The Construction of the System about Distribution in Linyi City
Based on the Modern Logistics

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Abstract. In the background of the service industry transformation and upgrading about the new retail, new model, new technology and new logistics, big data, cloud computing and Internet of things are widely used. It's important to improve the urban distribution system using the means and mode of modern logistics. This study selected the city distribution system as the research object, to build the distribution system of city. According to the new technology and new model of logistics, the paper puts forward the framework, construction path and configuration of the distribution system.

Introduction

Modern logistics industry has developed into a strategic and basic industry in China, which supports the development and extension of China's economy. In addition, with the prosperity of the new retail industry and the rapid development of e-commerce, the demand for distribution is expanding, and the diversity of demand is more obvious. Urban distribution plays a vital role in the development of our economy and the improvement of consumers' living standards. Optimizing the urban distribution service system and improving the quality of urban distribution service are increasingly important for the orderly development and operation of a city.

Analysis of Logistics distribution development on Linyi

The Storage Sorting Equipment is Backward and the Specialization Degree is Low

Because of distribution center being not scale, facilities being not advanced, handling, storage and sorting goods are not efficient. As the cold chain major backward, some distribution of halal food mostly do not meet requirement about the temperature, also do not have strict normalization homework. In terms of service level, there are fewer advanced information technologies. On punctual delivery and quick response, the high degree of satisfaction can't be achieved, Distribution is less specialized.

Delivery Vehicles are not Standardized

The wholesale and retail business in Linyi is growing in scale, however various wholesale enterprises in the flow of goods often use small electric tricycle or small freight difference carrying small bulk transport in the city. Not only did the traffic jam and chaos, there was no scale effect and it makes the social costs high. In the aspect of business over delivery, the vehicles selected by the enterprise are not reasonable in their own distribution center, such as illegally modified vehicles. There is no standardization between enterprises and enterprises in the use of vehicles, which can't be shared by vehicles.

The Planning of Network about Urban Distribution Has not Considered Requirements of Distribution

Planning and designing the construction about business enterprise are not set special distribution site, loading and unloading equipment and shipping channel, so it causes the long operation time, slow speed of loading and unloading, and problem of traffic congestion in the shopping center.
According to the investigation, most of the distribution outlets in Linyi are enterprises self-use, but not to the society. There are more and more spare equipment in the society, and the inventory control can't achieve reasonable effect, therefore, the efficiency of overall urban distribution is not high. The failure to form network of distribution from the whole point of view leads to the abnormal order of operation. The enterprises can't implement uniform distribution, so the scale about the concentration of the city are low.

**Lack of Service Platform about Information of Urban Distribution**

Trading city of Linyi involves more cargo turnover and distribution in. Due to the small size of the wholesale enterprises, and the lack of information technology means and platform of information service, the manual collation of bills and manual loading and unloading operations are still used. There are still problems in the selection of assembly line of cargo organization. The lack of the platform of information service, prevented resources information of city sharing, unable to achieve high efficiency of cohesion between enterprises, and the last kilometer of handling and delivery of goods is also difficult to realize real-time tracking and monitoring. In the distribution over business, it is easy to be unpunctual and the former traffic jam.

**Design and Content of System about Urban Distribution**

Urban distribution in China is still in the primary stage of development, and it needs to be improved in all aspects. Based on the analysis of the present situation of linyi city, the system of urban distribution is designed by using modern logistics big data and cloud computing technology and so on.

**Design of Urban Distribution System**

Because the system of urban distribution is more complex, in the process of construction about system, it is necessary to carry out comprehensive analysis of the elements within the system. In modern logistics mode, advanced technology, methods such as foundation conditions, according to the process of system operation, the system is designed in three levels, namely the business layer, executive management, monitoring of implementation.

On the implementation level of urban distribution, the construction of the system should mainly focus on the construction of network and information platform. Through the integration of the network and platform of the information, the design of the business process is completed, and the distribution of goods in the city are completed. Building the network of the distribution includes the design of the distribution node and the selection of the distribution line. By integrating merchants' own network of distribution in Linyi, select more punctual and efficient delivery routes. The construction of information platform needs to include data collection, processing and transmission, while also considering the support of information platform on software and hardware. Through the information platform of distribution, complete the collection of information and select and determine distribution lines at all times. Link the hardware device with the information system through the technology about internet of things.

Aiming at the executive management level of distribution, the system mainly has the functions of urban distribution management and innovation, including resource management, cost management, personnel management and operation standardization management on the equipment implementation. In the system of distribution, the resources are managed by the logistics facilities and equipment through the perceptual technology and transmission technology of the Internet of things. Through the information feedback of the business implementation level and the standardization of the industry, a standardized management framework and process are made for resources and personnel. In the field of personnel management, the personnel and team are regularly evaluated and evaluated through the construction of assessment indicators and docking with the information platform.

In the monitoring level of city distribution system, first determine the index system of monitoring, including working conditions, facilities, customer satisfaction, cost and other aspects,
all contents of monitoring and control further. At the same time, the government must regulate the system, and control the abnormal indicators.

Construction of Linyi City Distribution System Based on Modern Logistics

Construction of the Platform Urban Public Information Distribution. Through the modern information technology and the Internet of things technology, the information platform of urban distribution is constructed to realize the collection, processing and transmission of distribution data. At the same time, through the information platform, real-time monitoring of all the branches and routes of the city and controlling all the line conditions, we can make dynamic selection in a timely and accurate manner. In terms of technology, mainly through the use of RFID technology, temperature sensor and so on sound technology, GPS, GIS, Internet of things technology, obtain data and transfer data on distributed vehicles, urban facilities roads and distribution centers. Through network technology, information is transferred to the monitoring level and management level, so that internal and external personnel of the distribution center can get all information about cars, goods and people, and judge and control the abnormal situation. In the aspect of information collection, there are mainly customers' information, including the requirements of customers' goods and the requirements of service level. Traffic road information collects information such as congestion line and congestion level, construction road section and traffic accident. The vehicle information contents include the load of the vehicle, the driving route, the location of the driver, the driver's situation, etc. The cargo information has the basic information of the goods, including the number, name, size, price, etc., which is stored and changed by electronic label. The in-transit information of the goods has specific location, origin, destination, and any damage etc. The information platform is open to suppliers, customers and distribution centers, realizing real-time sharing of information. The evaluation of customers and suppliers can be converted into data, which can be exchanged and transferred between customer database, distribution center database, vehicle information database and system center database, and make effective decision on distribution business.

![Figure 1. The System of Distribution Information.](image)

Construction of Distribution Network. For the business implementation level, the distribution system is mainly based on modern logistics technology to realize distribution points and line optimization. In view of the specific situation of Linyi, including the housing situation and industrial structure, the city can be divided into the transport functional area and the distribution function area, and the layout of the first and secondary nodes is carried out. In the Luozhuang area,
the nodes should be located near the suburbs, and the nodes in the Lanshan district and the north city new area should be located near the main road of the city. The distribution routes are mainly linked to the primary distribution center node, secondary distribution center node and consumers. The goods arrive at the secondary distribution center and the delivery is completed by means of a small vehicle. The determination and selection of distribution center line are solved by genetic algorithm and other methods. The center method is used to divide the customers, and the center of gravity of the distribution center is determined by using the coordinate points of consumers and distribution centers. Connecting adjacent distribution center, to determine the center of the attachment, the area between the center of gravity and the center point is taken as a zone. The rationality of distribution center location plays an important role in distribution system. Because there are many factors involved, in this study, two schemes of the combination of qualitative and quantitative methods are given to determine the model and help enterprises determine the location plan of distribution center.

Construction of Terminal Joint Distribution Network. On Nov 11, 2017, total net sales reached 253.97 billion, with a total of 1.38 billion parcels. Under the development trend of e-commerce, the terminal distribution service needs to coordinate and integrate from each link to meet the needs of customers and complete the distribution business with the new distribution mode. This requires the overall layout and optimization of the terminal nodes.

There are a number of patterns in the way to solve the last mile. Many enterprises have also begun to increase the investment in terminal distribution to plan the terminal layout. Now there are more intelligent self-pick-up, dolly for the community and other places. Like the business generation mode similar to that of the vegetable bird network, and the mode of cooperation between Shunfeng and the chain store, it can solve the difficulty of end delivery effectively.

1. Smart express container mode
   The delivery mode of construction of express delivery cabinet in the neighborhood of community and office buildings can realize 24 hour consignment operation, while intelligent express delivery cabinet can also collect user information. This model can give consumers the maximum time space, while also reducing the waiting time of the delivery personnel. But this model does not store large and irregular state, and it is difficult for schools to use this model for more intensive distribution points.

2. The collecting model
   There is a unified service information platform, which provides customers with the service of collecting goods. The third party logistics collecting platform can satisfy the demand of various consumer, at the same time, in view of the campus being more suitable for this kind of goods, it also facilitates effective communication service personnel and customers. However, the fixed cost and capital cost of this model are relatively high, and the labor cost and the cost of rent account for the majority.

3. Cooperative mode of convenience store
   The direct-sale convenience store model is also applicable to the community, which can cover all the communities in the city and provide more choices for consumers in time, and it is convenient to store and communicate easily. As with the enterprise collection mode, this mode is expensive to deal with, and there is a certain wage cost in the convenience store staff, which is more risky than the enterprise.

4. Community store franchise model
   The current community participation mode also solves the problem of the commuter receiving express delivery. There are many small shops in the community, which have a wide distribution, so the office workers come home from work to pick up the express from their own community shops. It's a self-serving way to bring foot traffic to the neighborhood store. This kind of self-mentioned way can also bring the customer flow to the community store, and the goods access is quick, to promote the business development of the shop.

5. "One dollar" express mode
In the trend of the increase in packages of campus packages, it creates this kind of a dollar to take a pattern. This mode extends to commercial establishments such as office buildings where the flow is relatively large. The "one dollar" express mode is a kind of parcel generation business model that has been created by the rapid increase of campus parcel business. But this model is more prone to package in the situation of the loss and damage.

**To Promote the Construction of Urban Distribution System**

**Promote Smart Logistics and Carry out Real-time Distribution**

![Figure 2. Warehouse Distribution.](image)

![Figure 3. The Mode Just-in-time Distribution.](image)

The two main features of Just-in-time distribution are that there is no transfer link between a point and a point, and the second is that the service prescription is high, usually within two hours. It is mainly applied to the distribution services of O2O business in the same city, such as the distribution of the business, the delivery of the goods, the delivery of express delivery and the delivery of food. It is necessary for merchants and logistics enterprises to improve the logistics form. Especially for the rapid development of online retail, it needs to be reintegrated. The
warehouse distribution mode is then converted into an instant match, as shown in the figure below. Through the distribution information platform, the business scope is expanded to form a timely information sharing and instant distribution mode. Use intelligent scheduling and digital management to form the standard distribution of logistics industry. The distribution cost is reduced through algorithm optimization and order distribution.

With the development trend of new retail, the development of Just-in-time distribution will be able to replace the delivery at the end of express delivery. It realizes that scale and the sharing through the construction of the instant distribution platform. Using the Internet to gather scattered resources, through the system algorithm of the distribution platform, the most suitable single operation and single operation are carried out to improve the efficiency of distribution.

**Use Electric Vehicle to Carry Out Distribution, Promote Green Logistics Development**

Since 2007, the state has officially implemented the regulation of new energy vehicles production access management. In 2009, the ministry of finance, science and technology, and the NDRC announced the announcement of the demonstration of energy-saving and new energy vehicles. At the same time, the financial department also provided corresponding subsidies. Because of city distribution range is relatively small, the line is relatively fixed, so the pure electric vehicles can be used to solve the problem of battery risk for the urban distribution. With the development of intelligent industrialization and the increasing number of automobiles, green environmental protection is getting more and more attention. Now, some of the logistics are just as soon as the city's supply chain is launched into the city's electric enterprise distribution. Electric cars can not only save energy and environmental pollution, but also have high energy efficiency and low carbon emission. The use of electric cars in urban distribution is more conducive to urban development.

**The Government Led the Planning of Distribution Network Distribution**

First of all, the improvement and planning for the infrastructure channel of the urban distribution directly affect the efficiency of the terminal urban distribution. Because the city does not have the special channel of special goods distribution, it is easy to be blocked when the goods vehicles are delivered in the city. For freight and distribution areas such as Linyi, the use of vehicle types for urban distribution should be standardized as a result of the problem of transfer of wholesale goods, at the same time several types of vehicles are selected for special vehicle distribution and standardized management.

Secondly, improve the distribution network planning. In particular, as a trade and logistics city, there are many wholesale and scattered goods, which require the government to guide the construction of joint distribution points, and advocate the joint operation of enterprises, so as to reduce the problems of the terminal enterprises' own storage and distribution. Increase cooperation between retailers and wholesalers and third party logistics enterprises to conduct joint distribution and lay out a network of distribution networks covering that city.

Finally, to ensure the normal operation of the system, government support and guidance are needed. The government has been able to guide the market and industry through the system's surveillance level, and through certain policies to supervise and regulate the system, to make the system run in an orderly fashion.

**Conclusion**

This research mainly analyzes the current distribution situation of linyi, on the basis of the research on domestic and foreign urban distribution, city distribution system is constructed. According to the internal factors of distribution system, this paper puts forward relevant planning and countermeasures. It is of great significance to promote joint distribution, green distribution and improve distribution efficiency. We should build a public information platform for urban distribution and strengthen the construction of urban infrastructure and standardization of vehicles. The construction of public information platform for urban distribution can provide real-time sharing of information of urban distribution system, sharing of distribution centers and sharing of vehicles.
It provides decision suggestions on that selection of delivery node, and summarizes the distribution modes of urban ends, so as to make the final total distribution in the city scale normalize and achieve high efficiency.

References


