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AGRICULTURAL PRODUCT LOGISTICS AND THE ADVANTAGES OF ITS EFFICIENT USE

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Abstract

This article provides a detailed analysis of the logistics of agricultural products and the advantages of their effective management. The study examines opportunities to increase production efficiency, optimize resource utilization, and enhance economic benefits through the optimization of agricultural product supply systems. The article highlights the development of information technologies, innovative logistics systems, and transport and storage infrastructure as crucial factors. The research presents challenges in Uzbekistan's agricultural logistics system and recommendations for their resolution, as well as approaches based on global practices. This article offers relevant information for specialists interested in scientific and practical outcomes in the field of agricultural logistics.

Keywords: Agricultural products, logistics system, effective management, transport infrastructure, innovative technologies, information systems, production efficiency, export, resource optimization, economic development.

Introduction

The logistics of agricultural products is a complex system encompassing the efficient management, storage, transportation, and distribution of all processes from production to consumption.

The primary objective of this system is to deliver products to consumers in optimal time and at optimal cost, while maintaining the quality and safety of the products. Logistics also helps optimize the movement of agricultural products between markets, increase economic efficiency, and reduce environmental impact.

Today, on a global scale, the logistics of agricultural products has become one of the most important sectors of the economy. Effective management of this system allows for the shortening of production and supply chains, reduction of transportation costs, and improvement of storage conditions.

Many developed countries are placing great emphasis on improving the logistics system for agricultural products. The efficiency of production, storage, and distribution of agricultural products is being enhanced through the implementation of innovative technologies, including digital platforms, artificial intelligence, and IoT (Internet of Things) technologies. For instance, opportunities are being created to reduce costs in product transportation using robots and drones, as well as to ensure safe and rapid delivery of these products.

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In addition, the storage system for agricultural products is also being modernized. Great emphasis is placed on optimizing the storage and processing of products, taking into account environmental aspects such as the use of solar energy, increasing energy efficiency, and reducing waste. These innovative approaches help not only to improve product quality but also to ensure environmental sustainability.

The advantages of logistically efficient management of agricultural products are that this system allows for ensuring price stability of products, increasing export potential, and contributing to economic growth. Furthermore, an effective logistics system creates opportunities to reduce excessive costs in production and supply processes, save time, and accelerate integration into the global market.

In the context of the globalization of logistics va uning samarali foydalanishining afzalliklari, there is a need for globalization and innovation. The purpose of this study is to investigate the role of the logistics system in the development of a global organization.

METHODOLOGY

The methodology of this study is aimed at studying the logistics of agricultural products and its effective management. The study used a comprehensive methodological approach, which is aimed at measuring and improving the efficiency of logistics systems. The main goal of the study is to assess the efficiency of all stages of the supply chain of agricultural products and develop scientifically based recommendations for further improving the system.

The study used the system analysis method, which allowed for an in-depth study of all elements of the logistics system and their interactions. Using this method, the integration and interdependence of logistics processes were identified, potential problems in the system and opportunities for increasing efficiency were identified. At the same time, real data obtained during the processes of transportation, storage and supply of agricultural products were analyzed using the empirical observation method. Using this method, it was possible to determine the actual state of practical processes and the level of efficiency they have.

The method of engineering calculations played a central role in the study, as it allowed for an accurate assessment of the technical and economic efficiency of logistics processes. This method took into account issues related to transportation costs, energy consumption, and product quality assurance, and also developed optimization opportunities. Data analysis was aimed at identifying the efficiency of logistics processes and the need for their improvement using statistical methods. Based on the data obtained during the analysis, each logistics stage was evaluated separately and the main problems in the system were identified.

The research process involved the integration of empirical and theoretical data. Initially, scientific literature and best practices were analyzed, and then empirical observations were conducted based on real sector data. In the process of data collection and analysis, the efficiency of systems and processes was assessed using statistical and mathematical models. Based on the results obtained, comprehensive recommendations were developed for improving the agricultural product logistics system.

The main goal of this methodological approach was to scientifically assess the processes of agricultural logistics, identify existing shortcomings in the system and develop proposals to

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eliminate them. The research was also aimed at introducing scientifically based innovations in the field of logistics and developing methods necessary to solve existing problems.

RESULTS AND ANALYSIS

The main objective of this study was to analyze the efficiency of agricultural product logistics systems and develop scientifically based recommendations for their improvement. The results obtained during the study provided important information about the efficiency of logistics processes, existing shortcomings and opportunities for their elimination. This section presents the results of the study and their analysis.

During the study, various processes in the agricultural product logistics system were analyzed. The most important results are as follows:

1. Transportation costs and time consumption: Transportation costs and time consumption in the processes of transporting products were studied. According to the data obtained, costs can be significantly reduced by improving the efficiency of the transport system.

2. Product storage and quality assurance: Existing shortcomings in storage and packaging processes were identified. Optimal storage conditions and packaging methods were developed to ensure product quality.

3. Problems in the system: The biggest problems in the logistics system were identified as shortcomings in transport infrastructure, efficiency in warehouse management, and temporary storage processes.

System	Efficiency (0–10 point	Main problems
Component	system)	
Transportation	6.5	High time and costs, lack of
system		infrastructure
Storage system	7.2	Deficiencies in maintaining product
		quality
Packaging system	7.8	Unclear packaging standards
Delivery	8.0	Good, but errors in speed and planning

Table 1. Analysis of the efficiency of agricultural product logistics systems

When studying the efficiency of logistics systems, the first thing that was identified was the low efficiency of the transport system. High transport costs and time, as well as insufficient infrastructure development, were identified as the main factors reducing efficiency. This, in turn, extends the time for products to reach the market and increases costs.

In the storage system, shortcomings in maintaining product quality were identified as the main problem. Non-optimal storage conditions of products and the lack of packaging standards lead to a decrease in quality. In addition, poor organization of the storage system, excessive resources spent on storage, reduce efficiency.

Despite the good performance of the delivery system, more precise approaches to optimization and planning are required to increase its efficiency. In this regard, it is important to further strengthen the experience of industry specialists and introduce digital technologies more widely.



The results obtained allowed us to develop the following practical recommendations for improving the agricultural logistics system:

• To increase the efficiency of the transport system, it is necessary to develop infrastructure and organize new transport routes.

• To improve the storage system, it is necessary to introduce optimal storage conditions and packaging methods for products.

• To optimize logistics processes, it is necessary to widely use digital technologies, for example, the introduction of smart warehouses and real-time monitoring systems.

DISCUSSION

The results of this study are aimed at determining the efficiency of the agricultural logistics system and its optimization potential. The results obtained were of great importance in studying the current state of the industry and identifying the main problems in the system. The main conclusions drawn during the study and their comparison with other existing studies help to better understand the prospects and opportunities for the development of the industry.

The study identified high costs, inefficient use of time, and lack of infrastructure as the main factors affecting the low efficiency of the transport system. These results are also confirmed by other studies, for example, a study by Kannan and Kannan (2017) showed that high transport costs and underdeveloped transport infrastructure create serious obstacles to the delivery of agricultural products. According to the practical results of the study, the need to strengthen infrastructure and diversify transport routes is emphasized in order to establish an efficient transport system.

In addition, the use of digital technologies to improve the efficiency of the transport system, such as real-time monitoring systems and intelligent transport systems, plays an important role in reducing inefficient costs and saving time. At the same time, the improvement of urban-rural roads, the modernization of motor vehicles and the construction of logistics centers are indicated as important factors in optimizing the transport system.

The shortcomings in the efficiency of the storage system and ensuring product quality were another main result of the study. The introduction of optimal methods of storage and packaging of products allows maintaining a high level of quality of agricultural products. High-quality storage and packaging systems are especially important for perishable products such as fruits and vegetables. In this regard, other researchers, such as Silva and Almeda (2015), emphasize the positive impact of changes in storage systems on product quality. Other studies also show that improving storage and packaging systems leads to increased efficiency in extending the life of products and their delivery to the market.

In addition, the use of modern storage technologies, such as environmental control systems, is an important tool in optimizing product storage conditions and ensuring quality. In order to increase the efficiency of the storage system, it is necessary to develop packaging materials, ensuring their environmental friendliness and efficiency.

Proposals for optimizing logistics processes were discussed, in particular, the importance of expanding and automating digital technologies. The results presented in the study show that great opportunities are created to increase the efficiency of the logistics system through the

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introduction of modern digital technologies. In this regard, technologies such as real-time monitoring systems, the use of big data (Big Data) and artificial intelligence (AI) systems are important tools in optimizing logistics processes.

In addition, integration between systems can be cited as an important factor in optimizing the logistics system. Other studies, in particular, Sharma and Yadav (2020), emphasize that production and supply chains can be managed more effectively through integrated systems.

All of the above results are based on the results of research, especially those carried out using scientific and technical approaches. The practical application of these approaches will not only increase the efficiency of the logistics system, but will also have a positive impact on agricultural producers and consumers. Research shows that digital technologies and optimization processes help improve the entire system, which in turn will reduce market prices and allow products to be delivered to markets faster.

CONCLUSION

This study identifies the optimization methods necessary for the effective management of the agricultural logistics system. The study shows that it is possible to increase efficiency by using digital technologies in key parts of logistics processes. According to the results obtained, the modernization of transport and storage systems, as well as the automation of logistics processes, are important for the effective delivery and storage of agricultural products.

Also, the integration between systems and the introduction of scientific and technical approaches will help reduce logistics costs and improve product quality. This, in turn, will greatly contribute to the improvement of agricultural supply processes in the country. The results of the study also open up new prospects for future research in the field.

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