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MODERN METHODS OF INCREASING THE EFFICIENCY OF THE TRANSPORTATION PROCESS IN THE LOGISTICS SECTOR

Sammary

The use of modern information technologies in the cargo transportation process allows for reducing delivery costs and optimizing transit time. The modern dynamic economy requires reducing warehouse inventories to the most optimal level and ensuring just-in-time delivery of goods. One of the most important tasks of the logistics chain is to coordinate the operational actions of all its participants. This can be facilitated by standardizing the documentation required for cargo transportation, establishing direct contractual relationships among all participants of the logistics chain, and enabling a single unified order for all services provided by those participants. Efficient development of transport logistics requires a systematic approach to solving emerging practical problems. Specifically, the formation of transport and logistics clusters and the creation of multimodal transport-logistics centers lead to the development of the transport-logistics sector. For a transport system to achieve maximum efficiency, not only must modern transport infrastructure be in place, but free competition in the transport and logistics services market is also required. State policy in regulating the transport and logistics services market should be aimed at rationalizing these services and reducing associated costs.

Keywords: Transport logistics, transport and logistics cluster, logistics chain, advanced competition, perfect competition.

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Introduction

The development of the modern world economy is characterized by extensive globalization processes that influence the development trajectories of national economies in various countries. The international division of labor has led to an increase in the trade turnover of the global service and commodity market and a growing need for the transportation of various types of goods.

Thus, distances between producers and final consumers are increasing, and the demand to obtain high-quality goods at lower prices in the shortest possible time is also rising. Without a properly planned delivery route schedule and cost control over the delivery process, delivery times can increase significantly.

According to [1], producing goods in small batches that do not require large warehouses for storage necessitates the implementation of flexible production systems. There is also a need to deliver small batches of products over long distances within short time frames.

Up to 50% of costs can be spent on the transportation, packaging, and storage of goods. The current situation influences consumer choices. For this reason, the problem of reducing the cost of delivering goods from producers to consumers is one of the pressing issues for the modern economy.

In logistics, optimizing the flow of goods is a necessary condition for reducing production costs and the cost price of manufactured products [2-3].

Logistics must comprehensively solve all problems and issues that may arise in connection with the movement of goods from the place of production to the place of consumption [4].

Logistics should ensure the elimination of disagreements among the partners in the process of goods transportation and align their economic interests [5].

The main task of logistics is to optimize the cargo transportation process, taking into account the delivery time for the required quantity and quality of goods (Fig.1) [6]. Through logistics operation chains and channels, it is necessary to provide optimal storage and handling, proper packaging and delivery, determination of the means of transport and route, as well as planning of commodity flows for the effective movement of goods.

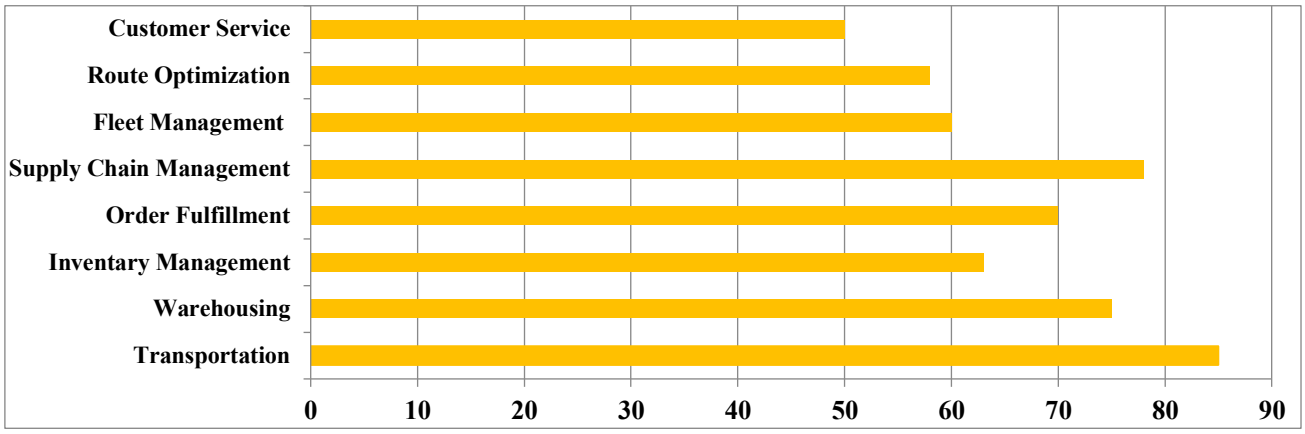

Fig. 1. The main tasks of transport and logistics companies [7]

Transport logistics is an effective tool that allows organizing and monitoring the transportation of goods [8]. In a perfect competition market, transport logistics, by providing standardized services to the customer, ensures the formation of transportation systems, the optimization of delivery routes, and a close interconnection of warehouse and transportation processes. Figure 2 presents a graphical illustration of the key activities of transport logistics as an operations system [9].

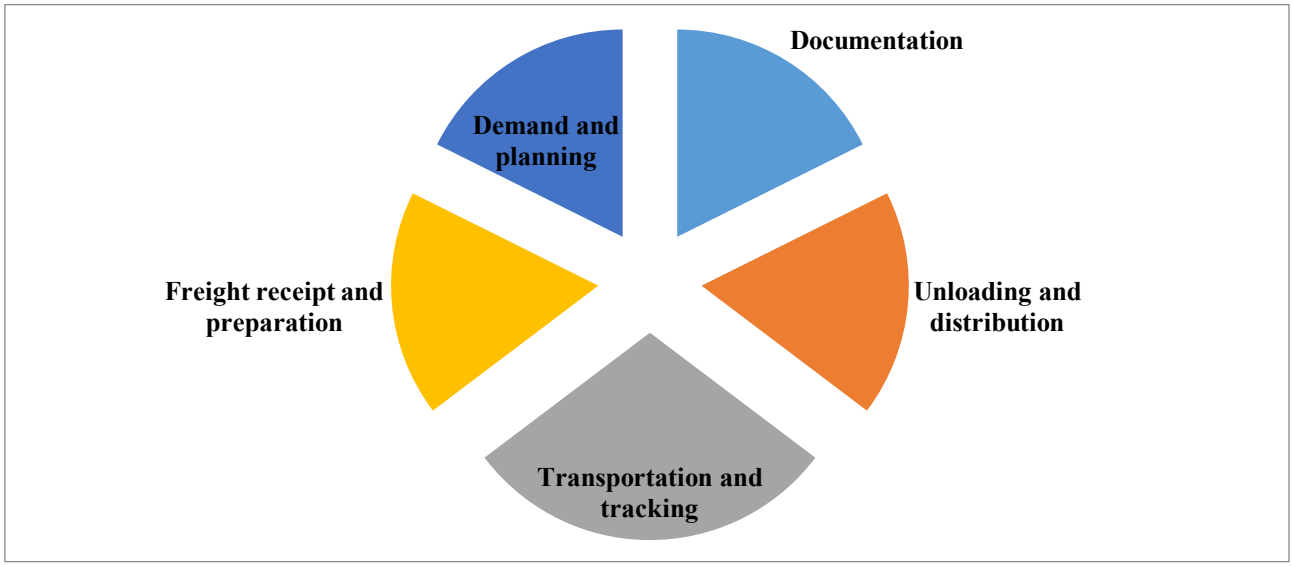

Fig. 2. Transport logistics operations chart

Note: Depending on the project, these processes may vary according to specific requirements.

Modern transport-logistics services are based on the integration of participants to reduce the inefficient use of transport means, to focus on the core competencies of participants, and to apply

new approaches in the distribution of goods [10-11].

According to [12], logistics:

1. Helps expand sales markets.
2. Increases the number of actual and potential consumers.
3. Reduces the cost of production.
4. Aligns the course of business operation processes.
5. Ensures improved service quality for end users.

As a rule, globalization spurs the emergence of business clusters in increasing efficiency based on synergistic effects. If business clusters encompass transportation infrastructure enterprises, they can yield great benefits [13-14].

It is particularly expedient to establish transport and logistics clusters in areas where there are rail, road, water, and air transport facilities and large flows of passengers and cargo near international transport corridors [15].

Transport and logistics clusters significantly affect not only the operations of enterprises in the region but also, indirectly, the state of the social sphere. The implementation of a transport and logistics cluster allows organizing door-to-door delivery of goods by coordinating the movements of various carriers. The quality criterion for a transport and logistics cluster is ensuring customer satisfaction.

A transport and logistics cluster is a grouped system that unites economically connected sectors operating jointly in the transport and logistics services market and forming the transport infrastructure [16].

A transport and logistics cluster is a group of interdependent companies providing transport and logistics services [17].

According to [5], a transport and logistics cluster is a combination of logistics links: it is a system that turns transport hubs, transport corridors, logistics transport and distribution centers into a single system to obtain mutual benefit from joint activities as a result of a synergistic effect.

According to [5-16], a transport-logistics cluster is a geographically localized group of enterprises jointly operating in the provision of transport and logistics services and specializing in the delivery and storage of goods, as well as the servicing of transport infrastructure facilities.

According to [5-17], a transport-logistics cluster is the interaction of market entities engaged in the provision of transport and logistics services in order to optimize operational costs.

In our opinion, a transport-logistics cluster is a system of local and international companies composed of homogeneous operational services that, by providing standardized services between producer and consumer chains in a perfect competition market, functions as a system capable of withstanding intense competition on both domestic and international platforms.

According to [5-18], precise geographical localization of a transport and logistics cluster is necessary, as it allows more efficient interaction with state bodies and also creates preconditions for attracting public and private investments into the transport and logistics cluster infrastructure.

In accordance with [18], the operating principles of transport and logistics cluster efficiency are grouped in Table 1.

Table 1

Operational principles of transport and logistics clusters

Operational principles of transport and logistics clusters	Provision of transport, logistics and related services on a contractual basis
	Maximum unification and standardization of documents used within transport and logistics clusters
	Comprehensive service to customers should be provided on the basis of a single contract
	Creation of a single information space within the transport and logistics cluster
	integration with other transport and logistics clusters, as well as logistics centers

World experience confirms the effectiveness of using multimodal transport and logistics centers. These centers are created in the outskirts of large cities to reduce the movement of freight trucks in city centers, improve the environmental situation, make efficient use of land resources for warehouse placement, and alleviate the load on railway stations.

Multimodal transport and logistics centers include warehouses for cargo handling and storage, spaces for customs procedures, bank branches, offices and administrative buildings, vehicle service stations, and parking areas for transport vehicles. Multimodal transport and logistics centers should cover dozens of hectares and have convenient access. According to Table 2, the main tasks of multimodal transport and logistics centers are as follows [19].

Table 2

Main tasks of multimodal transport and logistics centers

Main tasks of multimodal transport and logistics centers	Optimization of cargo flows for the import and export of resources from the region
	Development of terminal and warehouse facilities
	Ensuring the quality and safety of cargo operations
	Implementation of efficient loading and unloading technological processes
	Simplification of the document processing procedure for logistics operations
	Automation of information flows for cargo handling and transportation

Methods

By using an analytical method in the research process, the existing problems were grouped to some extent and the issues of their solution were considered.

Considering the aim and objectives of the study, a functional-structural method of scientific theory was used to solve the problem at hand.

As a result of the research, a number of issues related to improving the efficiency of the transport and logistics sector were examined.

Results

Multimodal transport and logistics centers cannot replace transport and logistics clusters, because multimodal centers are primarily aimed at working with large freight forwarding companies.

Large freight companies are interested in transporting goods in large batches, since in this way they expand the scale of production and gain profit. Multimodal transport and logistics centers will push small entrepreneurs out of the market, negatively affecting the state of free competition in the industry. Large carrier companies, by primarily collaborating with well-known brands, will turn into the largest clients of transport and logistics services. As a result, final consumers and small customers of transport-logistics services will suffer.

According to analytical analyses, the task of the state is not only to create multimodal transport-logistics centers, but also to maintain existing transport-logistics clusters and assist in their development. In a perfect competition market, a transport-logistics cluster should operate as a system composed of the group of operations shown in Figure 3 in order to function as a system resilient to intense competition.

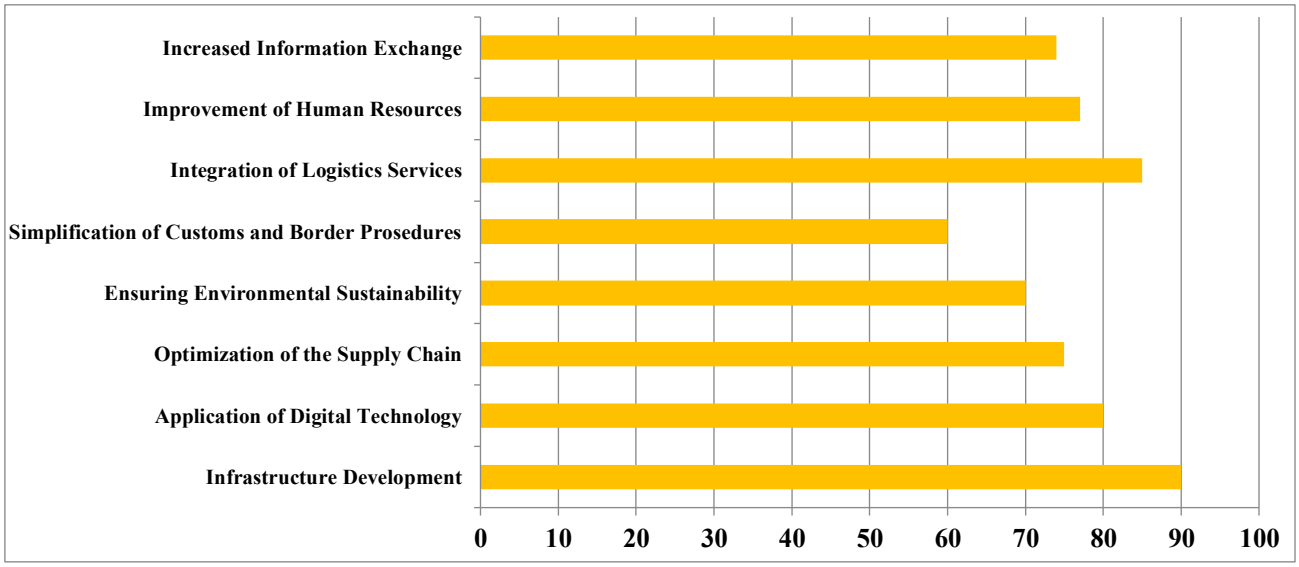

Fig. 3. Operations group for the efficient functioning of a transport-logistics cluster

Small carrier companies operating in the logistics field should be provided by the state with modern information technologies so that they can increase the efficiency of operational processes in a developed competitive market. This is because the use of information systems will facilitate route monitoring, rapid communication with drivers, control over deviations from the route and schedule, and oversight of stops during transportation.

Thus, by increasing information exchange through internet technologies, it will be possible to optimize transport routes and automate the process of managing road transport. This service will allow companies to reduce freight tariffs by lowering logistics costs in a developed competitive market.

The second direction for increasing the efficiency of the operations of multimodal transport-logistics centers and transport-logistics clusters is state support for rail transport, which is a more economical mode of transportation. At the same time, the use of road transport for freight causes an excessive load on the road network. Therefore, the state should stimulate freight transportation by rail by investing in rail transport infrastructure.

According to conducted studies, cargo should be transported by rail between different transport and logistics centers. The rail transport model will allow finding the most optimal option for delivery price and speed between cargo shippers and receivers.

This approach corresponds to the main features of a perfect competition market, which are a large number of buyers and sellers, standardized services, pricing based on agreement, and free entry to and exit from the sector. Thus, the formation of transport-logistics clusters that provide homogeneous services in a market with an equal number of buyers and sellers will create conditions for “non-price” competition in a developed competitive environment.

Discussion

The application of modern information technologies in transport logistics makes it possible to optimize delivery times and reduce transportation costs.

Reducing inventories to an optimal level in the logistics operations chain and delivering to the consumer within precise time frames are among the requirements of the modern dynamic economy.

Here, our important task is to coordinate the operational actions of all participants with each other. This can be facilitated by standardizing transportation documents, establishing contractual relationships among all participants of the logistics chain, and enabling a single unified order for all services among partners.

From this it is concluded that the development of transport logistics requires a systematic approach to solving the practical problems that arise. In a perfect competition market, the formation of transport-logistics clusters and the creation of multimodal transport-logistics centers increase the efficiency of logistics services.

In the presence of modern transport infrastructure, the transport system requires free competition in the transport and logistics services market in order to achieve maximum efficiency.

Conclusions

State policy in regulating the transport and logistics services market should be aimed at rationalizing these services and reducing related costs.

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LOGİSTİKA SEKTORUNDA NƏQLİYYAT PROSESİNİN SƏMƏRƏLİLİYİNİN ARTIRILMASININ MÜASİR ÜSULLARI

Xülasə

Müasir informasiya texnologiyalarından istifadə yüklərin nəqliyyat prosesində çatdırılma xərclərinin azaldılmasına və daşınma vaxtının optimallaşdırılmasına imkan verir. Müasir dinamik iqtisadiyyat anbarlarda ehtiyatların ən optimal səviyyəyə qədər azaldılması və malların dəqiq zamanda çatdırılmasını tələb edir. Logistika zəncirinin ən vacib vəzifələrindən biri onun bütün iştirakçılarının əməliyyat hərəkətlərini bir-birilə əlaqələndirməkdir. Bu, yüklərin daşınması üçün zəruri olan sənədlərin standartlaşdırılması, logistika zəncirinin bütün iştirakçıları arasında birbaşa müqavilə münasibətlərinin qurulması, habelə logistika zəncirinin bütün iştirakçıları tərəfindən göstərilən bütün xidmətlər üçün vahid sifarişin mümkünlüyü ilə asanlaşdırıla bilər. Nəqliyyat logistikasının səmərəli inkişafı ortaya çıxan praktiki problemlərin həllinə sistemli yanaşmanı tələb edir. Belə ki, nəqliyyat-logistika klasterlərinin formalaşması və multimodal nəqliyyat-məntiq mərkəzlərinin yaradılması nəqliyyat-məntiq sektorunun inkişafına səbəb olur. Nəqliyyat sistemi maksimum səmərəliliyini müasir nəqliyyat infrastrukturunun mövcudluğu ilə deyil, həm də nəqliyyat və logistika xidmətləri bazarında azad rəqabətin olmasını tələb edir. Nəqliyyat və logistika xidmətləri bazarının tənzimlənməsi sahəsində dövlət siyasəti onların rasionallaşdırılmasına və xərclərin azaldılmasına yönəldilməlidir.

Açar sözlər: Logistika, nəqliyyat logistikası, nəqliyyat və logistika klasteri, logistika zənciri, təkmil və mükəmməl rəqabət.

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СОВРЕМЕННЫЕ МЕТОДЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ ТРАНСПОРТНОГО ПРОЦЕССА В ЛОГИСТИЧЕСКОЙ СФЕРЕ

Резюме

Использование современных информационных технологий в процессе транспортировки грузов позволяет снизить издержки на доставку и оптимизировать транзитное время. Современная динамичная экономика требует сокращения складских запасов до оптимального уровня и обеспечения доставки грузов точно в срок. Одной из важнейших задач логистической цепи является координация оперативных действий всех ее участников. Этому может способствовать стандартизация документации, необходимой для транспортировки грузов,

установление прямых договорных отношений между всеми участниками логистической цепи, а также обеспечение единого унифицированного заказа на все услуги, предоставляемые этими участниками. Эффективное развитие транспортной логистики требует системного подхода к решению возникающих практических задач. В частности, формирование транспортно-логистических кластеров и создание мультимодальных транспортно-логистических центров ведет к развитию транспортно-логистического сектора. Для достижения максимальной эффективности транспортной системы необходимо не только наличие современной транспортной инфраструктуры, но и свободная конкуренция на рынке транспортно-логистических услуг. Государственная политика в сфере регулирования рынка транспортно-логистических услуг должна быть направлена на рационализацию этих услуг и снижение связанных с ними издержек.

Ключевые слова: Транспортная логистика, транспортно-логистический кластер, логистическая цепочка, развитая конкуренция, совершенная конкуренция.

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