Construction of Port Logistics Service Platform Based on Big Data

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Abstract: With the mature application of Internet of Things, big data and cloud computing technologies in various industries, smart ports based on new technologies have emerged. This article aims to build a port logistics service platform based on big data, with a view to using the big data platform to increase the development speed of the port logistics industry and realize the informatization and modernization of the development of logistics information. This article takes a typical B logistics company in Port A as an example. Through a survey and analysis of B logistics companies, it is concluded that the operating income of B logistics companies has always shown an upward trend. In 2019, the operating income reached 2.01 billion yuan. By analyzing the company's methods to enhance market competitiveness, combined with the actual situation of Port A, build a port logistics service platform based on big data. The research in this paper helps to improve the development speed of the port logistics industry, comprehensively improve the competitiveness of the port and the service level of the port, and realize the informatization and modernization of the development of logistics information.

Key words: Big Data, Port Logistics, Service Platform, Platform Construction

1. Introduction

With the development of The Times, big data has introduced people to a more scientific world and played an important role in different fields [1]. Urban development needs of logistics and logistics development is bound to need the support of logistics public information platform. In the face of accumulated data, the current society urgently needs information technology and data platform [2-3]. As a transportation hub, the port is no longer a simple loading and unloading hub. Its function has changed, promoting the development of China's port cities and regional economy, and the
development of science and technology lays a foundation for the construction of port logistics service platform [4-5]. Therefore, it is necessary to analyze the construction and construction of the port logistics information service platform, realize the development of the port logistics information service platform, promote the enhancement of the city's competitiveness, comprehensively enhance the port's competitiveness and the port's service level, and realize the development of logistics information. Modernization and modernization [6].

Logistics industry has become one of the pillar industries and many parts of the country city. Is home to the port city of port logistics industry to implement the important pillar industry development policy. Meanwhile, the development of port logistics industry is closely related to the industrial policy, economic structure, comprehensive service environment and other factors of the local city [7-8]. Port logistics services including depot service, warehousing service, loading and unloading handling services, transportation services, container service, information service, inventory management, packaging, sorting, circulation processing, distribution, and other functions. Construction of port logistics industry service platform is of far-reaching significance for the improvement of port comprehensive strength, at the same time, also to realize the control of logistics cost and improve the efficiency of logistics [9-10]. Based on large data for the construction of the port logistics service platform can improve the level the wisdom of the port, but also help the overall level of the port.

This article takes a typical B logistics company in port A as an example. Through investigation and analysis of B logistics enterprises, combined with the actual situation of A port, creatively build a port logistics service platform that conforms to the social development model. In order to improve the intelligent decision-making level of the port, realize the optimal allocation of port resources, and promote the improvement of the logistics service level of port enterprises.

2. Method

2.1 Platform Construction Principles

2.1.1 Advancement

Taking full advantage of the current advanced computer technology, network technology, control technology, and sensing technology, the management software will focus more on strengthening the organization and management of multimodal transport business through planning, pre-control, and real-time.

2.1.2 Security

To ensure that all data is handled the same on the platform, to ensure the legitimacy and authenticity of business and data, to prevent accidental data loss, to provide a wealth of options for security inspections and audits.

2.1.3 Reliability

Emphasis is given to the user's higher standards for the reliability of the platform, supplemented by higher technology to ensure the reliability of the platform, especially when dealing with critical
business operations.

2.1.4 Scalability

To ensure that the new application platform will not significantly affect the original platform while carrying out new business in the future. At the same time, on the other hand, using multiple servers to the cluster work together, to a full range of testing server status, to ensure that in the face of the large amount of cases, the processing speed can be guaranteed.

2.1.5 Ease of use

The interface of the platform should be enterprise-oriented and friendly to facilitate its promotion. Meanwhile, it should be operable so that enterprises can quickly and efficiently know how to use the system.

2.2 Specific Application Direction of Big Data in Port Logistics Industry

For groups, logistics information is complicated, difficult to real-time processing is the existing logistics mode of the main causes of short board. Big data, however, can easily lead to new solutions. For truck, for example, location information and destination information (via GPS or driver smartphones) dynamic acquisition can be applied to predict the front road, real-time guide vehicles reasonable distribution, to avoid congestion. For individuals, big data enables personalized logistics service solutions to meet individual needs while maintaining low costs. Such as for a van, a tailor-made container transportation, warehousing arrangement, in the past because of the economies of scale, often is batch processing and difficult to juggle to individuals. Big data can now be used to predict all kinds of safety accidents (accidents, broken down vehicles, drunk driving, fatigue driving) for trucks and even drivers. These accidents usually have many harbingers, which can be obtained quickly and cheaply with the support of big data and corresponding preventive measures can be taken.

3. Experiment

This article plans the port A logistics service platform in the era of big data based on the analysis of the current status and future development space of port A. The research in this paper mainly uses literature research methods, empirical analysis methods, investigation methods, experience summarization methods, and exploratory research methods. By collecting and reading literature, books, and network materials related to the port logistics industry, and integrating domestic and foreign scholars' research results on the first intelligent port, it provides sufficient literature and more authoritative data information for the research of this article. Take a typical B logistics company in Port A as an example, through a survey and analysis of B logistics companies, combined with the actual situation of Port A, build a logistics service platform. Expect to use the big data platform to improve the development speed of the port logistics industry, comprehensively enhance the port's industrial competitiveness, and promote the development of port logistics services. Informatization and modernization of the development of logistics information.

4. Discussion
4.1 Analysis of Survey Results of B Logistics Enterprises

Through the investigation and analysis of the B logistics company in port A, it is concluded that the main business scope of the B logistics company includes freight forwarding business, ship agency business, customs clearance business, multimodal transport service, and warehousing and distribution business. The operating income of B logistics companies in the past ten years is shown in Table 1 and Figure 1.

Table 1. Operating income of B logistics enterprises

| Years | 2009 | 2011 | 2013 | 2015 | 2017 | 2019 |
|-------|------|------|------|------|------|------|
| Operating income (100 million yuan) | 4    | 7.3  | 12.5 | 14.1 | 17   | 20.1 |

Figure 1. Schematic diagram of the completion of operating income of B logistics enterprises

It can be seen that the operating income of B logistics companies has been on the rise. Through the investigation, it was found that the company's core competitiveness and the way to enhance market competitiveness is to standardize the management of container transportation business processes. To effectively improve the ability and efficiency of employees, only through the integration of business and functions to build the competitiveness of international container transportation system companies can they make their due contributions to the promotion of local economic development and opening up in the current fierce market competition.

4.2 Construction of Comprehensive Port A Logistics Service Platform Based on Big Data

Through the investigation and analysis of the logistics enterprises of Port A and Port B, combined with
the actual situation of Port A, a comprehensive logistics information service platform is built. It includes three parts: basic platform system, business platform system and service platform system.

(1) Basic platform. The integrated logistics information service platform involves the use of multiple business subsystems. Through the establishment of unified regional logistics port data standards, unified data exchange and unified single sign-on (identity authentication can be judged by the background, and the current regulatory department can be used in parallel Multiple authorization authentication methods), unified billing management, unified portal entrance, unified call service and unified information publishing, to achieve data sharing of all business subsystems on the platform, avoiding the same user needing multiple business subsystems to maintain And the data is inconsistent and out of sync. The data application is mainly for logistics organizations and other organizations in need, and it is used for real-time perception, forecasting and dynamic decision-making of the conclusions drawn by data analysis, so that various logistics activities can be reorganized or even reconstructed. In order to achieve a better service level and lower logistics costs. Provide all kinds of comprehensive information of Port A for the majority of port and shipping companies and related users, such as administration, meteorology, sea conditions, transportation, logistics, customs clearance, regulations and online services. In addition to exchanging shared port logistics documents, each port unit also needs to share and exchange a large amount of locally generated information resources at the port site.

(2) Business platform. The integrated logistics information service platform is built on the existing application of the current regulatory department, and uses big data to solve the problem of complex and changeable logistics information for the group and difficult to deal with in real time. Based on the new business model conducive to logistics, an integrated business system oriented to trade and logistics enterprises is created to effectively connect the various business links in the whole process of logistics and improve customs clearance efficiency. Logistics business management system, to build a business support system that serves each port unit, supplements the existing information system of each port unit to meet their business needs in port A. Among them, it mainly focuses on the management of goods, flights, trains, ships, boxes, documents, logistics, personnel, import and export of goods, entry and exit of ships, loading and unloading of containers, warehousing and transportation of goods, and the transfer of documents related to this. The formation of information flow, logistics and capital flow. Tracking and monitoring system, including inbound and outbound logistics supervision system, inspection and quarantine inspection form inspection system, shipboard dangerous goods declaration system, ship dynamic declaration system, ship inspection management system, port administration supervision service system, fee and tax application system, enterprise data sharing system in the import and export field, social vehicle management system for goods in and out of the zone, and logistics supervision system in the zone.

(3) Service platform. The service platform mainly uses data such as new enterprise establishment, business declaration, application/change of business authority, and inspection and approval of regulatory authorities operating on the basic platform of the port to provide enterprises with a "one-stop" service function, fully reflecting the government's the role of logistics windows. Service platforms include port data value-added services and comprehensive query platforms, port unified customer service management platform, regional port customs clearance collaboration platform, port unified cargo tracking service platform, port logistics resource trading platform, call center.
5. Conclusion

In summary, the construction of the port logistics service platform based on big data is the future development model of the port logistics industry, which will provide logistics with more comprehensive information content, more complete functional services, and a more user-friendly experience. In the port logistics industry service platform, the integrated operation mode of upstream and downstream supply chains will effectively improve work efficiency and promote economic development. The scale of the logistics industry will be further expanded to realize the informatization and modernization of logistics information development.

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