

Development Review of Cold Chain Logistics Enterprises in Henan Province

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Abstract

This paper reviews the relevant literature from the perspective of technology application, policy and enterprise development, and finds that many scholars mainly focus on technology application and information management, and points out that there are many problems in the management process of cold chain logistics enterprises. In recent years, the development of cold chain logistics enterprises in Henan Province has shown a trend of steady growth of market scale, obvious advantages of equipment industry, gradual expansion of market subjects, and fresh e-commerce and cross-border trade have become new growth points. However, there are some problems, such as the level of information technology and technical equipment needs to be improved, the scale of international cold chain business needs to be improved, and the mechanism of professional talent training is not perfect. This paper puts forward some countermeasures from the aspects of accelerating digital transformation, strengthening supply chain management and filling up their own shortcomings.

Keywords

Cold chain logistics enterprises, present situation, review.

1. Introduction

1.1. Cold Chain Logistics Technology Research

At present, the international research on cold chain logistics is focused on the automatic control technology of cold chain logistics, mainly for the study of green, energy saving, emission reduction and atmospheric damage in the operation process. In the cold chain logistics process management, R. Montanari (2008) proposed the management scheme of effective tracking of fresh food cold chain logistics, combined with the application of technology can reduce the logistics cost [1]. ju-Chia Kuo(2009) proposed a logistics service model (MTJD) for the food cold chain based on the multi-temperature joint distribution system. The model can realize the continuous temperature control technology, meet the joint distribution of a variety of goods with different temperature requirements, and has revolutionary significance for the development of cold chain logistics enterprises [2]. R Joshi (2010) and other scholars studied the operation of agricultural products cold chain logistics system from a theoretical point of view combined with the actual, and put forward the measures taken in the normal operation [3].With the wide spread of refrigeration technology, air conditioning technology is widely used in cold chain logistics warehousing, transportation and other links. Whether the construction of cold chain logistics enterprise information system is perfect or not plays a vital role in the precooling of agricultural products from the origin, cold chain transportation, cold chain distribution with real-time monitoring system and temperature control system to realize the visualization of cold chain process. Jiao Yi (2016) and Fan Xinglan (2016) pointed out that there are many problems in the development of cold chain logistics enterprises at this stage, mainly due to the difficulty of cold chain technology leading to the whole cold chain and the lack

of innovation ability of cold chain logistics enterprises[4-5]. Many literatures pointed out that the cold chain transportation system in the United States, Japan and other developed countries has been very perfect. The temperature control technology, preservation technology and positioning technology in the cold chain link have been mature. The refrigerated rate of agricultural products transportation is more than 90%.

1.2. Policy and Enterprise Development Research

In 2014-2017, China has issued policies such as "medium and long-term logistics development plan (2014-2020)", "accelerating the development of cold chain logistics to ensure food safety and promote consumption upgrading," "Circular on Printing and Issuing the Transformation and Development Plan of Logistics Industry in Henan Province (2018-2020)" to guide the high-quality development of the cold chain logistics industry and strengthen the quality assurance of fresh products and agricultural products[6]; henan cold chain logistics enterprises should transform and upgrade according to the market demand, vigorously promote the reform of middle and high-end services such as cold chain logistics, strengthen the support of cold chain logistics links such as pre-cooling, initial processing, cold storage and preservation, and cold chain transportation, improve the cold chain facilities of important cold chain logistics nodes such as the wholesale market, and build a comprehensive cold chain logistics network system[7].With the increasing demand for fresh cold chain in recent years, China ' s cold chain logistics enterprises can not meet the needs of society. The state and local governments have issued relevant policies to support the high-quality development of cold chain logistics enterprises. Chinese scholars have studied the development of cold chain logistics enterprises. Diao Xueying (2017) and Wu Tong (2017) believe that the development of modern third-party cold chain enterprises is lagging behind and has not yet formed a modern cold chain logistics network. It is pointed out that cold chain logistics enterprises lack corresponding institutional standards and enterprise employment guidelines [8-9]. Fu Yanmei (2015) and He Linghua (2018) pointed out that the cost problem is an important factor affecting the development of cold chain logistics enterprises. The cost of cold chain logistics enterprises includes production and operation costs, cold storage costs, cold chain transportation costs and sales costs [10-11]. Luo Bin (2016) proposed that China ' s cold chain logistics enterprises need further research and improvement in the control process of enterprise operating costs[12].Cold chain logistics enterprises in Henan Province are developing rapidly. Jing Huiyun (2018) pointed out in his article that Xianyi Supply Chain Co., Ltd.is facing many problems such as the inability of management concepts to penetrate into employees, the high cost of cold chain logistics, and the lack of cold chain logistics talents[13]. Li Defeng (2018) put forward his point of view from a social perspective. The current stage of social development limits the play of cold chain logistics enterprises in Henan Province[14]. Li Lili (2018) proposed in the paper that most cold chain logistics enterprises in Henan Province waste vehicle resources, resulting in increased cost and reduced efficiency[15].Zhao Mingfeng (2018) pointed out that under the background of supply-side structural reform, cold chain logistics enterprises in Henan Province are facing new challenges and opportunities. Promoting the reform and upgrading of cold chain logistics enterprises, improving the situation of industrial chain dispersion, reducing high costs, and eliminating information non-circulation are important measures to ease the upstream and downstream circulation[16].

1.3. Summary of Literatures

The international research on cold-chain logistics enterprises combines theory with the actual development of enterprises, and explores the use of advanced cold-chain logistics-related technologies to promote the development of cold-chain logistics enterprises. Many scholars have carried out a large number of studies on the development status and countermeasures of cold-chain logistics enterprises, mainly focusing on technology application and information

management. In the cold-chain logistics of agricultural products, they mainly explore its importance and research significance, the expansion of research fields, and the development and operation of agricultural products. In some economically developed countries in Europe, the cold chain logistics level of fresh agricultural products has been relatively mature. In fresh agricultural products, producers began to seriously deal with each link from the beginning of the field, standardized postpartum cold chain system has been basically established. At the same time, in order to have good brand effect and reputation guarantee, producers will print the information of fresh agricultural products and producers on the packaging of finished products, which effectively improves the improvement process of agricultural cold chain logistics. Many studies have shown that there are various problems in cold chain logistics enterprises, and Henan Province as a major agricultural province, the origin of pre-cooling, initial processing can not be guaranteed, unified cold chain logistics enterprise information management is not perfect, restricting the development of cold chain logistics in Henan Province.

2. Development Status of Cold Chain Logistics Enterprises in Henan Province

2.1. Stable Growth of Market Size

Henan is a large agricultural province and a large population province. The development of cold chain logistics has good industrial foundation and endogenous demand, and has broad market prospects. With the continuous improvement of residents' income and living standards, the demand for the quality of fresh products is increasing day by day. The epidemic has promoted the replacement of the main fresh consumption channels of residents such as farmers' markets by new retail channels such as supermarkets and e-commerce. The number of agricultural products and processed products stored and transported through cold chain continues to increase, the cold chain circulation rate and refrigerated transportation rate continue to increase, the circulation loss rate is significantly reduced, and the cold chain circulation scale ranks among the top in the central and western regions. The scale of cold chain logistics demand continues to expand, leading enterprises grow rapidly, the cold chain Henan army continues to grow and develop, the comprehensive competitiveness is accelerated, and the trend of networking, standardization, scale and collectivization is strengthened. Among them, 10 enterprises such as Shuanghui Logistics and Xianyi Supply Chain were selected as the top 100 cold chain logistics enterprises in China, which increased by 3 compared with last year, and the total amount ranked the top 3 in China; wanbang, Shuanghui and other 9 logistics parks selected cold chain logistics demonstration park in Henan Province; three star cold chain logistics enterprises, ranking in the forefront of the central provinces; huaxia Yitong and other third-party cold chain logistics enterprise service innovation in the forefront of the country.

2.2. Advantages of Equipment Industry

Driven by the strong development of the cold chain logistics industry in the province, the cold chain equipment manufacturing industry has accelerated its development, forming a relatively complete industrial chain, and the industrial cluster effect is prominent. The Refrigeration Industrial Park in Minquan County has now entered 200 enterprises, including more than 100 refrigeration enterprises, including 47 refrigeration equipment enterprises and 65 refrigeration accessories production enterprises, with 20 well-known brands such as Wanbao, Okoma, Xiangxuehai, Ice Bear, Huamei, Yingtai and Ashidanton. Refrigerator refrigerator capacity more than 18 million units, accounting for one tenth of the country; the annual output of refrigerated vehicles is 25000, and the domestic market share is 40%. There are 40,000 employees in the refrigeration industry, including 14 provincial engineering and technical

research centers, 5 post-doctoral workstations and 1 post-doctoral mobile workstation. Zhengzhou has been approved as the national backbone cold chain logistics base. A number of characteristic cold chain logistics parks have been accelerated. The construction and application level of standardized and intelligent cold storage has been steadily improved. The designated ports for cold chain products such as meat, live cattle, fruit, ice fresh aquatic products and edible aquatic animals have been built and normalized. The cold chain logistics network layout of "one center, multi-node and full coating" has been preliminarily formed.

2.3. Gradual Expansion of Market Players

Cold chain logistics industry concentration increased steadily, network, standardization, scale and group trend is obvious. Leading enterprises play a prominent role in demonstration and guidance. Nine enterprises, including Huaxia Yitong, Datong Yuntong, Elephant and Yongda in Qixian, are selected as the top 100 in China 's cold chain logistics, and the total amount ranks third in the country. Shuanghui and Xianyi logistics are rated as five-star cold chain logistics enterprises, and Elephant logistics is rated as four-star cold chain logistics enterprises. Muyuan, Shuanghui and other pork production and processing enterprises have strong development momentum, and the demand for pork cold chain is growing rapidly. Shunfeng Cold Transport, Jingdong Cold Chain, Suning Logistics and other national advantageous cold chain enterprises have accelerated the layout, and the Central European Class (Zhengzhou) has taken the lead in achieving more than 10,000 kilometers of international cold chain transportation. Key enterprises in the cold chain logistics network, information technology, standardization, scale actively explore innovation, some areas in the forefront of the country. Driven by the rapid development of cold chain logistics, the cold chain equipment manufacturing industry has accelerated its development. The market share of ice bears, Zhongji, Xinfei and Hongyu in the domestic refrigerated vehicle market has reached 64 %, forming a relatively complete industrial chain.

2.4. Fresh E-Commerce and Cross-Border Trade Become New Growth Points

After the outbreak of the new coronavirus pneumonia, relying on the unique natural endowment resources of agricultural products and food processing industry in Henan Province, cold chain logistics enterprises undertake fresh products, frozen products, medical supplies and other storage and transportation business, which plays an important role in ensuring people 's livelihood, promoting consumption upgrading and supporting front-line epidemic. Unlike large logistics, cold chain logistics, on the one hand, is limited by the prevention and control measures of the epidemic, on the other hand, it benefits from the market demand caused by the epidemic, and its market demand, business model, service level, operation status and emergency support have produced more obvious changes. Fresh e-commerce has certain advantages in reducing circulation links. Upward supply of agricultural products will effectively improve the operation efficiency of agricultural supply chain and reduce the operation cost of upward supply chain of agricultural products. The rapid development of new formats such as e-commerce and cross-border trade has changed the traditional circulation mode, created new development space for cold chain logistics, and produced a number of fresh e-commerce platforms represented by fresh e-commerce network, basket network and lotus network. The cold chain business volume of cross-border trade platforms such as Banlie Buy, Zhongdamen and fresh Luxembourg continues to grow.

3. Development of Cold Chain Logistics Enterprises in Henan Province

3.1. Information and Technical Equipment Levels to be Improved

At present, the cold chain infrastructure construction of cold storage and refrigerated vehicles in Henan Province is insufficient, which is difficult to meet the needs of cold chain services. The

national cold chain logistics node network is not perfect. Enterprises lack information monitoring means for the whole chain of coating cold chain logistics, and the application of information equipment such as vehicle positioning and temperature monitoring is insufficient. The information management system for warehousing, transportation and orders has not been widely popularized. The proportion of refrigerated and insulated vehicles in freight vehicles is low, and the empty driving rate is high. The terminal refrigerated and insulated distribution facilities and equipment are not perfect, and the chain 's last kilometer ' is seriously broken. Most cold chain logistics transportation enterprises are not equipped with temperature monitoring information equipment, warehousing management, transportation management, order management and other information systems have not been widely popularized. Cold chain logistics enterprises lack information monitoring means to cover the whole process of cold chain logistics, and there are a lot of ' chain breaking ' hidden dangers. At the same time, the transportation and distribution of fruits, vegetables and fresh cut flowers are still dominated by the traditional way of ' ice bag + plastic foam box ' due to the limitation of technical equipment, and the ' last kilometer ' problem of cold chain logistics has not been effectively solved. The cold chain logistics technology of agricultural products is backward, the equipment is simple, the pre-cooling warehouse is very lack, the necessary post-cooling treatment is lack, and the loss rate is high.

3.2. Scale of International Cold Chain Business to be Upgraded

The province 's cold chain logistics enterprises focus on regional trunk distribution and urban distribution. In addition to Zhengzhou airport, international dry ports and other related enterprises, there are few logistics enterprises engaged in international cold chain transportation. There is a big gap between the business scale and service capacity and the requirements of building an international cold chain logistics center. The per capita occupancy rate of cold storage and refrigerated vehicles is low, and some infrastructures are obsolete, unevenly distributed and unreasonable. It is urgent to accelerate the development, transformation and upgrading. In cold storage construction, more meat cold storage, less fruit and vegetable cold storage; more city operating cold storage, less processing cold storage ; large and medium cold storage, wholesale and retail terminal cold storage ; self-built self-use cold storage, professional third-party social cold storage less. In terms of transportation organization, at present, the cold chain logistics in Henan Province is dominated by highway transportation. The scale of air cold chain, railway cold chain and multimodal cold chain transportation is small, and the cold chain logistics parks, vehicles and other facilities and equipment are relatively scarce. The proportion of cold chain logistics in the province is large, the development of third party cold chain logistics lags behind, the lack of leading enterprises with strong financial and technological strength and strong innovation driving force, the imperfect service network, and the insufficient development of specialization, internationalization and scale.

3.3. Imperfect Professional Talent Training Mechanism

Professional talents are the driving force for the development of cold chain logistics enterprises and the guarantee for the future survival of cold chain logistics enterprises. Compared with traditional logistics, cold chain logistics has more stringent requirements for professionals. For example, cold chain logistics packaging, warehousing, transportation and other aspects need cold chain logistics professionals to operate; food cold chain logistics, pharmaceutical cold chain logistics and special cold chain logistics have different requirements for cold chain logistics practitioners. China 's cold chain logistics originated in the 1950 s, at this stage in the growth period, more need professional cold chain logistics personnel as a support. According to the survey results, the talent of cold chain logistics enterprises in Henan Province shows a trend of polarization, Henan Wanbang International Agricultural Products Logistics Co., Ltd.

has 5000 professional cold chain logistics personnel, 26 cold chain logistics enterprises do not have professional cold chain logistics personnel, for private enterprises, in the need for a large amount of manpower, material resources, funds and can not quickly improve the market operating income of infrastructure, such as inspection and quarantine, garbage disposal, safety traceability, information system construction and other aspects of the development lag, short board prominent.

4. Development Countermeasures

4.1. Accelerating the Digital Transformation

After the outbreak, affected by consumer consumption habits change, online and offline business model will become standard, collaborative integration development is expected to become a new trend of industry development. Henan Province should transform the traditional supermarkets such as agricultural markets, community restaurants and chain fresh supermarkets, actively develop or introduce fresh e-commerce business, encourage "base direct supply, order agriculture, fresh housing distribution" to expand online business, standardize community group purchase operations, continuously chain the whole cold chain, and truly achieve fresh direct supply. Expand agricultural e-commerce channels, carry out the "base + e-commerce + cold chain logistics" mode, support Sanmenxia apple, Jiaozuo yam, Xixia mushroom kiwi and other characteristic agricultural products advantage enterprises to deepen cooperation with well-known e-commerce platform, provide the whole cold chain logistics service, and create a number of national famous agricultural e-commerce brands.

4.2. Strengthen Supply Chain Management

Supply chain management has become the key to winning in the melee. Using advanced technologies such as big data, artificial intelligence and the Internet of Things to track user behavior, accurately predict market demand, control the quality of fresh products, shorten the supply chain by extending to the production side and reduce operating costs are important ways to improve supply chain management capabilities. Policy is a social benchmark for a period of time. Accurately grasp the policy guidelines, use government preferential policies to develop their own enterprises, and improve the competitive value of enterprises. Therefore, government agencies must first do a good job of bridge, and actively guide and organize agricultural products logistics enterprises, logistics distribution centers and wholesale markets and agricultural production bases, leading enterprises, farmers cooperatives to strengthen cooperation, do a good job of agricultural products distribution, improve logistics efficiency. Secondly, coordinate and optimize the 'green channel' policy of fresh agricultural products transportation, ensure the rapid passage of agricultural products transportation vehicles, and ensure that road transportation to the village to the base is unimpeded.

4.3. Complementing the Weaknesses of Enterprises

Based on the high demand of the epidemic for logistics response, the commonality and versatility of logistics facilities have become the focus of attention, which also requires that in the future logistics system construction, logistics facilities have certain flexibility. Government agencies should first encourage enterprises to speed up the construction of cold chain logistics facilities. Through different forms of support or support for enterprises to strengthen the construction of post-production commercialization of agricultural products, cold chain logistics facilities and terminal sales network, the electricity price for agricultural production is implemented for the fresh-keeping storage facilities built in rural areas by family farms, farmer cooperatives, supply and marketing cooperatives, postal express enterprises and leading enterprises of agricultural industrialization. Secondly, relevant policies are introduced to encourage enterprises to build strategic logistics centers or nodes, encourage multi-functional

and multi-service compatibility services, enhance the flexibility and convenience of enterprises, and realize the supplement or expansion of logistics capacity in a short time.

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