Research on Information Cooperative Operation of Smart Logistics Park

Wang Chunfang 1, Pang Liwei 2 and Xu Ming 3

1 Weifang Vocational College (Weifang, Shandong, China: 262737)
2 Weifang Vocational College (Weifang, Shandong, China: 262737)
3 Weifang Vocational College (Weifang, Shandong, China: 262737)

Corresponding author's address: Wang Chunfang, No. 06588, Hai'an Road, Science and Education Innovation Park, Binhai Economic and Technological Development Zone, Weifang City, Shandong Province Post Code: 262737 Email: sdwfwcdf@26.com, Tel 13563682513

Abstract. The smart logistics park is booming under the development of the Internet, Internet of Things and e-commerce, and will definitely help reduce the efficiency, transformation and upgrading of the entire logistics industry. Faced with the complex system of smart logistics park construction, the construction of the smart logistics park must be integrated and coordinated, and openly connect all the external systems associated with it to create a community of interests with information as a link.

1. Introduction
The modern logistics industry is currently facing the contradiction between individualized demand and the pressure of logistics supply resources. To support the healthy and sustainable development of the logistics industry under the new normal, the state has issued a series of guiding opinions to transform the technological innovations such as the Internet and the Internet of Things into logistics. The new driving force of transformation and upgrading, cost reduction and efficiency enhancement will promote the transformation of modern logistics to networked, data, strategic and efficient smart logistics. The Smart Logistics Park is the product of this era, and it has the basic characteristics of the logistics park. But more importantly, it integrates information technology into all aspects of the supply chain, efficiently integrating various resources, and achieving internal and external interconnection. It is no longer just a collection of formal logistics units, but a park as a whole, which has certain functions of perception, analysis, decision-making and feedback, so as to achieve the purpose of improving logistics service quality and operational efficiency and reducing logistics costs. However, at present, the time proposed by the Smart Logistics Park is short and the operation mode is still unclear. The article discusses the collaborative operation mode of the intelligent logistics park based on information platform and promotes the coordinated development between the parks.

2. Research Status of Smart Logistics Park

2.1 Current Status of China's Logistics Park Operation. In recent years, China's logistics parks far exceed the growth rate of foreign countries both in terms of quantity and scale. However, the actual operating ratio is less than 60%. Among them, the lack of effective operation mode is an important
reason for the high vacancy rate of China's logistics parks. The problems are mainly reflected in the following aspects:

2.1.2 First, lack of systematic planning guidance. Attracted by the government's preferential policies, a large number of logistics parks have emerged, but most of them lack systematic planning. Some parks are excessively pursuing short-term gains, lacking long-term planning, and deviating from the actual situation of the local area, unable to meet the needs of the surrounding economic development; some lack of unified resident enterprises to enter the standard, resulting in uneven campus enterprises, low efficiency of park management; The coordination with the surrounding areas is poor, resulting in waste of resources and development hindrance; some parks are unreasonable in layout, nodes are set up at random, and resources for multimodal transport cannot be fully utilized, and operational efficiency is low.

2.1.3 The homogenization competition is serious. Under the turbulent logistics park, due to the lack of scientific and rational planning by the government, the supervision is not in place, causing a lot of blind construction and repeated development. The homogenization competition between logistics parks is becoming more and more serious, and the logistics enterprises in the park also have service business and The phenomenon of overlapping scopes has led to vicious competition in the "price war", which has hindered the development of enterprises and the operational efficiency of the park is not high. Although some companies try to work together, the overall coordination function is poor, lacking flexibility and integration.

2.1.4 Low degree of informationization networking. Although the logistics industry has developed rapidly, due to the late start, the information construction is still far from the foreign countries. The overall informationization level of the logistics industry is not high, and the lack of software and hardware seriously hinders the development of the park. On the other hand, most enterprises still do not want to actively share logistics information in order to maximize their own profits. The problem of information islands is serious, and information sharing and interconnection cannot be realized, which seriously limits the development of modern logistics industry. Fourth, the park's function and profit model are single. Most of the existing logistics parks have a single function and cannot meet the diversified needs of the market well, which is reflected in insufficient supply capacity and low overall service level. At the same time, the profit structure of most of China's parks is unreasonable, and the profit mode is mainly concentrated on basic services such as facility leasing fees and service fees. In contrast, value-added services, especially information services, are not high, and the logistics parks have low profitability and lack market competitiveness. Fifth, government functions need to be changed. China's logistics park has always been an important project led by the government. The role of the government in the early stage of construction is obvious. In addition to providing preferential policies such as land taxation, it is necessary to systematically plan and deploy the park construction. However, in the actual planning and operation process, it is easy to ignore the “invisible hand” of the market and interfere excessively with the industrial development, resulting in unscientific and unreasonable phenomena in the planning and operation of the logistics park.

The smart logistics park is developed on the basis of the traditional logistics park. The problems in the operation of the logistics park are worthy of our consideration and solution, which is conducive to avoid repeating the mistakes in the construction and operation of the smart logistics park.

3. Smart Logistics Park Collaborative Operation Mode Architecture
At present, although some of China's logistics parks have achieved intelligent scale to a certain extent, the overall operation quality of the logistics industry is still not high. The gradual rise of smart logistics parks, information technology as a new driving force, provides a strong support for collaborative operations. At the same time, under the background of the new economic normal, it also requires information sharing, cooperation and win-win between enterprises and enterprises, enterprises
and parks, parks and parks, and jointly promotes industrial transformation and upgrading, reducing costs and increasing efficiency. Guided by Internet thinking, relying on information technology, and building a collaborative operation model between regional parks based on the information platform, it is an important way to realize the intelligentization of logistics. The collaborative operation platform consists of three parts: a coordinated management organization, a smart logistics park, and an information management platform. Among them, the coordination management organization is the manager of the platform, the smart logistics park is the hardware foundation of the platform, the information management platform is the medium between the smart logistics park and the coordination management organization, and the coordination management organization connects the enterprises in the area through the information management platform. Work together together.

3.1 Coordination Management Organization
Because the collaborative operation platform involves more participants, all parties have conflicts of interest. Therefore, in order to play the positive role of the platform and maintain the fairness and impartiality of the platform, it is necessary to establish a coordinated management organization led by the government and involved by the enterprise members. Members of the organization may include government logistics management related departments, park management committees, logistics enterprises, and fourth party logistics management companies. The coordination management organization does not directly provide logistics related services to logistics demanders.

In essence, first of all, as a non-profit organization, it was established to coordinate and protect the basic rights and interests of all participants, so it is necessary to establish clear regulatory mechanisms and incentive measures. Secondly, as the operation manager of the platform, it is necessary to uniformly allocate platform resources according to the information decision system, coordinate the multiple parties to complete the logistics operation together, and the benefits obtained by the system cooperation are used to maintain the normal operation of the platform and further promote the system information construction. At the same time, it is necessary to actively guide all types of enterprises to join the platform of collaborative sharing, to screen out high-quality enterprises for the system, guide the development of key enterprises, and enhance the vitality and creativity of the platform. Finally, as a relationship between the logistics park and the government, it is necessary to actively grasp the policy trends, correctly communicate and explain the policy content to the enterprise, and assist the government agencies to implement supervision functions to jointly promote the development of the logistics industry.

3.2 Smart Logistics Park
The Smart Logistics Park is a gathering of logistics companies and other related enterprises in space, providing a series of supporting services for logistics service demanders. The better the synergy of enterprises in the park, the faster they can respond to the needs of consumers and provide efficient and high-quality logistics services. For the entire platform, the more the platform network effect can be exerted, the aggregation of resources can be promoted, the value of multi-party value can be increased, and the healthy development of the industry can be promoted. There are four main development modes of the smart logistics park:

3.2.1 Economic Development Zone Model. It refers to the government as an investment entity and uses financial funds to develop and construct logistics parks. Under this model, the government has absolute dominance and can plan globally from the perspective of driving regional economic development, guarantee logistics service functions, and achieve industrial agglomeration. However, there will be drawbacks of excessive government intervention and excessive financial pressure. This model requires high quality of project management personnel. It must not only consider the overall layout, but also have sensitivity to the market and professionalism in operation management.
3.2.2 Main business model. Relying on a number of leading enterprises that have a certain dominant position in the logistics supply chain and have certain influence in the industry, under the guidance of the government's overall planning needs and macro-policies, they use the spontaneous adjustment mechanism of the market to drive industry aggregation through their own development. This model transfers the investment construction risk and capital pressure to the superior enterprises, guarantees the professionalism of construction and operation, and exerts the government's macro-control function on the project to achieve a win-win situation between the enterprise and the government. The shortcoming of this model is that the government has no ownership and management rights, and it is prone to the monopoly of leading enterprises and deviate from the original intention of the construction of logistics parks.

3.2.3 Industrial real estate model. In the main early stage, the government will make overall plans, formulate relevant land and tax preferential policies, and attract industrial real estate developers to invest and build logistics infrastructure. The investor is responsible for the investment financing and operation management of the entire park within a certain period of time. After the expiration of the operation period, the government will reclaim the park. The government will transfer the investment construction of the park to a third party to reduce the pressure on its own funds. However, this model will weaken the government's dominance in the later period and will not be able to control the developers.

3.2.4 PPP mode. Refers to the development mode that separates the ownership and management rights of the park and realizes the joint investment and sharing of benefits, shared risks and operational responsibilities between the government and enterprises. The government provides preferential policies to attract investors to develop and construct the infrastructure of the park, and establish a management committee to manage administrative affairs. Investors look for specialized operations management companies to be responsible for the operation and management of the park for a certain period of time. Under this model, enterprises provide professional support, and the government plays a supervisory role. The two sides learn from each other's strengths and weaknesses, reducing the cost and risk of construction and operation of the park. However, in the case of multi-participation, how to choose a partner, how to coordinate multi-party interests and how to avoid risks are all issues that need to be considered.

Due to the integration of advanced information technology, the smart logistics park has a larger construction scale and investment amount than the traditional logistics park. The capital recovery cycle is longer and the types of risks that may be encountered are more. Therefore, it is more suitable for the PPP investment development model and the enterprise and the government. Their respective advantages.

3.3 Information Management Platform

The collaborative operation of the smart logistics park includes internal collaboration and external collaboration. The internal collaboration needs to rely on the internal platform operation of each smart logistics park to provide support for the coordinated development of enterprises within the park. However, with the increase of logistics nodes, in addition to considering the internal coordination of the park, it is also necessary to consider the coordinated development with relevant institutions outside the park. The coordinated development between the park and the park is particularly important, but at present, the development is not optimistic. This is also the main research direction of the article.

The information management platform can effectively integrate the park resources with different service objects or functions to avoid duplication of construction, bring new consumer groups to each node through collaborative operation between the parks, and provide more comprehensive and professional for the regions. Logistics services drive regional economic growth. For those parks with similar service objects and similar service functions in different regions, the information management platform can realize the spatial connection between multiple nodes, share customer information and
resource information, accelerate market response speed, and broaden the market coverage of the park. On the realization of intelligent logistics park information collection, logistics inquiry, cargo tracking, financial advice and other functions.

Through the construction of the information management platform, the logistics demand side shares the required logistics service types, time information, price information, etc., the logistics service providers share service types and service capabilities, etc., the government shares preferential policies and future planning and other government information, and the logistics park The information related to the infrastructure such as the traffic channel is shared on the platform, and each node can obtain the shared information on the platform after obtaining certain platform permissions.

To build an information management platform, we must first design the regional logistics information network, analyze the functional requirements of the system, and determine the functional modules, operational processes and rules. Secondly, the use of the Internet, Internet of Things, big data, cloud computing and blockchain and other new generation information technology to ensure the technical implementation of the system, set a unified standard information interface to ensure smooth exchange of information between nodes. Finally, it is necessary to establish a standard unified reward and punishment mechanism to ensure the quality and safety of information in the operation of the platform.

References
[1] Han Limin. Construction of Intelligent Logistics Park Information Platform in Big Data Environment [J]. China Market, 2018(24): 185-186.
[2] Zhou Cheng. How to build a smart logistics park? [N]. People's Posts and Telecommunications, 2017-08-03 (008).
[3] Lin Zhenqiang. Planning and Construction of Smart Logistics Park[J]. Logistics Technology and Application, 2017, 22(05): 60-63.
[4] SHI Rongli, CUI Hongrui. Evaluation of Intelligent Logistics Park Information Platform Based on Entropy Weight VIKOR Method[J]. Logistics Technology, 2017,36(01):63-68+88.
[5] LI Wei. Research on the Construction of China-ASEAN Smart Logistics Park Management Information Platform[J]. Journal of Guangxi Economic Management Cadre College, 2016, 28(04): 7-13.
[6] Jingwen Li. A Intelligent Logistics Inventory Distribution Model Based On Pipeline Network And Ant Colony Algorithm[A]. I-Shou University, University of the West of England, Hong Kong Global Research Hongkong Global Scientific Research Association. Proceedings of the 3rd International Conference on Energy and Environmental Research Progress (ICAEER 2018) [C]. I-Shou University, University of the West of China England, Hongkong Global Scientific Research Association: Hong Kong Global Scientific Research Association, 2018: 4.