

Overview of the Information Platform Research on the Supply Chain of Agricultural Product

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Abstract: The establishment of the information platform of the supply chain of agricultural product can effectively solve the problem of breaking of information chain of agricultural product, improve the credibility of all members among the supply chain, and realize the summarization and collaboration in a efficient and collaborative platform, thus achieving efficient and standard operation of the supply chain. This article expounds some problems existing in agricultural product's supply chain in China, carries out a feasibility analysis of the establishment of information platform of agricultural product's supply chain, and accounts for the necessity and feasibility of the establishment of agricultural product's supply chain by analyzing three different kinds of technical platform.

Keywords: Agricultural product's supply chain; Information platform; Establishment

1. Introduction

Since 1996 Zuurbier for the first time put forward the concept of food supply chain, many scholars came up with many other notions such as agricultural product's supply chain, supply chain concerning agriculture, supply chain of agriculture, supply chain of agri-food, agribusiness, logistics network of agricultural product and logistics system of agricultural product. Leng Zhijie thinks that these notions, which are defined in accordance with product features and different researching boundaries, can be termed as supply chain of agricultural products. The supply chain of agricultural products refers to a circulation chain consisting of agricultural products' production, purchase, processing, transportation and distribution to consumers. It means a network composing of suppliers providing agricultural production materials, producers of agricultural product (farmers and production base), distributors, retailers and consumers by controlling the circulation information of agricultural products. At present, the production and sales of agricultural products is still in the phase of dispersion, information block and blind production, and the information level of circulation of agricultural products cannot meet the requirements of the development of modern circulation of agricultural products. So it is urgent to establish an agricultural products supply chain of information sharing and collaboration based on network technology.

2. The Analysis of the Current Mode of Agricultural Products Supply Chain

2.1. The current mode of agricultural products supply chain

Since the introduction of the opening up and reform policy, China's agricultural product circulation system has fundamentally broken the past unified purchase and sale unified underwriting under the planned economic system. And agricultural prices are adjusted according to the market supply and demand, market is more open. Agricultural management has developed from the single public ownership to the direction of diversification, gradually forming a market pattern under which business entities of diversified ownership management can compete commonly and a new circulation mode of various business practice, variety of circulation channels and a few links. Overall, our country agricultural product circulation construction has initially formed a circulation market system of agricultural products which centers on all kinds of wholesale market, bases on the agricultural trade market in urban and rural areas, is added with direct selling distribution and supermarket chains, and combines producing areas, selling areas and distribution market.

2.2. The limitations of our current agricultural products supply chain model

China's agricultural products supply chain of current mode although to some extent can meet the basic needs of the masses of urban and rural consumers, but from the perspective of long-term development, it has some inherent limitations, for example, it is unable to realize precise linkage of agricultural production and consumption, thus having difficulty in coinciding with the initial inten-

tions of supply chain management in both efficiency and performance.

1. The block of Information chain of agricultural products in the wholesale market lead to the disorder of logistics operation. The wholesale markets are served as links in current mode of agricultural products in China ,basically is given priority to with business flow and logistics integration mode of spot transactions, which merely causes a simple competitive relationship traders and distributors and can neither realizes full exchange and sharing of information nor the real cooperation and coordination

2. Agricultural products supply chain members of each node in the good faith construction is insufficient, lack of trust and cooperation. First of all, China's current agricultural products processing enterprises in the majority with small and medium-sized enterprises, the number of leading enterprises not only in the true sense, and slow growth, annual sales income over one hundred million yuan of less than 5% of the total number of enterprises. The enterprise management is not science, market competitiveness is not strong, driving ability is weak, upstream and downstream connected loosely, and lower part of the business integrity, more influence the cooperation between enterprises.

3. The low level of coordination and standardization in agricultural products supply chain operation makes it difficult to achieve value-added implementation. First, widespread inconsistency in existing standards and principles of each node of the agricultural products supply chain members make it impossible to reach standard and coordinated operation of supply chain , thus reducing the efficiency of supply chain operation. In particular, the main body of agricultural production and operation in China--farmers who is of vast quantity and wide distribution is both rational and irrational in response to market signals and cognition of economic information.

3. The Feasibility Analysis on the Information Platform Construction of Agricultural Supply Chain

The establishment of information platform of agricultural products' supply chain is of great significance to optimize the distribution of agricultural resources, reduce agricultural risks, improve international competitiveness of agricultural products, and promote agricultural development.

(1) As for technology of platform construction, Chen Honglin put forward an information integration frame of agricultural supply chain on the basis of XML technology. Fan Haiqin analyzed such key technologies which can achieve information management of agricultural products' supply chain as agricultural products traceability technology、 bar code technology、 cold chain tech-

nology and data warehouse technology, and developed a simple system using B/S structure and J2EE platform.

(2) As for the logistics information platform, Zhou Huan and other scholars established the logistics public information platform of agricultural product on the basis of supply chain management. The platform will directly link and government departments involved in the manufacture of agricultural products into a whole emphasizing the use of advanced information technology and logistics technology. Using RFID automatic identification and network technology , Xue Yueju and other experts put forward solutions of agricultural products logistics network ,and designed transparent information application framework throughout the whole logistics chain of agricultural products. Shu-hua zhou and other experts set up a supply chain information management system chain supermarket for live fresh agricultural products in chain supermarkets. This system integrates the basic information, characteristic information, business operation process, the quality and safety and all the traceable information of fresh agricultural products' production, circulation, sales process into a integrated information management system . The reform on the information flow of the whole logistic process of fresh agricultural products to improve the circulation and cash flow can achieve optimal comprehensive value of fresh agricultural products circulation process.

(3) As for integrated information platform, Chen Xiaolin and other experts, by the notion of information control, established an information management platform of agricultural products' supply chain based on information sharing .The platform includes five main participant bodies of agricultural products' supply chain and two major system of information management and information sharing . Yang Shenyan designed an overall architecture of information platform of agricultural products' supply chain combined by integrated information platform and collaborative operating platform , and recommended by the core enterprise leading platform construction or shared by members of the supply chain. Fang Lina proposed the agricultural products supply chain information platform based on CPFR (Collaborative Planning, Forecasting and Replenishment).

4. The Analysis of Information Platform Construction based on Different Technologies

4.1. The information platform construction of agricultural products on the basis of cloud technology

1) The expected goals of the platform

Relying on the information network foundation, using cloud technology of super computing power and low cost, high safety, the application characteristics of user-centered, fruit and vegetable supply chain information

sharing and cooperative mode, formed from fruit and vegetable production, acquisition, processing, transportation and sales of integrated system. Through the platform system of fruits and vegetables circulation information under effective control, with fruit and vegetable producers (farmers), the production base, distributors, retailers and consumers of information network chain structure, realize seamless information from production to sales of fruit and vegetable cohesion, to achieve the information flow, business flow, logistics, capital synergies.

2) Platform application principles based cloud technology

According to the key technology application and using direction of the cloud technology, the article explores an organic combination of the virtual machine, data storage and data management with the information platform of fruit and vegetable supply chain.

Virtual Machine Monitor

Virtual machine technology is server virtualization. Using VMware Cloud virtualization technology, through the virtual machine and the host operating system and the isolation between multiple virtual machine, a server cut into several servers use, made of fruit and vegetable information platform of hardware resources can be reasonable allocation, scheduling and management.

Data storage technology

The cloud data storage has the characteristics of distributed, high throughput and high transfer rate, which can meet a lot of information on agricultural products supply chain resources integration and multiple user requirements.

Data management technology

To huge amounts of data stored in a timely manner, supply chain system analysis, and response to the fruit and vegetable supply target group implement synchronous update, random read rate of increase access to information in a timely manner.

3) Establishing a safe stable business platform by PHP

The PHP language, mysql database, visualized tag technology and excellent architecture support yeepay pay-and-escrow, online payment. Powerful business management model supports merchants' enquiry, enquires of suppliers and agents, recommendation of outstanding businessmen. supply chain integration pricing method is used to study the daqing fruit and vegetable information trading platform using the pricing model, support mass article release system, many rights management development build and implement the daqing fruits and vegetables such as information platform, to build agricultural products supply chain e-commerce information platform based on cloud.

4.2. The information platform construction of agricultural products' supply chain on the basis of P2P

IBM defines the P2P as consisted of several interconnected coordinated computers with at least one of characteristics below: system depends on marginal active collaboration (not a central server) equipment, each member benefits directly from other members instead of the server's participation; Members in the system paly the roles as server and the client's at the same time; System application user can realize the existence of each other, form a group of virtual or real.

Information platform of agricultural supply chain based on P2P technology, cloud computing, Internet users can be communication and file sharing, users can directly connect to other computer users for information exchange, do not need to connect to the server to browse and download, the intermediate links, in addition to the server from the Internet content is located in the center mode change for "content is located in the edge", will be right back to the user, so as to realize the reasonable adjustment of agricultural information industry chain, the suppliers, agricultural producers (farmers), the production base of the whole network chain, distributors, retailers and consumers, from information, production, sales, processing, transportation to the trade, export as one of the supply of agricultural products such as information network system.

Considering the domestic current situation of the agricultural products supply chain and the connotation、characteristics and structural model of the agricultural products ' supply chain, the information platform construction of agricultural products supply chain is put forward based on P2P technology and the B/S mode is combined with P2P technology to set up an information platform. Producers in the platform node through registration after login to the network to provide agricultural information resource cloud, as a provider of agricultural production information resources, market node of the platform to provide services; Market node after login to the network to provide product circulation through registration information resource cloud, as a provider of agricultural information resources, sales, and producer node of information resource cloud, a unified foreign provide information services.

4.3. Information platform construction of agricultural supply chain on the basis of Internet technology

The system of agricultural products supply chain based on the technology of Internet information platform is mainly composed of portal website, logistics management system, decision-support system, the interface system. Portal websites mainly provide for the production of agricultural products supply chain parties, transport, sale, consumption and other comprehensive information to make each link organically united, thus forming the integration of agricultural production, supply and sales operations. Portal websites offer complete and full range of

professional and technical guidance for agricultural production for example: selecting seeds, seedlings, agricultural products processing, brand construction of agricultural products ,etc. Consumers can quickly understand and purchase agricultural products they need. In addition, the website also provides an interactive communication platform to accelerate the spread of technology and market promotion.

The entire supply chain logistics management subsystem is an important part of the supply chain information platform. Because agricultural production distribution in our country is vast, the improvement of logistic efficiency of agricultural products is of great importance for the improvement of the whole supply chain value. At present, still in the stage of simple transportation, without systematical planning our country agricultural product logistics simply results in blind transport which make the agricultural products supply exceed demand, and difficulty in storage and eventually lead to a lot of wasting. In the logistics system, the integrated use of CPS and GIS technologies to track transportation situation of agricultural products and timely feedback information, by analyzing and comparing the transportation costs and times of agricultural products, agricultural transport routes are optimized to control the transport cost and time.

4. Conclusion and Trend of Development

According to the analysis above, we can draw a conclusion that the research on information platform construction of agricultural product supply chain in our country mainly focuses on e-commerce platform technology research and development and the design of the system, information management, etc. The results of this study provide for our country agricultural product supply chain information platform a beneficial reference for both the theory and practice. But there are also deficiencies: (1) the qualitative analysis is more than quantitative analysis. Researches stay the status and problems in qualitative description, analyzing process and the mechanism, design pattern and framework, etc. The most conclusion are strategies and policy suggestions lacking quantitative analysis of the data and conclusions; (2) the agricultural products supply chain security platform, e-commerce platform and information platform for the logical model design, more complete physical model and the underlying detail design, implementation, less research system implementation; (3) empirical research is less.

The researching trends in the future: (1)carry out deep analysis of issues like moral hazard and adverse selection caused by asymmetrical and incomplete information in agricultural products supply chain, such as: how to minimize the moral hazard in agricultural products

supply chain, how to design effective incentive mechanism, etc.(2) The research of supply chain of agricultural products should be conducted from the perspective of knowledge engineering and knowledge management , such as knowledge discovery in the supply chain of agricultural products supply chain and construction of knowledge service system of supply chain of agricultural products.(3) International agricultural products supply chain research, such as: trading platform and decision support system of transnational supply chain of agricultural products, and technical support of global supply chain of agricultural products for dynamic alliance.

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