Analysis on the Restricting Factors of Cold Chain Logistics of Fresh Agricultural Products in Anhui Province based on AHP Method

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Abstract

Based on current environment of development of logistics in Anhui province, this paper expounds the fresh agricultural products cold chain logistics development of the important role of economic development in anhui province, and using the analytic hierarchy process (AHP) to the problem of fresh agricultural products cold chain logistics development in Anhui province were analyzed, and that some important factors on the development of fresh agricultural products cold chain logistics in Anhui province, and puts forward some corresponding measures.

Keywords

Fresh Agricultural Products; Analytic Hierarchy Process; Cold Chain Logistics.

1. Introduction

In recent years, the economy of Anhui Province has developed rapidly. In 2019, the GDP of Anhui Province reached 3711.4 billion yuan, an increase of 7.5% over the previous year. Agricultural products have always been an important part of the economic development of Anhui Province, and the development of fresh agricultural products logistics is affected by the improvement of people's life quality and the improvement of economic development level.

However, the logistics development of fresh agricultural products in Anhui province is relatively backward. In the supply chain management system of fresh agricultural products, product attributes and packaging, goods storage and handling, commodity distribution and transportation and other links are prone to problems. With the improvement of residents' consumption level, people have higher requirements for the quality of consumer goods. Therefore, the task of strengthening the cold chain logistics development of fresh agricultural products has become more urgent.

2. Fresh Agricultural Products Cold Chain Logistics Development Overview

In recent years, the state of fresh agricultural products, fresh agricultural products are those perishable, vulnerable, in order to maintain freshness of picking, storage, preservation, such as a certain time limit and requirements of agricultural products, including "fresh vegetables, fruits, aquatic products, eggs, milk and living animals" five types of agricultural products.

Chinese residents have a large demand for fresh agricultural products. In 2018, the total demand for cold chain logistics of agricultural products in China was 188.7 million tons, and in 2019, the total demand increased to 225.63 million tons, with a year-on-year growth of 19.6%. The demand is mainly concentrated in dairy products, meat products and aquatic products and other fields.

In order to meet the public demand for fresh agricultural products, modern freezing and refrigeration technology is crucial. However, the refrigeration process and technical methods

adopted by agricultural cold chain logistics enterprises in Anhui province are lagging. At the same time, the agricultural production mode of our province is mainly characterized by small-scale peasant economy. Under this mode, the distribution of agricultural products is relatively scattered, and the concentration of agricultural products logistics is very low, which leads to the low marketization, scale and proportion of cold chain logistics of agricultural products in our province, and restricts the development of relevant enterprises.

3. Empirical Analysis

3.1. Establish Index System

Through combing the literature in recent years, based on the research on the development status of fresh agricultural products cold chain logistics in Anhui Province, through the comprehensive consideration of logistics related professional staff and researchers engaged in agricultural products logistics, the index system is confirmed as the three index system factors with the highest proximity to the fresh agricultural products cold chain logistics. The index factors selected in this study are: economic facilities factor, macro factor, logistics management factor.

Establish the hierarchical structure of restricting factors of fresh agricultural cold chain logistics in Anhui Province (see Table 1)

Table 1. Index system of restricting factors of cold chain logistics of fresh agricultural products in Anhui

Objective level	Level indicators	The secondary indicators
Factors restricting the development of fresh agricultural products cold chain logistics (A)	Economic facility factors (B1)	construction of information system (C1)
		Logistics facilities (C2)
		infrastructure construction (C3)
	Macro factors (B2)	Government macro-control (C4)
		Fresh produce awareness (C5)
		Standardization of laws and regulations (C6)
	Logistics management factors (B3)	Quality of logistics personnel (C7)
		The characteristics of fresh agricultural products (C8)
		The operation ability of logistics company (C9)
		Communication skills between enterprises (C10)

3.2. Result and Analysis

In order to reflect the importance of each index in the index system of restricting development factors of fresh agricultural products cold chain logistics, this paper uses the analytic hierarchy process (AHP) method to assign values to the restricting factor index. Through calculation and analysis, the single sorting and total sorting of schemes are carried out. By integrating the calculation results, the total sorting of all matrix data is carried out, as shown in Table 2.

Table 2. Overall ranking table

		B1	B2	B3	Sort
		0.268	0.177	0.554	
C1	0.164	0.044	-	-	8
C2	0.263	0.07	-	-	5
C3	0.573	0.154	-	-	3
C4	0.554	-	0.098	-	4
C5	0.177	-	0.031	-	10
C6	0.269	-	0.048	-	7
C7	0.313	-	-	0.173	2
C8	0.068	-	-	0.038	9
C9	0.498	-	-	0.276	1
C10	0.121	-	-	0.067	6
rank		2	3	1	-

From Table 2, we can see the following conclusions: The influence of the three constraints on the development of cold chain logistics is in the order of logistics management factors, economic facilities factors and macro factors. It shows that logistics management is the first factor that restricts the development of fresh agricultural products logistics in Anhui Province. According to the ranking results, it is suggested to strengthen the operation capacity of logistics companies, improve the efficiency and effect of the company's operation, and improve the ability to transport fresh agricultural products quality.

The primary factor restricting the development of fresh agricultural products cold chain logistics in Anhui province is the operation capacity of logistics companies and the quality of logistics practitioners. It shows that the relevant cold chain logistics enterprises have not been able to adapt to the rapid change of the market and diversified transportation needs. For the key factors, specific suggestions are put forward below.

4. Suggestions

4.1. Strengthening Cold Chain Logistics Infrastructure Construction

The development of fresh agricultural products cold chain logistics enterprises needs the support of infrastructure and professional equipment. The government should accelerate the construction of cold chain logistics infrastructure, vigorously promote the research and development and innovation of key technologies, and provide enterprises with special fund subsidies.

4.2. Cultivate Third-party Cold Chain Logistics Enterprises

The development and expansion of cold chain logistics of fresh agricultural products in Anhui Province is inseparable from the strength of third-party cold chain logistics enterprises. The government should strengthen macro-control, actively attract investment, open policy, and

actively attract talents, cooperate with universities, and improve the ability of using cold chain logistics technology. Cultivate a group of professional cold chain logistics enterprises with advanced business philosophy and management mode.

4.3.   Cultivate High-quality Cold Chain Logistics Talents

First, the government should attach importance to the cultivation of cold-chain logistics application-oriented talents, increase support for cold-chain logistics, and encourage universities to open majors related to agricultural products cold-chain logistics. At the same time, enterprises should vigorously introduce high-quality technical talents, organize comprehensive training activities, and establish a good working atmosphere.

4.4.   Establish Cold Chain Logistics System for Fresh Agricultural Products

It is necessary to use modern science and technology and professional logistics management concept to promote the construction of professional, modern and large-scale logistics system. Encourage the development of cold chain logistics of meat and agricultural products. Focus on promoting the construction of cryogenic refrigeration and freezing facilities, and accelerate the establishment of a chain cold chain logistics network covering production, storage, transportation and sales of meat.

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