

On the Construction of Cloud Warehousing in Grain Distribution

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Abstract—Overviewing the globalization environment, the future grain distribution will outperform two important elements - price and mobility (reducing lead time), which requires us to keep up with the pace of the times, constantly accept new things, and develop new things. Apply new thing to optimize the price and mobility of grain distribution. The rapid development of the Internet has accelerated the arrival of the new retailing era, which has had a far-reaching impact on the traditional grain supply chain, warehouse and logistics system. Fast, efficient, energy-saving and green cloud warehousing platform must be born, developed and applied by various industries in the society. The construction and application of grain distribution cloud warehousing in this paper is to use Internet cloud to enable grain distribution, shorten distribution links, save warehousing and transportation costs, excavate the dividends of the Internet in the new era, and lean the supply chain of grain distribution. Return to the people, serve the people.

Keywords: grain distribution, new retailing, cloud warehousing

I. INTRODUCTION

At the present, the continuous popularity of the Internet has given birth to the wave of all forms of society chasing Internet +, and the manufacturing industry, retail trade and service industry are developing rapidly. The retail trade in the new era has gradually moved from the traditional retail to the new retail era, and, at the same time, it has promoted the thinking and innovation of Internet + in the grain distribution trade. The formation of the new retail model under the Internet constantly promotes the transformation of our original traditional grain distribution mode. Connecting the Internet, embracing the Internet and innovate the Internet, the cloud warehousing of grain distribution is another classic innovation and application in the era of Internet innovation.

II. UNDERSTANDING OF THE TRADITIONAL MODEL IN GRAIN DISTRIBUTION

The traditional mode of grain distribution is to send the order demand step by step in each link of the grain supply chain, and then implement the grain supply mode of demand, and carry out the grain transportation among the warehouses in the whole supply chain. Each link is the demand of the above link of grain (staple food, fruits and vegetables) for the relevant

quantity, variety, type requirements through the transport vehicle from one link of the warehouse to another link of the warehouse.

A. The Distribution Links and Channels of Traditional Grain Distribution are Shown in the Fig. 1: Traditional distribution model .

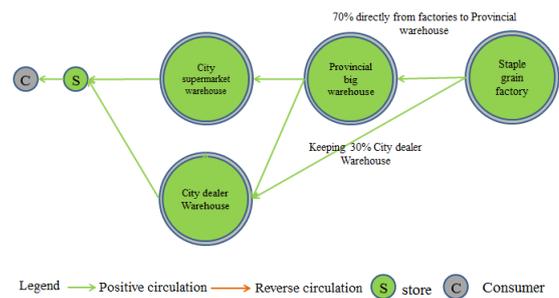


Fig. 1. Source: the model is made by the author.

The distribution under this traditional way mainly covers two major flows, namely, information flow and food logistics flow[1]. The information flow is the demand information that put forward upstream from the downstream of the whole distribution supply chain. Food logistics is the process of transporting objects from the upstream warehouse to the downstream warehouse according to the downstream demand information. The information flow and food logistics in the process of grain distribution are operated synchronously.

- Information flow and food logistics operation of grain distribution:

The provincial general distributor regularly sends annual, quarterly, monthly and weekly rolling sales forecasts to the main grain factory. The food factory transports the required quantity and variety of grain to the transit warehouse of the provincial general distributor (large warehouse in the province) through the third party logistics company according to the demand of the provincial general distributor. According to the regular needs of the local supermarkets or dealers in the lower reaches of the supply chain, the provincial general dealers deliver the relevant grain objects to the self-operated warehouses or dealers' warehouses of the municipal supermarkets on demand. The supermarket in the city then uniformly allocates all the goods distribution in supermarket

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and retail store, and finally purchase the needed grain (staple food, fruit and vegetable) to each community store.

- The route of foods distribution under the warehousing mode of traditional grain distribution:

Route 1: Staple grain factory - Provincial warehouse – City supermarket warehouse – Store - Consumer.

That is, the positive distribution of staple grain distribution is the staple grain factory, the large warehouse in the province, the supermarket warehouse, the store and the consumer in the city.

Route 2: Staple grain factory - City dealer Warehouse-Store-Consumer

That is, the positive distribution of staple grain distribution is in the staple grain factory, city dealer warehouse, store and consumer.

B. Disadvantages of Traditional Grain Distribution

The disadvantages of traditional grain distribution are that the information flow and food logistics chain of traditional grain distribution are longer, and it is easy to form an isolated information island, often resulting in inventory backlog, which is bound to cause additional waste. There will always be a certain deviation between the actual demand and the forecast demand, and the accumulation of deviations in multiple links will always result in an additional backlog of different varieties in different links. The backlog of goods leads to a long lag in the inventory of grain distribution, an increase in inventory turnover rate and the occupation of a large amount of working capital, which reduces the efficiency of capital turnover, and, at the same time, because grain has certain characteristics of freshness, especially for seasonal products, the backlog of distribution links will shorten the sales period of grain.

The warehousing and transportation logistics costs in traditional grain and distribution remain high, and physical objects need to be transferred in every link of the supply chain, which requires rental or self-built warehouse storage. The warehousing and logistics costs under these icebergs will be paid for by the final consumer.

C. With the Rise of New Retailing and E-Commerce under the Internet, the Traditional Food Distribution can't Meet the Needs of the Development of New Retailing

Under the Internet, all business forms are Internet of everything, information sharing, and online-and-offline synchronization. The traditional mode of operation has been far from satisfying with rapid, efficient, energy-saving, green operation in the new retailing and e-commerce era. The development of grain distribution and warehousing in the new model will become an inevitable trend.

III. NEW REQUIREMENTS FOR FOOD DISTRIBUTION IN NEW RETAILING AND E-COMMERCE UNDER THE INTERNET

Under the Internet, new retailing customers' purchase experience and performance-to-price ratio is particularly important, the new era of food distribution needs to move in

these two directions. With the unprecedented development of new retailing and e-commerce, the purchase experience and performance-to-price ratio become more and more important. The development of the times has given new requirements, new methods and new ideas to grain distribution.

A. Consumption Experience

Now the post-90s generation is keen on consumer experience, spending money on freshness, spending money on feelings. Consumer purchase experience is reflected in the convenience of product purchase, the category of goods purchased and the delivery of timely services. From the perspective of consumer psychology, consumers want to see more similar goods to choose from, more fresh food and fruits and vegetables on the market, but the traditional grain distribution link is lengthy, and the information flow is single-line isolated island distribution. Will affect the rapid listing of goods, at the same time will cause different periods of time varying degrees of shortage of goods. This should be affected the sale of goods. The choice of direct distribution service from manufacturers is the direction of development in grain distribution.

B. Cost-effective Elements

In the new era, the material supply is sufficient, the information transparency is high, and the price reference of consumers is relatively high, whether online or offline, goods comparison becomes very easy. This puts forward the need to reduce unnecessary links in grain distribution, effectively reduce costs, improve the performance-to-price ratio of commodities, in order to benefit from the people and get the recognition of consumers for products.

C. B2B (Business To Business) Order

The core competitiveness of B2B orders is the delivery in next day, from the issuance of orders to delivery in customers, all the process is within 24 hours. Only by realizing the information sharing among stores, dealers and grain processing plants can realize the immediate linkage effect after consumers place orders, that is, after the order is placed, the warehouse center searches for the inventory of goods according to the order information and arranges the delivery of goods from the nearest warehouse, which is for to achieve delivering goods in next day.

D. The Pain Point of New Retailing Return

The return and exchange of goods in the new retailing era is a difficult problem that businesses have been facing. Customers also need to return the business step by step, so there are certain restrictions on specific grain products. When the products are step by step, the shelf life of the food has expired or deteriorated. That is, the returned JIT (Just in time) also needs to be applied and promoted.

IV. CONSTRUCTION OF CLOUD WAREHOUSING IN GRAIN DISTRIBUTION

Cloud warehousing in grain distribution is to use the cloud service of Internet dividends to virtualize the function of transit

warehousing in all aspects of grain distribution in reality, that is, all warehouse data in all grain distribution supply chains are moved to the cloud. Cloud warehousing only carries on the distribution management of grain distribution information or data, but simplifies the actual distribution link and implements the physical idling. All the warehouses of the grain distribution supply chain share data in order to realize big data analysis to provide data support for the re-optimization of the supply chain.

A. Construction of Cloud Warehousing Model in Grain Distribution

Grain distribution mainly involves grain production factories, central warehouses, regional warehouses, stores and consumers. Whether the supply process from the grain processing plant to the final consumer is the optimal inventory control and the optimal transportation cost is mainly reflected in the operation efficiency of grain logistics and the turnover efficiency of warehousing, which directly affects the cost of grain distribution and lead time. From the point of view of reducing the cost of logistics and warehousing and lead time, this paper puts forward the management model of cloud warehousing in time, which improves the traditional grain distribution from the traditional mode to the level of information and intelligent cloud warehousing platform. With the popularity of the Internet, the architecture of intelligent cloud warehousing for logistics warehousing, from grain factories to consumers, comes into being.

- Model diagram of grain distribution cloud warehousing are shown in the Fig. 2: Cloud warehousing distribution model.

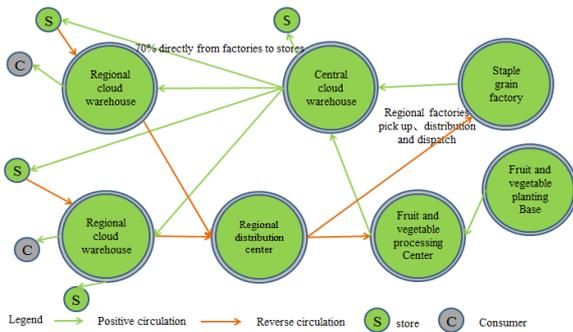


Fig. 2. Source: the model is made by the author.

The core value stream mapping of cloud warehousing: through cloud services, shortening the supply chain, improve warehousing and logistics efficiency, virtual central cloud warehouse, the regional cloud warehouse under the framework of cloud warehousing. The information / data flow in the supply chain is mainly integrated, optimized and transmitted between the "central cloud warehouse" and the "regional cloud warehouse". Cloud warehouse, stores, consumers only between the flows of information, physical idling.

The "central cloud warehouse" of cloud warehousing is the central brain of the whole grain distribution, which is responsible for the scheduling of information and goods in the whole supply chain, that is, the demand information of cloud warehouses, stores and consumers in all regions is directly put

into the cloud warehousing management platform. The cloud warehousing management platform is synchronously shared in the central cloud warehouse. The "central cloud warehouse" aggregates and integrates all the information of all the "regional cloud warehouses" to form the final monthly and weekly requirements through "cloud computing." Synchronously shared to the most front-end main grain factory or fruit and vegetable processing center of the supply chain, the main grain factory directly integrates offline logistics resources to distribute related goods to regional stores or direct hair consumers according to the demand information of "central cloud warehouse".

The "regional cloud warehouse" is the regional center that serves the stores and consumers in a certain area, connecting the orders and needs of the stores and consumers in the region. The "regional cloud warehouse" aggregates and collates the demand information of all the stores or consumers accepted. Through "cloud computing", the demand information is sent and shared to the "central cloud warehouse" at the upper end of its supply chain, that is, it is directly shared with the central cloud warehouse in real time through the cloud warehousing platform.

The fruit and vegetable processing center is to preprocess the fruits and vegetables in each fruit and vegetable planting base. The traditional distribution mode is to sell the fruits and vegetables after they arrive at the specific stores and then carry out the relevant processing and processing. Because of the cloud warehousing mode, fruits and vegetables need to be sent directly to stores or customers, and the last end of the traditional mode of pre-processing can't meet the requirements of distribution, so the distribution of fruits and vegetables under the cloud warehousing mode needs to move forward. Deal with it first and then transport it directly to stores or consumers.

The regional distribution center is all the return processing centers in the whole supply chain of grain distribution. When all stores and consumers in the region need to return the goods, they need to return all the returned goods to the regional distribution center. After sorting out the distribution center, the corresponding goods will be returned to the corresponding grain processing plant or fruit and vegetable processing center.

B. The Route of Foods Distribution in Cloud Warehousing Mode

- Route 1: Staple grain factory - Central cloud warehouse - Regional cloud warehouse - Store - Regional distribution center - Staple grain factory

That is, the positive distribution of staple grain distribution is the staple grain factory, the central cloud warehouse, the regional cloud warehouse and the store. The reverse distribution of staple grain distribution is store and factory of staple grain.

- Route 2: Staple grain factory - Central cloud warehouse - Regional cloud warehouse - Consumer - Regional distribution center - Staple grain factory

That is, the positive distribution of staple grain distribution is the staple grain factory, the central cloud warehouse, the

regional cloud warehouse and the store. The reverse distribution of staple grain distribution is store, regional distribution center and staple grain factory.

- Route 3: Staple grain factory - Central cloud warehouse – Store - Regional Distribution Center - cloud warehouse

That is, the positive distribution of staple grain distribution is the staple grain factory, the central cloud warehouse, and the store. The reverse distribution of staple grain distribution is store, regional distribution center and staple grain factory.

- Route 4: Fruit and vegetable planting base - Fruit and vegetable processing center - Central cloud warehouse - Regional cloud warehouse – Store - regional distribution center - Fruit and vegetable processing center.

That is, the positive distribution of fruit and vegetable distribution is fruit and vegetable planting base, fruit and vegetable processing center, central cloud warehouse, regional cloud warehouse and store. The reverse distribution of fruit and vegetable distribution is store, regional distribution center, fruit and vegetable processing center.

- Route 5: Fruit and vegetable planting base - Fruit and vegetable processing center - Central cloud warehouse - Regional cloud warehouse – Consumer - regional distribution center - Fruit and vegetable processing center.

That is, the positive distribution of fruit and vegetable distribution is fruit and vegetable planting base, fruit and vegetable processing center, central cloud warehouse, regional cloud warehouse, store and consumer. The reverse distribution of fruit and vegetable distribution is consumer, store, regional distribution center, fruit and vegetable processing center.

- Route 6: Fruit and vegetable planting Base - Fruit and vegetable processing center - Central cloud warehouse – Store - Regional Distribution Center - Fruit and vegetable processing Center.

That is, the positive distribution of fruit and vegetable distribution is fruit and vegetable planting base, fruit and vegetable processing center, central cloud warehouse and store. The reverse distribution of fruit and vegetable distribution is store, regional distribution center, fruit and vegetable processing center.

- Information flow and foods logistics flow under the cloud warehousing mode of grain distribution.

Information flow: The grain factories, fruit and vegetable processing centers in the upper reaches of the grain distribution supply chain and regional cloud warehouses in the lower reaches of the supply chain, local supermarkets, stores and consumers directly establish links with the “central cloud warehouse.” The information enters the type, quantity and date of the demand on the client itself in cloud warehousing platform, and the “central cloud warehouse” obtains the summary demand data through “cloud computing”. Upstream grain factories or fruit and vegetable processing centers directly share the “cloud computing” data of the “central cloud

warehouse”. That is, the information of the upstream main grain factory, the fruit and vegetable processing center and the downstream regional cloud warehouse of the supply chain, the supermarket, the store and the consumer are directly shared in the central cloud warehouse. Foods Logistics flow: after obtaining the data shared by the “central cloud warehouse” in the upper reaches of the grain distribution supply chain, the types of grain required by the integration of third-party logistics companies, the quantity is delivered according to the demand date to the direct demand store or consumer.

C. Core Control Points for Cloud Warehousing Operations

Any operation model has its own unique operation and management method, and the cloud warehousing model of grain distribution also has its unique way and core control elements. First of all, although cloud warehousing is different from the traditional grain distribution model, the grain distribution of cloud warehousing is developed and promoted on the basis of the traditional operation mode, only with the help of cloud technology in the Internet age. Therefore, the operation of its core is still inseparable from the management thinking and theoretical basis of the traditional operation mode.

- Through cloud warehousing management, intermediate transportation and distribution links will be omitted, mainly based on the overall control and optimization of the cloud warehousing system, and about 70% of the goods will be delivered by factory stores or consumers. What kind of variety, quantity, and batch determines whether the goods in distribution under the cloud warehouse are balanced and lean, that is, they will not cause shortage or hoarding of goods. This requires cloud warehousing managers to analyze the annual, quarterly and monthly consumption trends according to big data of the cloud warehousing platform. Based on the results of big data analysis, this paper formulates the safety inventory, minimum batch and transportation batch of different goods, so as to cope with the JIT model of new retail.
- About 70% of the goods are supported by big data, carry out orderly production and distribution, and retail consumption has a certain seasonality and difference, then the remaining 30% of the goods are prepared for some uncertain factors. Cloud warehousing is considering keeping 30% of its goods in regional stores for inter-store transfers to meet temporary shortages with a store. At the same time, in order to meet the specific requirements of B2B orders, the nearby shipment of B2B orders will be arranged through the cloud warehousing platform to improve customer JIT satisfaction.
- Cloud warehousing has realized the idling of grain distribution, but it still needs food plant to directly send goods to stores or consumers, to the various communities in the city where the stores are laid out, and the actual daily demand for each store is limited. This puts forward higher requirements for factory logistics distribution, which requires regional integration, store integration, consumer integration,

stores and consumer integration. As a result, the most economical logistics batches transportation and the existing trunk line transportation due to the real-time distribution in the urban area. Arrive in a timely manner to improve customer satisfaction.

D. Management of Sending and Receiving at the Beginning and End of Cloud Warehousing Supply Chain of Grain Distribution

The basic function of the warehouse is the operation and management of sending and receiving goods. Cloud warehousing only uses cloud technology to move the isolated island information of each warehouse managed by the traditional warehouse to the cloud for overall layout operation and management. The principle of sending and receiving is unchanged. It is only necessary to follow the new intelligent equipment under the Internet, carry out the transceiver and logistics operation of intelligent warehousing, and at the same time include the functional area layout planning of the warehouse, in order to solve the information isolated island of traditional warehousing. Warehousing logistics opens up the entire grain distribution supply chain.

- **Cloud Receiving Management**

In the actual process of receiving goods in the warehouse, there are many problems, such as uneven arrival, wrong delivery, missed delivery, physical receipt and system receipt are not synchronized. The above problems will be effectively solved under the cloud warehousing management model. The store will receive the goods in the form of arrival reservation (E-Queue). Prior to the delivery of the goods, it is necessary to make an appointment for delivery with the store where the goods are received. Avoid receiving the goods without manpower when they arrive. At the same time, cloud warehousing can be adapted to balanced receiving (I-Time Vendor), intelligent receiving, QR(Radio Frequency) Code and visual system solutions to assist in warehouse receiving management. Offline receiving of goods can be assisted by new scientific and technological means, such as intelligent turnover design, binding of materials and turnover, interaction between RF (Radio Frequency) talk and SAP(System Applications and Products) Cross Talk, automatic receipt of goods into the door, updating of inventory and so on.

- **Cloud Warehousing Management**

In the real process, there are many problems in the warehouse storage process. For example, the path of the incoming storage location is not clear, the logic of the system allocating the cargo location, the error of the incoming and outgoing storage location, the non-synchronization between the physical storage and the system storage (poor real-time), and real-time accuracy of cyclic inventory are poor, and it consumes a lot of manpower. The above problems will be effectively solved under the cloud warehousing management model. Cloud warehousing uses intelligent in and out of the cloud technology including RFID (Radio Frequency Identification) solution, visual system solution, I-BOX and RoLA (Long Range Radio) solution with intelligent navigation in and out of the warehouse system to achieve the real sense of intelligent storage operation and digital management.

- **Cloud Delivering Management**

In the real process, there are many problems in the warehouse storage process, such as goods ready state query, goods transportation status monitoring, vehicle position monitoring, customized packaging reference operation instructions, and so on. The shipment of goods under cloud warehousing will improve the pain point of the shipment process to a certain extent. Through intelligent acquisition of cargo status, intelligent customer packaging operation, safety monitoring and early warning of transportation process (safe transport sensor, abnormal early warning of logistics process, logistics cloud), vehicle management system, the solution of transportation route optimization and driver big data analysis have been solved intelligently.

V. THE INFLUENCE AND GAINS OF CLOUD STORAGE IN GRAIN DISTRIBUTION

The concept of lean production is a management tool introduced by Toyota in Japan, and it is also suitable for the construction of grain distribution supply chain. The spinal cord of lean production is to find waste in the production process, analyze problems and solve problems. The grain distribution cloud warehousing platform virtualizes the unnecessary warehouses of grain distribution links, transforming the actual rotation of goods into idling. That is, optimizing the waste of distribution links. Through the cloud warehousing information system platform, the grain processing plant and consumers are directly linked, eliminating all the intermediate links so that the lean development of the distribution supply chain is realized. The road of lean is endless. The lean grain distribution industry lays the foundation for the development of the whole grain industry.

A. Warehousing and Logistics Costs

The traditional grain distribution needs to rent the warehouse to store the goods, and each link needs logistics to realize the actual distribution of the goods. When the grain arrives in the hands of the final consumers, it adds too much additional costs of manpower, logistics and warehousing. As a result, the final price of food remains high and warehousing and logistics costs account for about 30% of the cost under the traditional model. Cloud warehousing reduces intermediate warehousing, reduces intermediary logistics transportation, greatly reduces warehousing costs and logistics costs, and reduces warehousing and logistics costs by about 10%.

B. Cloud Warehousing Platform and Information Sharing

Through the cloud warehousing platform, the information is shared, and the grain distribution can be operated through a cloud platform, which solves the delay and uncertainty of information transmission. It improves the overall efficiency and accuracy of grain distribution. The JIT distribution service of grain distribution has been realized by realizing the direct distribution of the national commercial super of the grain processing plant, supplemented by the store warehouse allocation. The regional distribution center of defective goods or seasonal return in the cloud warehousing platform has also been effectively solved.

C. Using the Internet and Big Data's Thinking

The continuous application and development of the "cloud service" of the new retail new business type, using the Internet of things technology to realize the "information system + cloud platform", using the cloud to reduce costs, improve the accuracy of inventory and design the cloud warehousing for use as needed. With cloud warehousing as the basis, with the help of the connected big data center, reasonable distribution time and quantity are arranged for consumption concepts, consumption preferences, and monthly consumption data in different regions. At the same time, it plays a core supporting role in the integration and optimization of logistics distribution. Compared with the traditional distribution model, the data analysis of cloud platform is timely and accurate. The prediction of the product life cycle of grain production and processing plants also provides theoretical data support, avoids the waste of all kinds of products caused by the delay of the traditional mode, and has a certain help and guiding significance for enterprises to pursue profit maximization.

D. Cloud Warehousing Management

The development of Internet of things technology provides a technical basis for cloud warehousing management. First of all, the rapid growth of human cost has been solved through the automatic and intelligent application of warehousing while, with the new requirements of e-commerce, cloud warehousing will eventually solve the pain points of traditional warehousing operations. Differences between incoming and outgoing warehouses, non-synchronization between objects and systems, and unreasonable allocation of warehouse locations will be effectively solved and promoted through cloud warehousing and "cloud computing". As a result, the space resources of the warehouse can be brought into full play, and the space resources can be exchanged for the time resources so as to improve the consumption of the time resources of the warehouse management.

VI. SUSTAINABLE DEVELOPMENT IN THE FUTURE OF GRAIN DISTRIBUTION CLOUD

The innovation of grain distribution under the Internet aims to create a secure, visual, interconnected and efficient integrated grain distribution supply chain. Cloud warehousing is only the tip of the iceberg in the field of grain distribution based on the application of the Internet. With the continuous progress of social technology, the cloud warehousing design and application of grain distribution will continue to expand, and the following visible technologies such as cloud TMS, cloud ROS and cloud box will be developed and applied in the near future. The development and application of 5G technology, Internet of things and AI technology will promote the development of new retailing, new distribution and intelligent logistics, and will promote the development and progress of the whole supply chain.

A. Cloud TMS (Cloud Transportation Management System)

The cloud TMS, which relies on the "cloud" technology, the transportation entrustment, zero load entrustment, transportation plan, transportation dispatch, capacity reporting, anomaly report, vehicle trajectory, in-route tracking, weather

forecast, on-line early warning, online payment, automatic settlement, etc., is optimized for each link of the supply chain. Efficient connectivity of "cloud" services in round-the-clock supply chains, such as profit and loss analysis, multi-dimensional analysis, multi-warehouse management, etc. is also optimized. Realize the visualization of the whole process of grain distribution and transportation, improve transportation efficiency and reduce management costs, and complete the collection, integration, analysis and re-optimization of big data.

B. Cloud ROS (Robot Operating System)

The cloud ROS, which relies on "cloud" technology, uses the ROS software platform on the cloud to simulate the optimal allocation of transport capacity resources for the grain distribution supply chain, which include vehicles, transportation mode, transportation quantity, transportation distance, transportation station, transportation times, etc. If you enter the demand information (time, vehicle, quantity, destination, etc.) of the response on the client side of the cloud ROS, the cloud ROS automatically calculates the delivery proposal to the customer for customer selection and adjustment. According to *«Time»* magazine, online retail giant Amazon has paid \$775 million for Kiva Systems' robot project, fully demonstrating its confidence in using robots for warehousing operations. Amazon has deployed 10000 robots in its warehouse network, a move that says it will save up to \$900m in order execution costs-broken down to each customer order, which will save up to 40 per cent.

C. Cloud Box

The cloud box, which relies on the "cloud" technology, is the goods of the store or consumer, binds the goods throughout the distribution, and feedback the goods on the way in real time. The distribution limitation, goods defect, customer signature, customer feedback and payment in the process of distribution can be realized in the application of cloud box system. The cloud box provides a good solution for the distribution of the last kilometer of grain distribution so that the grain distribution supply chain can be perfect and enhance the customer purchase experience.

D. Prospect of Logistic Supply Chain.

Driven by artificial intelligence, Internet, big data and other new technologies, the retail industry in China will experience a profound change on the basis of diversified and personalized consumer demand. Many new things such as Unmanned supermarket, unmanned shelves, intelligent distribution, and in the forefront of the times will appear one by one in the near future. We should launch a series of explorations, speed up the layout of the industry, lead the intelligent retail, and the development of new retail will promote the development of grain distribution supply chain.

With the development of new retailing and intelligent logistics, the grain distribution supply chain will be more transparent, rapid, accurate and timely, which can continue to improve diversity, quality, nutrition and convenience. With the development of 5G and the application of Internet of things technology, it is expected that China's grain distribution industry chain will move from segmentation to organic

integration of production, supply and marketing and intelligent distribution in 2025.

VII. SUMMARY

With the proposal of made in China 2025 and German industry 4.0, the combination of industrialization and information is the development trend. The demand for intelligent logistics and warehousing in the future grain logistics mainly includes logistics, warehousing data, logistics cloud, warehousing equipment, intelligent logistics and logistics, warehousing automation, Internet of things, augmented reality, the big data and so on, which can realize logistics cloud warehousing equipment monitoring, logistics tracking, warehousing intelligent logistics forecasting, logistics

sharing and so on. This also can improve the efficiency of operation logistics and warehousing and reduce the cost of logistics warehousing. According to the data of China Federation of Logistics and Purchasing, the size of intelligent logistics market will exceed 500 billion Yuan in 2020, and the scale of intelligent logistics market will exceed 1 trillion by 2025.

REFERENCE

- [1] Dongmei Li, Analysis of Total Freight Volume Based on Value Stream Mapping (VSM), vol.1, Aussino Academic Publishing House, pp. 624-629, 2016.