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## THEORETICAL ASPECTS OF LOGISTICS MANAGEMENT OF AGRICULTURAL ENTERPRISES AT THE INTERNATIONAL LEVEL

**Summary.** The article examines the theoretical foundations of logistics management at the international level. The main scientific schools that are exploring logistics management are considered. The conceptual apparatus of logistic control is investigated. The modern logistics in the system of international market relations is analysed. The differences between modern agricultural logistics and the turnover of agricultural products are determined. The main system elements of the logistics management of agrarian enterprises are displayed. Classification features of logistics management are formed. The potential of logistics services is analysed on the example of China thereby defining the international aspect of the subject-matter of the article.

**Key words:** logistics management, agro-industrial enterprise, international level, classification, aspect.

### Introduction to the problem statement.

After more than 40 years of development since the reform and opening up, China is now in a critical period of transformation from traditional agriculture to modern agriculture. In this process of development, the contradiction between the small production of farmers and the large market has become more and more prominent, and the problems of agriculture, rural areas, and farmers have become important issues affecting the development of the national economy [1].

Agricultural enterprise logistics which is based on agricultural production facilities, and also through agricultural productions, packaging, storage, transportation, and distribution of logistics links such as maintenance and assessment of agricultural logistics development, is to reduce material consumption, improve labour productivity outside of the profit source, so agricultural logistics research is on the rise and attracts attention from all sides. Due to the complexity of the research on the logistics of agricultural enterprises, theoretical and practical research on the logistics of agricultural enterprises is relatively poor, which needs to be further systematized.

Logistics can be defined from different perspectives. The most commonly adopted definition in the world is the definition of American logistics association: "logistics is the entire process of planning, implementing, and controlling the effective flow and storage of raw materials, intermediate inventory, final products and related information from the starting place

to the consumption place to meet the needs of consumers." The 1998 definition of logistics gave rise to the concept of a supply chain. In 2001, the definition of logistics by the American Logistics Association was modernized: "logistics is the supply chain operation process to meet customer requirements for the purpose of the goods, services, and related information between the output and sale to achieve high efficiency and low cost of positive and reverse flow and storage of the process of planning, implementation, and control" [2].

The main problem is the need for the formation of logistics management of agrarian enterprises, taking into account modern world trends and challenges, monitoring and processing of which may affect the increase of the competitiveness of agrarian products in the world markets for its sale.

### Analysis of recent research and publications.

Logistics is of great significance in economic development. Peter Drucker, a leading American business scientist, likens logistics to "a virgin land." Douglas Lambert pointed out that the warehouse cost is the largest part of the total cost of logistics activities. The book "Circulation Cost" written by Waseda University Professor Xizeshu calls improving the logistics system as the "third source of profit" that still needs to be excavated. In the book "Logistics War of Major Societies," he elaborated that the current logistics cost is like an iceberg, most of the potential seabed, so it can be seen that the cost is only a small part of the surface [3].

Wang Ling and Cao Hongrui analysed the impact of economic globalization on China's logistics industry organization from the perspectives of China's entry into China's logistics market and transnational logistics companies' entry into China's logistics market from three aspects: the market structure, enterprise behaviour, and market performance of China's logistics industry [4].

Wang Xinli studied the relationship between agricultural logistics and agricultural industrialization and believed that one of the important reasons for the slow development of agricultural industrialization in China was that it neglected the role of agricultural logistics in the process of agricultural industrialization and the backwardness of China's agricultural logistics system [5].

Wang Ya believes that China's WTO accession requires further liberalization of the domestic grain market and its integration into the international grain market with trade liberalization as soon as possible. Accordingly, it is necessary to adjust the current grain industry policy and accelerate the scientific construction of grain logistics [6].

Xia Wenhui studied the operation mode of agricultural products logistics under the e-commerce platform. Alan McKinnon analysed the transportation efficiency of the British food supply chain, etc. [7]

Oleksandr Velychko from the angle of the agricultural industry logistics management, at the same time, put forward agricultural industry logistics management through the agricultural materials chain management and distribution management, agricultural industrialization management, and development of agricultural production logistics management; in our country, he also puts forward as a class agricultural logistics taking into account the operation mode of agricultural materials of the enterprise including chain, operation mode, order pattern, industrialization of agricultural production, agricultural products wholesale [8].

The research of Alan McKinnon shows that logistics capability has a positive effect on the performance of agricultural product supply chain, and the external integration and internal integration of enterprises are highly correlated [9].

D. Kobyzskyi proposed the methods and rules of economic reengineering of enterprise operation [10].

**Identification of previously unsettled parts of the general problem.** The main problem of this scientific research, which is insufficient attention in the scientific articles, defines the insufficiency of the theoretical substantiation of the logistics management of agricultural enterprises at the international level with the necessity of studying both the conceptual foundations of this management, the conceptual apparatus, classifications, and the system-forming elements of modern logistics in the work of agrarian enterprises in the international sphere.

**The purpose of this article** is to study the theoretical aspects of logistics management of agricultural enterprises at the international level.

According to the authors, **the main tasks of the article** include: to consider the main scientific schools that are investigating the management of the logistics of agrarian enterprises; to study modern logistics in the system of international market relations; to analyse the potential of logistics services on the example of China thereby defining the international dimension of the research subject; to identify the differences between modern agricultural logistics and the turnover of agricultural products; to formulate the classification features of logistics management at the international level; to consider the system elements of international logistics services; to define the main characteristics of the modern agro-industrial sector taking into account logistics management.

### Results of the research (presentation of the main research material).

In the national standard of logistics terminology officially implemented by China on August 1, 2001, the definition of "logistics" is the physical flow process of goods from the place of supply to the place of acceptance [1].

According to the actual needs, the basic functions of transportation, storage, loading and unloading, handling, packaging, circulation processing, distribution, information processing and other organic integration, "logistics management" is defined as the planning, organization, coordination, and control of logistics activities in order to achieve the service level that satisfies users at the lowest logistics cost.

We can understand the connotation of modern logistics agricultural enterprises at the international level from the following aspects:

- in modern logistics, "thing" refers to all material materials that can be physically moved in real life, including raw materials, semi-finished products, finished products, services, information and wastes. "Flow" refers to all physical movement, which covers not only the field of commodity circulation but also the field of commodity production and consumption;

- modern logistics activities include procurement, quality inspection, warehouse inventory, storage, classification, inventory, packaging, handling, loading and unloading, transportation, information communication, customer service, sales forecasting, order processing, cost management and a series of activities involving the process of goods from the place of raw materials to the final consumer;

- in the era of economic globalization and information, modern logistics is a concept of integration, systematization, networking, and comprehensive integration, and has become a cross-sector, cross-industry, and cross-regional social system;

- modern logistics not only pursues economic goals to achieve the effective allocation of resources in the whole society and the whole world but also pursues social goals to reduce pollution, protect the environment, and achieve sustainable economic and social development.

Differences between modern agricultural logistics and agricultural products circulation:

- modern agricultural logistics is not the same as the circulation of agricultural products. From the perspective of industry, agricultural logistics is the name of a service industry, and the core activity of modern agricultural logistics is to complete the time and space transfer of agricultural materials and agricultural products;

- different coverage. Economic activities usually include production, circulation, and consumption activities, while the circulation process of agricultural products also includes commercial flow and logistics of agricultural products;

- different profit sources. The profit of circulation of agricultural products comes from the price difference of agricultural products, while the profit source of modern agricultural logistics is diversified, including the price difference of agricultural production materials and agricultural products, as well as the value-added generated by the packaging and processing of logistics links [1].

Elements of modern agricultural logistics agricultural enterprises at the international level [11]:

- flow factors (fluid, carrier, direction, traffic, process), the development of modern agricultural logistics activities should pay attention to the relationship between the elements, otherwise, it will make the cost of agricultural logistics increase, and also service level and efficiency decline;

- functional elements (transport, packaging cleaning, storage, loading, circulation processing, distribution) refer to the basic capabilities of modern agricultural logistics system;

– supporting elements (hardware elements, software elements), the establishment and operation of modern agricultural logistics need many supporting means, especially in the complex social and economic system.

Classification of modern agricultural logistics enterprises at the international level:

1 According to different fluid objects, it can be divided into:

1.1 Agricultural production logistics includes agricultural means of production logistics (hereinafter referred to as the agricultural capital), which are necessary for the process of agricultural production.

1.2 Agricultural products logistics. Agricultural products logistics is the logistics formed by taking agricultural products as the object. According to the classification of agricultural products, it includes food crop logistics, cash crop logistics, animal products logistics, aquatic products logistics, forest products logistics, and other agricultural products logistics.

2. According to the main stages and material transformation of the agricultural production process, it can be divided into:

2.1 Agricultural supply logistics. Agricultural supply logistics is the logistics formed in the process of supplying and supplementing the means of agricultural production in order to ensure uninterrupted agricultural production, guarantee rural economic development.

2.2 Agricultural production logistics. Agricultural production logistics refers to the logistics formed by the allocation, application, and management of production factors in the process from farming activities and management to the output and harvest of agricultural products.

2.3 Agricultural sales logistics. Agricultural sales logistics refers to the logistics activities that transfer the ownership of agricultural products to consumers through acquisition, processing, fresh-keeping, packaging, storage, transportation, distribution, and sales of agricultural products.

2.4 Agricultural recycling and waste logistics. In the process of supply of agricultural means of production, agricultural production, circulation, and consumption of agricultural products, it will inevitably lead to the generation of a large number of wastes, useless objects, and recyclables.

Consider the practical principles of logistics management of agrarian enterprises at the international level. China is an export-oriented country that pays great attention to creating convenient, fast and reliable communications to deliver its products to key foreign markets. These include the US and EU markets. As for the US, there is no alternative to maritime transport. As for the European market, the creation of a transnational rail transport corridor can reduce the route of goods from China to Europe from 36 to 16 days (compared to the maritime route of transportation). Negative aspects of the land corridor are the need to cross several state borders, the dependence on the clear coordination of freight trains, the need for storage terminals and inspection and inspection complexes. It is for this purpose that China created the Silk Fund, which should promote the promotion of Chinese goods and carry out infrastructure and portfolio investments in the participating countries. The total amount of the Fund's funds is about \$40 billion, of which about \$5 billion was invested in 2015. The most capital-intensive projects of the Fund were:

– within the framework of the Sino-Pakistani economic corridor: the construction of a hydroelectric power station in the north-east of Pakistan, a portfolio of investments – \$1.65 billion;

– acquisition of 98% of the shares of the Italian company Pirelli (tire production), investment portfolio – \$1.8 billion;

– purchase of shares in the Russian project on the production of liquefied natural gas “Yamal LNG” and the allocation of a development loan of 730 million euros.

That is, the modern concept of the Silk Road is a multi-functional global international project aimed not only at creating transport corridors and an extensive logistics network but also at implementing projects in the real economy and energy sector. In the future, the Fund's resource liabilities may increase by a factor of ten, primarily due to investments from the Gulf countries [12].

The main line of logistics of agrarian enterprises in China.

1. Sea freight from China. The size of Chinese investments in the ports of the country is the largest in the world: only during the implementation of the 11th Five-Year Plan in 2006–2010, more than 357 billion yuan was invested. These funds have helped China to achieve great and sustained progress in spite of the adverse economic situation in the world. This shows 17% growth, which is relatively stable for the main seaports of mainland China between 2001 and 2010. During this period, Shanghai became the largest port in the world, exported more than 29.06 million TEUs in 2010.

2. Rail transport. China is actively investing in the development of its rail infrastructure, both in terms of high-speed passenger transport and freight. It plays a key role in boosting the logistics industry. By the end of 2011, the length of all of the railways of the PRC reached 99 thousand km. The volume of transported goods has also increased, giving impetus to the development of high-speed highways.

3. Road transport. Another important part of the domestic volume of Chinese trucking is automobiles. Just like in the US and EU, freight wagons in the People's Republic of China are moving along high-speed highways.

4. Air transportation. The volume of air traffic flows in China steadily grows by about 6% a year; it is not a particularly eloquent indicator on the general background of the development of the Chinese logistics market. Chinese Southern, a leading Chinese carrier, reported 42.2 billion yuan profit for the first half of 2011 (+22.3%). The volume of UPS cargo by air in the PRC has increased by 10% over the same period [13].

**Conclusions.** On the premise of defining the connotation of modern logistics, this paper defines the concept, functions, and characteristics of modern agricultural logistics, and elaborates on modern agricultural logistics management, modern agricultural green logistics, the development trend of modern agricultural logistics and modern agricultural logistics industry. Studies suggest that modern agricultural logistics is to satisfy customer demand as the goal, supported by information technology, the use of modern means of logistics, the means of agricultural production and agricultural output content and related services and information, from the source to consumption source of organization, control and management, and other economic activities, is an important part of the whole society logistics, with implementations use value, value, improving competitiveness, dispensing and points, and wide large amount of independence, specificity, unbalance, preservation, processing and value-added, bigger risks, etc. Modern agricultural logistics management is the scientific management of the logistics activities in the process of agricultural pre-production, production, and post-production, so as to achieve the service level satisfied by users with the lowest agricultural logistics cost. Modern agricultural supply chain management is a new agricultural logistics management mode. Modern agricultural green logistics is the sustainable development direction of modern agricultural logistics.

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### ТЕОРЕТИЧНІ АСПЕКТИ ЛОГІСТИЧНОГО УПРАВЛІННЯ СІЛЬСЬКОГОСПОДАРСЬКИХ ПІДПРИЄМСТВ НА МІЖНАРОДНОМУ РІВНІ

**Анотація.** В статті досліджуються теоретичні засади логістичного менеджменту на міжнародному рівні. Актуальність статті полягає у необхідності підвищення рівня концептуального наповнення та теоретичного узагальнення інформації щодо логістичного управління сільськогосподарськими підприємствами на міжнародному рівні, адже, з урахуванням поширення глобалізації на економіки країн світу, євроінтеграції економік деяких країн пострадянського простору, існує необхідність підвищення рівня конкурентоспроможності аграрної продукції на світових ринках. До теоретичних аспектів авторами віднесено: дослідження теорій економічних циклів, інноваційного управління, понятійного апарату логістичного управління, формування класифікаційних ознак, системоутворюючих елементів логістичного управління аграрних підприємств на міжнародному рівні. Розглянуті основні наукові школи, які досліджують управління логістикою. Визначено понятійний апарат логістичного управління. Сформовано класифікаційні ознаки логістичного менеджменту на міжнародному рівні. Відзначено основні ознаки сучасного логістичного менеджменту. Визначено відмінності між сучасною логістикою сільського господарства та обігом сільськогосподарської продукції. Розглянуто системні елементи та класифікаційні ознаки міжнародних логістичних послуг, які базується на шumpeterіанській теорії, де впровадження технологічних змін в роботі аграрних підприємств призводить до суттєвого підвищення рівня конкурентоспроможності аграрної продукції на зовнішніх ринках збуту. Досліджено сучасну логістику в системі міжнародних ринкових відносин, а саме проаналізовано потенціал логістичних послуг на прикладі Китаю тим самим визначаючи міжнародний аспект тематики статті.

**Ключові слова:** логістичне управління, агропромислове підприємство, міжнародний рівень, класифікація, аспект.

### ТЕОРЕТИЧЕСКИЕ АСПЕКТЫ ЛОГИСТИЧЕСКОГО УПРАВЛЕНИЯ СЕЛЬСКОХОЗЯЙСТВЕННЫХ ПРЕДПРИЯТИЙ НА МЕЖДУНАРОДНОМ УРОВНЕ

**Аннотация.** В статье исследуются теоретические основы логистического менеджмента на международном уровне. Рассмотрены основные научные школы, которые исследуют управления логистикой. Исследовано понятийный аппарат логистического управления. Проанализировано современную логистику в системе международных рыночных отношений. Определены различия между современной логистикой сельского хозяйства и оборотом сельскохозяйственной продукции. Отображены основные системные элементы логистического управления аграрными предприятиями. Сформированы классификационные признаки логистического менеджмента. Проанализирован потенциал логистических услуг на примере Китая, тем самым определяя международный аспект тематики статьи.

**Ключевые слова:** логистическое управление, агропромышленное предприятие, международный уровень, классификация, аспект.