

Development Mode and Innovation Research of Cold chain Logistics of Agricultural Products

Jian Sun, Jing Zhou*

School of economics and management, Shenyang Agricultural University, Shenyang, 110886, China

Keywords: agricultural product; cold chain logistics; development model;; Innovative Research Cold Chain Logistics

Abstract: this paper analyzes the existing urban and rural cold chain logistics patterns of agricultural products, based on which, through the study on the different characteristics of demand made by urban and rural residents for agricultural products, the author puts forward the corresponding solutions to the problems existing in cold chain logistics of agricultural products. It is hoped that through the analysis of this article, improvement of agricultural cold chain logistics can be further enhanced.

Since the reform and opening up policy which began 30 years ago, China's economy has made remarkable achievements. At the same time, the living standards of urban and rural residents continue to increase. With the steady improvement of living standards, people's requirements for agricultural products are constantly increasing. Compared to the previous era of scarcity of agricultural products, people's requirement for agricultural products is based on from quality to quantity. But China's current cold chain logistics mode of agricultural products still has some deficiency, so there is a need to do a further study

1. Problems existing in china's cold chain logistics mode of agricultural products

As we all know, since the reform and opening up, China has made great achievements in cold chain logistics of agricultural products. This can be collectively reflected in the gradual establishment of cold chain logistics of agricultural products and its mode. However, at the same time, we should also recognize that between China's cold chain logistics and that of foreign developed countries there is still a big gap, which can mainly be seen from the following aspects:

First, food safety problems in China continue to occur in recent years. This is because China's market economic system is not complete and the relevant departments are not strict enough in safety problems. Food is the first necessity of the people. That's why food safety problems should be regarded as a common concern of the whole society, and should be strictly supervised by relevant departments. Therefore, such problems are very prominent in cold chain logistics of agricultural products.

Second, infrastructure for cold chain logistics of agricultural products is lagging behind. According to statistics, there are about 20,000 refrigerator storages. Although it is a large number, because of China's large population base, the current limited refrigerated storages, most of which were built 30 years ago, are difficult to meet people's growing demand for fresh agricultural products. Therefore, the current situation of refrigerated storages is relatively backward.

third, infrastructure of China's cold chain logistics of agricultural products has an uneven development. At present, development of refrigerated storages in urban areas is fast while that in suburbs slow. Development of operating refrigerated storages is developing fast while that of processing refrigerated storages slow, medium-sized refrigerated storages fast and wholesale and retail refrigerated storages slow. This uneven development can easily lead to the drop of the overall level of the refrigerated storages, then fundamentally restricting the further development of China's cold chain logistics of agricultural products industry.

Fourth, the third party develops very slowly. The so-called third party means the industry taking

charge of the cold chain logistics is developing slowly. At present, the development of China's cold chain logistics of agricultural products is showing its characters such as being numerous, medium sized, decentralized and varying service quality.

Fifth, standard for cold chain industry of agricultural products is missing. As China's Food Safety Law continues to improve, not only makes the food safety supervision of food safety has relevant law to abide by and people's litigation right of food safety can be guaranteed according to the law. Moreover, Food Safety Law regulates the country's operation of cold chain logistics of agricultural products radically. However, it is worth noting that regulations on industry standards and relevant law of old-chain logistics of agricultural products in Food Safety Law are not enough, thus leading to a lack of effective binding effect on specific implementation standards of old-chain logistics of agricultural products.

2. Development mode of cold chain logistics of agricultural products.

Like some foreign countries, China's development mode of cold chain logistics of agricultural products has experienced a course from nothing to something gradually. Generally speaking, a perfect mode of agricultural products supply should start from the producer to the logistics center of the origin, then to processors and logistics providers, and through distribution logistics centers to reach the final retailers and consumers. And in this mode, each link should be strictly checked to ensure quality and safety.

Take cold chain logistics mode of agricultural products as an example, a thorough mode should include processing, storage, transportation and delivery, and sales, and the key of the whole mode lies in the word cold chain, that is to say, all the links mentioned should be carried out in cold storage conditions. Also, this must be strictly regulated by its relevant departments. China's cold chain logistics mode of agricultural at present can be divided into four kinds, namely: the processing-enterprises-centered cold chain logistics mode, the third-party-centered cold chain logistics mode, the wholesale-market-centered cold chain logistics mode, as well as the chain-supermarket-centered cold chain logistics mode.

(I) Processing-enterprises-centered cold chain logistics mode

As the name suggests, this mode is based on the processing enterprises. Meanwhile, the focus of the mode is also processing enterprises. According to the current situation of China's cold chain logistics of agricultural products, it can be found that the weakest link of this mode lies in the procedure where agricultural products are picked from the farm to deliver to processing enterprises. In addition, if there are some production and quality problems in the enterprises themselves, other problems are also likely to appear in retail.

The processing-enterprises-centered cold chain logistics mode has been taking the lead in China's cold chain logistics of agricultural products for a long time. That's because, apart from China's vast geographical area and large population base, this mode has obvious advantages in terms of operation and economy.

Shuanghui Group, for example, after years of development, has become the country's largest meat producer, gradually accumulating abundant experience in cold fresh meat processing. And Shuanghui Group has a sound self-support cold chain, that is to say, the group itself has a good control based on which certain autonomic management and supervision can be done to ensure the integrity of the processing-enterprises-centered cold chain logistics mode.

(II) The third-party-centered cold chain logistics mode

As the requirements for freshness degree of agricultural products goes up, due to some operational reasons of the processing-enterprises-centered cold chain logistics mode, the stringency of cold chain may easily have some problems, that's to say, the stringency is becoming weaker and weaker as the cold chain goes to the end. Therefore, some enterprises have begun to try a new cold chain logistics mode, i.e. the third-party-centered cold chain logistics mode.

As the name implies, the third-party-centered cold chain logistics mode means that the third-party logistics enterprises account for a leading role throughout the cold chain logistics mode. In this mode, the third-party logistics enterprises need integration of logistics, that is, to meet the

integrated logistics service requirements of different departments, industries and areas in agricultural products production, processing and selling.

Let's take a look at Xia Hui, which is the third-party logistics industry for the world famous restaurant chain McDonald and occupies the dominant position in McDonald's all cold chain logistics of agricultural products. Through its unique cold chain logistics network, this company offers McDonald a complete set of service including purchasing, distribution, warehousing and coordination.

Compared with the processing-enterprises-centered cold chain logistics mode, the cold chain logistics mode dominated by the third-party logistics industry, through having improved a lot in stringency of cold chain, still has the possibility of breaking the cold chain.

(III) The wholesale-market-centered cold chain logistics mode

As the name implies, the wholesale-market-centered cold chain logistics mode is dominated by wholesale markets. This mode closely combines the fresh agricultural products manufacturers, processing enterprises, transportation agents, wholesale market of agricultural products and wholesale retailers. In this way, all the parties in this cold chain logistics mode become a community of interests. Meanwhile, they may as well complete each other's advantages.

With the development of society and economy, the specific implementation of the wholesale-market-centered cold chain logistics mode must be based on modern logistics infrastructure and technology. Overall, it needs the support of information based on which the integration of the processing, storage, transportation and delivery of fresh agricultural products can be reached. At the same time, every relevant department should be managed as a whole. Only in this way, can logistics cost, loss and time be reduced.

(IV) The chain-supermarket-centered cold chain logistics mode

Compared with the three cold chain logistics of agricultural products modes above, the large-supermarket-centered cold chain logistics mode has advantages such as wide coverage and small seasonal effects. Without doubt, no matter what mode to choose, the terminal goal is to guarantee the agricultural products to be on sale fresh, i.e. the so-called terminal marketing.

Through the above analysis, a conclusion can be summed up that no matter what kind of cold chain logistics mode of agricultural products is chosen, the more cold chains the mode has, the greater the possibility of breaking is, which accordingly, resulting in a higher cost. The advantage of large and medium-sized chain supermarkets lies in this independent development of cold chain logistics of agricultural products; that is to say, it's the supermarket that dominates the mode. Through the establishment of a supermarket-centered cold chain logistics network of agricultural products, the integration of resources and information of agricultural products is realized. Then, based on this point, the sales of fresh agricultural products in the supermarket are increased and the intermediate links are saved, which to some degree, reduces the transportation cost.

Take RT Mart supermarket as an example. This supermarket, by the establishment of agricultural supply cooperative relationships with local farmers and the signing of supply contracts with the farmers directly, successfully eliminates the middlemen. Apart from this, the supermarket has established its distribution center, which in turn saves some transportation costs. Through statistical analysis, the chain-supermarket-centered cold chain logistics mode saves about 20%-30% total cost, compared with other 3 modes. The profit margin resulting from this mode will give more benefits to the consumers. What's more, it will increase the benefits of local farmers, stimulating their enthusiasm for long-term cooperation.

III. Innovation research of cold chain logistics of agricultural products

(I) The establishment of logistics center for modern agricultural products

According to the above analysis, it can be seen that terminal marketing plays an important role in increasing the reliability of cold chain logistics mode of agricultural products, and reducing the breaking probability. Therefore, the innovation stance of cold chain logistics mode of agricultural products should be based on terminal marketing.

At present, the innovation of cold chain logistics mode of agricultural products is focused on the establishment of the logistics network. As the cold storage facilities towns are continuously

improved and the cold chain logistics network of agricultural products is gradually established, the logistics resources integration and exchange of logistics information has become the key step in the development of the cold chain logistics of agricultural products. By integrating the logistics resources of wholesalers and retailers and the third party logistics enterprises, strategic alliance is made. This not only realizes collectivization of the transportation, storage, processing, delivery and terminal marketing, but also avoids the occurrence of some malignant competition and hoarding. In addition, with the gradual establishment of the logistics center for modern agricultural products, the distribution of profits between the agricultural product wholesalers and retailers and the third-party logistics enterprises will be more rational.

(II) The operation of logistics center for modern agricultural products

After the establishment of logistics center for modern agricultural products, some modern cold chain logistics center can be established led by the government. These centers can be based on the previous refrigerated storages, which is cost-saving and easy to reform. The center needs a comprehensive service platform which has not only the perfect hardware and software conditions, but also, at the same time, the support of funds and information. This will attract a lot of processing enterprises, third-party logistics enterprises and wholesale and retail enterprises. The integrated services platform is guided by the local government and managed by the core enterprise with good supply chain management ability. Through the implementation of unified management of cold chain logistics center, alliance between giants and help between each other can be made.

Besides, local supermarkets can also be attracted into the center. In this way, after the unified dispatch and management, the agricultural products will be distributed to the point-of-sale terminal so that production can replace selling and production and selling can be combined. What's more, long-term relationships between the parties can be built to further form a stable strategic alliance, which is based on resources and information, holds places of origin, places of sale and market information and has a strong ability to resist risks.

3. Conclusion

When the development of China's cold chain logistics is relatively low, choosing a proper logistics mode can effectively allocate and make use of all the cold chain logistics resources to reduce the cost of the circulation of agricultural products as much as possible and to ensure the quality of agricultural products. With the development of economic society in China, new logistics mode will continue to appear. China's cold chain infrastructure construction is continuously strengthened; marketization of cold chain logistics is continuously improving; regulations and standards of cold chain logistics is continuously improving; means of cold chain management means is continuously becoming richer and richer. With the joint efforts of what mentioned just now, cold chain logistics in China will get more considerable development.

Acknowledgments

This paper is a project of National Natural Science Foundation of China (71473167)

References

- [1] Zhou Cheng. *Research on the Present Situation and Countermeasure of China's Cold Chain Storage Industry Development* [J]. Logistics Engineering and Management, 2011 (11).
- [2] Bu Mei. *A Comparative Study on the Development of Cold Chain Logistics of Agricultural Products at Home and Abroad*[J]. Logistics Engineering and Management, 2011 (11).
- [3] Fu Yu. *Analysis of the Application of the Common Distribution Pattern of Cold Chain Logistics in China*[J]. Heilongjiang Foreign Trade and Economy, 2011 (11).

- [4] Zhu Chaocai. *Research on Cold Chain Logistics System of Chinese Agricultural Products*[J]. Anhui Agricultural Sciences, 2011,39 (04).
- [5] Leng ZhangLing, Jin Zhongze. *The Speeding up of the Industrialization, Standardization, Systematization and Large Scale in Taling Agricultural Products Processing Park, Ding'an County, Ding'an County Agriculture Industrial Organization*[J]. China Fruit and Vegetable, 2010