

Collaborative framework analysis of agricultural logistics ecosystem under industrial Internet

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Abstract

At present, the organic integration of information technology and Internet of Things technology with various industries is bringing new opportunities and challenges to traditional industries and forming a modern business development model. This paper introduces the concepts of agricultural logistics ecosystem, influencing factors of agricultural logistics and collaborative research of agricultural logistics, analyzes the elements, structure, function and market of agricultural logistics ecosystem under the industrial Internet, and grasps the key elements and basic principles of operation of agricultural logistics ecosystem. Agricultural logistics and information technology matching degree and interaction with the market, from a new perspective to explore the synchronous development of agriculture and logistics industry.

Keywords

Industrial Internet; Agriculture; Logistics ecosystem; The framework.

1. Introduction

Ecosystem is a concept in biology. The main reason for the orderly development of agricultural ecosystem is that in the traditional agricultural development mode, agricultural logistics system lacks standard operation order and develops at a low speed. If you want to move to an orderly mode, you need to absorb external energy to bring it to an orderly state. Agricultural logistics ecosystem is a kind of advanced development mode. The coordinated development of each internal subsystem can realize the goal of assisting and winning.

2. Summary of related concepts and concepts

2.1. Agricultural logistics ecosystem

At present, there is no standard definition of agricultural logistics ecosystem, but it is included in the category of industrial ecosystem, and the concept of agricultural logistics ecosystem can be defined by using industrial ecosystem and other theories. The main operating theory of ecosystem is that in order to build a circular industrial development system, we should attach more importance to the leading industry and use other resources to assist it. The ecosystem is to take the core enterprise as the main body and some related industries as the object, and form

a win-win development mode between the main body and the object, strengthen the closeness between each node and make it in a state of stable discovery.

2.2. Factors affecting agricultural logistics

When "influencing factors of agricultural logistics" are searched as keywords, there is a lack of relevant documents, materials and data information in the database, and there are few relevant researchers. Views similar to this concept are as follows: On the one hand, it explores the synergistic factors of agricultural logistics, and grasps the connection between agricultural development and logistics, the correlation between logistics capacity and agricultural development speed, and the interfering factors in the development of agricultural logistics. On the other hand, the influence of agricultural products logistics relationship is explored to master the uncertainties in the development of cold chain logistics, agricultural logistics in the development of the experience and lessons learned. It is necessary to focus on the factors affecting agricultural products logistics, so as to provide data and case support for agricultural logistics construction.

2.3. Collaborative research on agricultural logistics

The essential concept of agricultural logistics synergy is that the nodes in each supply chain of agricultural logistics can share information and reasonably distribute income, which should be based on the coordinated development of supply chain. The main performance of the coordinated development of supply chain is to maximize the economic benefits of the whole chain. The fundamental power for the development of agricultural logistics is the sale of agricultural products, so the supply chain and service chain should be coordinated in the process of research. When exploring the collaborative work of agricultural logistics supply chain, different categories should be combined, such as dairy products, fresh food, fruits and vegetables. In different development cycles and environments, agricultural products have different characteristics, and they are particularly prone to the interference of objective factors, resulting in production reduction or quality decline. Therefore, scientific control of various factors should be carried out. The key point of agricultural supply chain coordination is to control the risk of agricultural supply. When exploring the collaborative work of agricultural logistics service chain, we should pay more attention to value-added services of agricultural products and improve the level of servitization of agricultural products.

3. Synergistic analysis of agricultural logistics ecosystem elements under industrial Internet

3.1. Factor analysis of agricultural logistics ecosphere

Agricultural logistics covers a series of activities before, during and after agricultural production, including processing and sales of agricultural products. The main body of agricultural logistics ecosystem is an ecosystem composed of agricultural logistics demanders, logistics service providers and other stakeholders, mainly including transportation, storage, distribution, big data and other logistics system related elements. Each system plays a specific role in the principal and can be divided into several groups. First, the leadership population. It is the leader of the whole system and the integrator of resources, the purpose of operation is to integrate resources, to ensure the coordinated development of each population. It is necessary to combine the development mode of agricultural logistics to divide the work, such as strengthening the connection with upstream and downstream enterprises, creating industrial structure chain, and forming logistics business service area. Second, key populations. It has a transactional function in the ecosphere, and all the work of the biosphere needs to help it. In the process of service, we should respect the main position of agricultural economy, strengthen the fit degree of service, so as to speed up the development of agricultural logistics. Key

population mainly refers to those who need to provide agricultural logistics services. Different groups can be divided according to the similarities and differences of service objects, such as means of production demand and agricultural product demand. Key population can guarantee the whole ecosystem in a stable state. Third, support populations. It can guarantee the function of the whole ecosystem. The rapid advancement of agricultural logistics activities cannot be separated from the help of related groups. For example, banks can provide effective assistance for the development of agricultural logistics, so as to expand the radiation scope of agriculture and enrich the categories of agricultural industry. Financial institutions and third-party service institutions can provide convenient services for the development of agricultural logistics and are independent. They can also develop independently from the ecological circle. The establishment of close and cooperative relationship between the group and the ecosystem can enrich the profit channels and increase the economic benefits of enterprises. Fourth, parasitic populations. It mainly refers to the main body that can provide value-added services for the ecosphere, such as advertisers or agricultural consultants, which are completely dependent on the ecosphere for survival. If the ecosphere disappears, they will also disappear.

3.2. Analysis of circle layer structure

In order to achieve effective development of agricultural logistics ecosystem, information technology should be comprehensively applied, and each subject can be effectively connected with the help of cloud platform. Logistics enterprises can innovate the development mode of traditional agriculture, improve the advancement of industrial development, and key populations in the ecosystem can provide value-added logistics services to ensure the normal operation of the ecosystem. In order to achieve the rapid development of agricultural ecosphere, it is necessary to consider the external environment comprehensively. We should control the political, economic, ecological and social environments, make clear the direction of development and enhance the cohesion of the whole. Only by constructing a good external environment can the sustainable development ability of biological fluidic be improved.

3.3. Synergistic analysis of agricultural logistics ecosphere elements

First, carry on the coordination analysis to the main element. The essence of ecosphere development is to make all the main bodies develop together, so as to create higher economic benefits. A complete and efficient project needs the cooperation of all subjects, and the agricultural logistics population and support population should develop together. For example, banks offer opportunities to integrate agricultural logistics and provide financial support so that their own businesses can grow. Agricultural logistics population also needs to cooperate with the external environment, for example, the government puts forward policies to benefit farmers and increases agricultural support. Within the ecosystem, each individual strives for a development goal and maintains cooperative relationship on the basis of competition. Different agricultural logistics groups have different functions, such as transportation, storage and distribution of agricultural products, and integrate and integrate each function to facilitate decision-making.

Secondly, the collaborative analysis of object elements is carried out. The object elements should also be matched scientifically. The synergy of object elements is mainly reflected in the matching state of standardized operation and technology and capital owned by the subject. For example, there are certain omissions in the infrastructure construction of agricultural logistics, so funds should be invested in the construction of cold chain technology to enhance the advancement of ecosphere development.

4. Collaborative analysis of agricultural logistics ecosphere structure under industrial Internet

4.1. The fourth stream is coordinated with the information chain

In each stage of agricultural production, there will be certain capital flow, logistics and commercial flow. In the process of the operation of these three flows, a large amount of data will be formed to form the information flow, and information technology will be used to dynamically control the various links of agricultural production, master the key elements that affect the development of running agriculture, and then integrate all elements together to form a large number of data and data, and gather into an important information flow. Agricultural logistics ecosystem has been formed in the stage of agricultural products procurement business flow, agricultural logistics to achieve transactions, that is to say, business flow provides opportunities for the development of logistics. When the completion of agricultural logistics, the settlement work, capital flow began to operate.

4.2. The fourth stream is coordinated with the agricultural chain

Agricultural supply chain mainly refers to the network structure chain composed of agricultural production material supply, agricultural production and sales, agricultural material service providers, manufacturers, service providers and buyers. Commercial flow can provide inexhaustible power for agricultural supply chain. Only with capital flow can the entire agricultural logistics ecosystem operate. In order to manage agricultural logistics ecosphere scientifically, it is necessary to coordinate the commercial flow, logistics flow, capital flow and information flow in agricultural supply chain to ensure its stable development. Agricultural logistics ecosystem should not be a simple surface cooperation, members should carry out scientific communication and exchanges, clarify the essence of industrial development, make resources fully and reasonably integrated, connect each link, and form the development mode of agricultural integration.

4.3. The fourth flow and agricultural logistics value chain synergy

Agricultural value chain is composed of three stages: before, during and after agricultural production. Logistics mainly plays a role in the later stage of agricultural production. Although the value chain only has a supporting function, scientific control of it can fundamentally improve the value chain. Transportation, storage and distribution of agricultural products can provide guarantee for logistics work, and have the foundation. The agricultural logistics value chain must control the information flow in order to realize the purpose of adding value. The value of information flow is mainly reflected in two aspects: first, information flow can help logistics service providers to share information and summarize resources; Second, make full use of information technology, establish a new agricultural supply chain and agricultural logistics ecosystem, master consumer demand and shopping characteristics, so as to carry out precision marketing, broaden the radiation scope of the industry, and ensure sufficient capital flow.

4.4. The fourth stream is coordinated with the technology chain

Technology can provide guarantee for the integration of business flow, logistics, capital flow and information flow. The coordinated development of the four flows requires technical support, so technology is the foundation of all development work. Capital flow and business flow need to rely on electronic settlement technology to carry out good circulation; To develop rapid circulation of agricultural products, preservation and cold chain storage and transportation technologies are needed. In the traditional agricultural development model, because do not have the aid of related technologies, four circulations are in a separate development, the condition of the information flow fracture, lead to demand is in a state of uncertainty, the consumers suspicious of the quality of agricultural products, resource utilization is low,

resources cannot be effectively integrated, high cost but low efficiency of agricultural logistics. With the continuous discovery of information technology and cold chain technology, agricultural logistics technology can achieve four-stream coordinated development. Strengthen the effect of the integration of the four streams, speed up the development of agricultural logistics ecosystem, improve the economic and social benefits of the industry.

5. Functional synergy analysis of agricultural logistics ecosphere under industrial Internet

5.1. Agricultural circulation

In the construction of the platform, information technology should be the core, and the demand of the demander and logistics service provider should be regularly released on the platform, so that the information of both sides is in an equal state. In this way, logistics demanders can make decisions according to their own needs, and also apply the intelligent solutions provided by the platform. Only in this way, agricultural logistics resources can be rationally allocated, logistics costs can be reduced, and customers can always be placed in the center. With the widespread application of Internet of Things technology, the visualization and intelligence level of agricultural logistics ecosystem is deepening. The main value of agricultural products in the circulation of agricultural products is as follows: First, it can supervise the whole process of trading and trace the source to ensure the quality and safety of agricultural products and agricultural products. Second, improve the automation of energy logistics, and improve the efficiency of storage and transportation of agricultural products and agricultural products. The extensive application of a large number of logistics information technology in the agricultural logistics ecosystem can improve storage technology, optimize transportation and distribution lines, accelerate the circulation of agricultural products, and avoid the loss of agricultural products.

5.2. Financial services

Small and medium-sized agriculture-related enterprises have certain financing difficulties, and their financing channels are relatively single and lack of assistance. In the process of development, agriculture-related enterprises are in urgent need of a large amount of capital to help them, so as to expand the scale of production and operation and enhance their comprehensive competitiveness. But many banks are afraid to take risks and are reluctant to finance businesses. This is because the information is not equal to the situation, seriously hinder the further development of agriculture-related enterprises. With the help of information technology financial institutions can comprehensively consider and explore the actual development of agricultural enterprises, master the performance growth of each quarter, evaluate the debt paying ability of enterprises in combination with the development trend of the industry and the law of market changes, and determine whether to carry out financing work. In this way, risks can be avoided effectively and opportunities for the development of agricultural logistics ecosystem can be provided. Agricultural logistics providers have agricultural resource providers and wholesalers of transaction details and data information, Banks can data according to the logistics service providers in the platform is grasp the financing situation of the enterprise, and based on these data to construct the credit evaluation rating, to determine whether to provide financing services for enterprises and the financing amount of concrete. This will not only help smes in financing activities, but also curb the risk from the root. In addition, information technology can enhance the advancement of logistics operations, for the financial sector. With the help of network and intelligent technology, financial institutions can dynamically supervise the mortgaged goods and obtain dynamic data information, so as to

avoid the situation that logistics service enterprises and agricultural enterprises jointly defraud financing funds and avoid the risk of collateral.

5.3. Data services

When agricultural logistics in the process of ecosystem operation will generate a vast amount of data and information, using big data technology of information retrieval, classification and function of summary, in the vast amounts of data information in the selection of key content, analyses their intrinsic value, so could you arrange to provide the reference for main body of each work, reduce the incidence of the decision-making problem. In the process of agricultural logistics operation, dynamic management and tracking of production work are carried out with the help of positioning technology to ensure that all operations are implemented in place. Once problems occur, the system will automatically give warning, so as to ensure the comprehensiveness and effect of work. At the same time, big data can also judge the situation of consumers, clarify their consumption demands and dissatisfaction, and timely feedback information to the manufacturing process of enterprises, which can not only optimize the industrial structure of agriculture, but also highlight its own characteristics and get consumers' attention. In the process of circulation of commodities, agricultural logistics each link of the information collected, the flow direction and flow of the products, accelerate the rate of products, reduce the influence of the objective factors and the interference, ensure transportation resources can play its value, grasp the key elements of agricultural logistics information, provide a reference for transportation of work after, Effectively solve the problems existing in the process of transportation. In the sales link, the data of consumers are mined, and the goods are arranged in the most suitable position from consumers, so that consumers can get products in a short time.

6. Market coordination analysis of agricultural logistics ecosystem under industrial Internet

First, vertical markets. E-commerce has completely changed the sales model of agricultural products. By using the Internet of Things and Internet technology, consumers can break the shackles of time and space, obtain massive information and buy agricultural products from all over the country without leaving home. The online platform builds a bridge of communication between consumers and producers, flattening the sales channel and reducing the cost of consumption. However, logistics efficiency of many agricultural products is low. Offline farmers' markets have sufficient development experience and have formed a complete logistics and transportation system, which can make up for online logistics problems. Therefore, we should adopt the agricultural logistics ecosystem mode of synchronous development under the online business of agricultural products logistics to integrate logistics resources and speed up the circulation of agricultural products.

Second, horizontal markets. The logistics infrastructure in some parts of the countryside is slow, and large quantities of agricultural products cannot be sold, leading to widespread rot. To build urban and rural two-way flow channel can effectively alleviate the problem of agricultural information asymmetry, the government should build information platform, the agricultural production, sales and storage, transportation and distribution of information and requirements in terms of matching and integration, so as to realize the maximization of agricultural resources, to build a healthy ecosystem agriculture logistics, so as to close the connection between the urban and rural.

7. Conclusion

To sum up, based on the perspective of ecosystem, this paper analyzes the collaborative framework of agricultural logistics circle under the industrial Internet and clarifies the mechanism of collaborative operation. From the Angle of element coordination, it mainly includes the subject and the object. The object is the external cooperative performance of the subject. From the perspective of structural coordination, the four nodes of logistics, information flow, business flow and capital flow can be integrated together to form the circle layer of ecological circle. From the perspective of functional coordination, the application of information technology to agricultural logistics can speed up the operation and ensure the growth of value. Analyzing from the Angle of market coordination, combining the vertical and horizontal market structure can realize resource integration and make up the short board in the development of agricultural logistics.

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