

Information Platform Construction of Intelligent Steel Logistics Park under the Mode of Semi-Trailer Swap Transport

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Abstract. As there is a surplus of productivity in the steel industry on the market, large domestic steel enterprises are looking for opportunities for enterprise transformation by optimizing the steel logistics process. The current status of the steel and logistics park is a bit of a mess, and the management of the vehicles is a little messy, which is causing the congestion in the park, and the operating efficiency is low. Proposed in this paper will semi trailer swap transport is applied to steel logistics park, park and construction vehicle information management platform to support semi-trailer swap transport.

Keywords: Information system; semi-trailer swap transport; Steel logistics park.

1. Introduction

With the development of a market economy, the amount of steel used is also increasing, which is a new challenge to the steel stream. At present, there are no more integrated and intelligently developed information platforms for the park administration in most steel logistics parks in China. Many technologies are still in the exploration stage, which is not widely used, and the technology of information platform in the country is still close, and the degree of on-line degree and information sharing is relatively low. The information platform proposed in this paper is a steel logistics park which is used to conduct operations by means of semi trailer swap transport. It can not only make the semi trailer swap transport mode be well used in the steel logistics park, solve the problems of congestion and low efficiency in the park, but also reduce paperless operation, reduce management cost and improve efficiency.

2. Background Analysis

Due to the rapid development of big data technology and artificial intelligence in recent years, the development trend of logistics parks in China is to transform to digitalization and intellectualization, and accelerate the promotion of intellectualization and automation of logistics parks. But because of the steel logistics park is processing rebar, plates and other bulk commodities, some new technique could not get a good application in steel logistics park.

At present, the overall standard operation level of steel logistics park in China is not high, lacking specialized management, the operation standardization of steel logistics park is still to be improved, and the standardization of the industry is relatively low, so the condition of "multiple, disorderly and loose" is presented. The operation efficiency of the logistics park is relatively low, which relies on conventional customers to enter into the park pattern, so as to cause the congestion and queuing phenomena in the park, which limit the overall development and service increment of the logistics park. The service capacity of the logistics park is not full, and the service specialization, standardization, informatization and networking level of the park are not high, and the surrounding industry does not form a benign interaction pattern.

At the same time, the enterprise in the logistics park is lacking the support of a unified logistics platform, the steel logistics process, which is a direct lack of the effective link, resulting in the increase in the distribution of the logistics, the low level of resources sharing, and the lack of integration of the logistics, which has greatly limited the overall function of the logistics park, so that the integration of the logistics park value chain can't be achieved.

3. The Operation Mode of Semi Trailer Swap Transport in Steel Logistics Park

To solve the problem of the congestion and the low standard in the interior of the steel logistics park, by investigating the current transportation patterns in the market, it is clear that the transport can be a very good solution to the problem. Separately manage towing vehicle and trailer, and the enterprise shall manage the towing vehicle and manage the trailer so as to provide flexibility for the whole process of transportation.

3.1 Shared Carrier - trailer

In the steel logistics park, the vehicle transport mode will be changed into a tractor and trailer with the mode of transport. Trailer becomes the tool of goods circulation in steel logistics operation. Become the circulation vehicle among various steel logistics parks and manufacturers; It is a Shared carrier similar to a pallet.

3.2 Operation Activities of Steel Logistics Park under Shared Vehicles

In the operation mode of the park: when the customer needs to take delivery, the customer is not required to search for the transportation vehicles to enter the steel logistics park for goods purchase, but the enterprise arranges the tractor to enter the goods at the park. There will be a trailer waiting on the tractor to match the goods in the park, and then loading the goods. After the trailer is transported to the designated place, the trailer is separated from the tractor, and the tractor continues to work. After the completion of loading of the goods by the external transport tractor and trailer matching with the goods, transportation to the destination specified by the customer, complete cargo operations.

4. Information Management Platform Construction

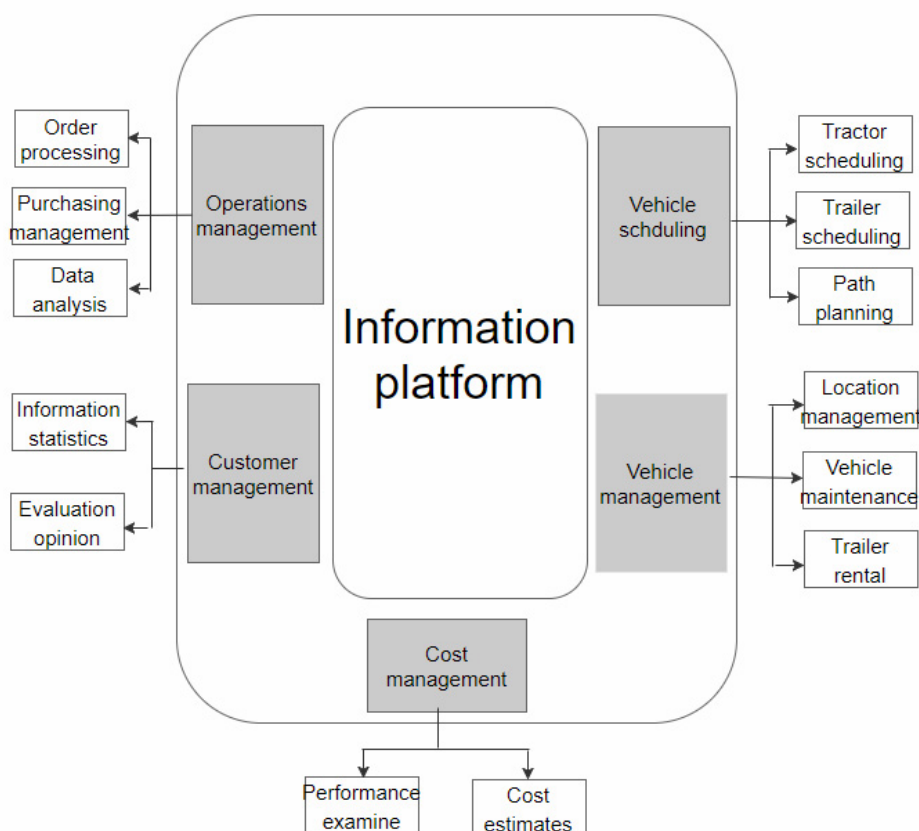


Fig.1 Information platform module

4.1 Customer Management

Conduct dynamic management of customer information, input the information of each customer into the customer relationship management system, and set up some personnel to timely follow up, update the customer information in a timely manner, and maintain the customer relationship system. By using big data and some correlation algorithms, the correlation degree of different steels is obtained, which can be used as the basis for the improvement of the heap.

According to the Pareto's principle, We should use the actual order situation to analysis the key clients, at the same time also need to pick out a potential key clients and key to expand its customer base, in order to create more value through customer relationship management.

4.2 Operations Management

Order processing is one of the conditions to give full play to the advantages of the shipping mode. Information after receiving orders, according to the order of goods, delivery time, delivery location, such as preprocessing, will order the information platform to share the related information to shippers, trailer rental business and seller, enable participants in the process of steel logistics in a timely manner to deal with orders, plan arrangement, thus not only solved the caused by random arrival order imbalance of resource distribution, also let get timely information sharing in the process of operation, to avoid the emergence of the "information island" phenomenon.

4.3 Vehicle Scheduling

The information platform processes the ordered orders, works program for each tractor, and uses GIS technology and positioning technology to send the trailer and order information of the cargo which needs to be loaded to the mobile terminal of the driver, the display on the mobile terminal of the driver is the map of the park and the starting point of the trailer to be delivered and the destination of the delivery, and the trailer is refreshed in time to ensure the continuity of the operation. By using similar mobile terminals, drivers can clearly get their own work plans, simplify work links, promote online operations and improve work efficiency.

4.4 Vehicle Management

Tractor is the actual capacity, the tractor needs regular maintenance and repair. In the process of transportation, bar code technology and RFID technology are used to locate the tractor, and the fuel consumption and driving speed of the vehicle in the process of transportation, as well as overspeed, sudden braking, rapid acceleration, idling and other operations involving safety risks are monitored, and the driver is evaluated by combining these indicators.

The trailer will circulate in the market as a Shared vehicle, so the management of the trailer is a very important part. It is necessary to conduct positioning management of the trailer, and check the trailer after each use to ensure the safety and integrity of the trailer. If there is any damage, the responsibility should be investigated in time.

4.5 Cost Management

The information platform carries out statistical analysis on the use costs of each vehicle, such as fuel costs, maintenance costs and other funds used in transportation, so as to carry out fine management of the transportation process and reduce some unnecessary waste of funds.

In the layout of the park, 6S management and electronic kanban and other technologies are adopted to standardize and standardize the layout of the park, set up some rules for its operation, record the costs in the operation process, and manage it with information-based methods.

5. Summary

Compared with some foreign developed countries, the construction of domestic steel logistics parks has a big gap. In terms of equipment and facilities, the development is relatively backward, the level of information technology is low, and there are long-term problems of information asymmetry

and high circulation cost in the field of steel circulation. In the steel industry recession, these problems will appear particularly serious, urgent need to solve.

In this paper, the semi trailer swap transport mode is used to standardize the internal operation process of the steel logistics park, build a smart information platform to integrate the information in the park, and use some smart technology to promote the online operation and information sharing. Its information management platform has five functions: business management, customer management, vehicle scheduling, vehicle management and cost management. Under the control of the information platform, the information of each module can be shared.

However, to reflect these advantages requires a complete operational information platform for support, so it is necessary to expand and maintain the information platform according to the actual operation situation. This paper will continue to study the improvement of this information platform.

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