling to organize the hang-up operation on the closed loop. In the loop hang, the object of the cyclic dispatch is the tractor, and the trailer is the cargo that needs to be loaded or unloaded on the circular route.

(2) Water and iron inter-modal transportation at the terminal
As an important node market city in the southwestern region of A logistics company, Chongqing is a key city for A logistics company to open the South Belt and the southwest region's bulk commodity transportation market. Therefore, Chongqing as the terminal drop-off node, its main role is to give full play to its location advantages, large-scale transhipment, water-rail inter-modal transport and other efficiency, while collecting and distributing peripheral goods. Chongqing can collect and distribute all goods in the middle and lower reaches of the Yangtze River by means of inland river shipping. As a terminal drop-off node, it is necessary to set up large yards and stations, carry out water-rail inter-modal transport with the help of the Yangtze River, and carry out highway-rail inter-modal transport with the help of highways, so as to facilitate the distribution of goods. Chongqing combines with the middle and lower reaches of the Yangtze River to build domestic and international cargo transportation.

At the port node, the swing-off transport and multimedia transport are fully integrated, and the combination swing-off mode is chosen to effectively link up the two. The combined jigging mode is often used in double jigging transport of port containers, which divides the whole network into three parts. These three parts are respectively the branch network from the port service area to the port area, the trunk link swing network between the port service area and the station, and the barge swing network from the customer to the swing transport station.

4.3 Implementation of Transportation Scheme of Logistics Company
(1) Strengthen strategic cooperation with upstream and downstream, integrate resources, establish advanced international container facilities and multimedia transport management system, accelerate business and asset restructuring, actively improve the national trunk transport network, improve park management and accelerate the development of trunk transport.

(2) Gradually expand the influence of trunk transportation, improve the highway logistics network at all hub points in the country, and link up the multimedia transport network in the first-level logistics park. The renovation of new nodes, the use of internal high-tech and the rebuilding of logistics and transportation network make the original network layout more complete, to a certain extent, make the service more comprehensive and thoughtful, and meet the wider transportation needs of various enterprises. At the same time, it is helpful for its more adaptability and predictability in the establishment of warehouse outlets in the future.

(3) To further enhance the intensive level of drop-and-drop transport, establish a relatively perfect national or regional transport network objectively, guide the cooperation between small and medium-sized logistics enterprises, and integrate logistics resources effectively while continuously satisfying the individual transport service needs of production enterprises, so as to ensure that the supply chain achieves the best overall.

(4) A company should gradually improve its technical level, make the trunk transportation subsystem upgrade and the comprehensive application of GPS technology, and effectively support the two-way transportation business.

5. Conclusion
By doing the above work, A logistics company will effectively save costs and increase its own profits. A Logistics Company is not only a transport specialization commodity transport company, but also will eventually develop into a professional supply chain provider. In the end, it will be achieved its
development goal of "integration of Container Trunk transport services".

References:
[1] Wang Hoeing. Analysis of the impact of modern logistics on railway freight transportation and the development of railway logistics [J]. New Business Journal, 2017, 0 (23): 268-268.
[2] Tang Liang. How to give full play to the advantages of container transportation in the construction of port collection and distribution system [J]. Enterprise Reform and Management 2018, 0 (7): 218-218.
[3] Hou Hailu. Research on the Development Strategy of Multimodal Transport of Railway Containers[J]. Journal of Transportation Engineering and Information, 2018, 16(1): 56-60.
[4] Liang Kai, Zhang Li, Liang Cheng Zhu. Research on Railway Freight Transport Related Countermeasures in Modern Logistics Environment[J]. Times Finance, 2018, No. 23
[5] Zhu HanMin, Yao Hua, Liu Bin. Research on the Construction of Evaluation Index System of Container Intermodal Efficiency[J]. Railway Transport and Economy, 2018, 40(5): 8-14