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Logistics costs of a transport enterprise: organizational aspects

The article analyzes scientific research concerning the organizational aspects of logistics costs in transportation enterprises. The functions of logistics cost analysis are examined, and the importance of improving the accounting of logistics costs is highlighted. Practical recommendations are substantiated and developed for organizing activities related to ensuring the effective organization of logistics costs. The use of a process-oriented system for organizing logistics costs is proposed, and a basic concept for a process-oriented logistics cost management system for transportation enterprises is formulated. The impact of logistics indicators on the overall efficiency of enterprise operations is investigated. The structure of logistics costs for a typical enterprise is presented.
transport enterprise, logistics costs, organization of logistics costs, logistics activities, process approach.

Introduction. During the transformational processes in the geopolitical and economic self-determination of Ukraine, it is risky for transportation enterprises to rely solely on competitive advantages driven by technology or traditional management methods. Current trends in economic development are leading to an increase in associated business expenses. Therefore, optimizing total costs remains one of the most pressing challenges for enterprise management. The issues of cost optimization can be addressed through the effective organization of planning, accounting, analysis, and control of logistics costs, which will enable the formation of comprehensive costs and more accurate financial forecasting of operational results.

The development of a general concept for the logistics cost accounting system for a transportation enterprise requires in-depth research, considering the scientific advancements of both domestic and foreign scholars.

Analysis of recent research and publications. Effective management of logistics systems is a key factor in the successful operation of modern enterprises. In the studies by O. O. Andrukhova and I. A. Yakimov [1], the importance of organizing logistics cost accounting to enhance economic efficiency is emphasized. The authors highlight that accurate accounting allows for the control and optimization of expenses related to logistics operations.

V. V. Aulin and co-authors [2] examine the theoretical and methodological foundations of logistics in transportation and production systems in their monograph. They focus on the integration of transportation and production processes, which contributes to improving logistics management efficiency. Further research by V. V. Aulin et al. [3] concentrates on the formation of a logistics information system necessary for effective management of transport and production enterprises. The authors underscore the significance of implementing modern information technologies to optimize logistics processes.

S. V. Mishina and O. Yu. Mishin [4] propose a hierarchical classification of logistics costs based on functional purpose. This approach allows for more precise identification of cost sources and determination of optimization pathways. Similarly, U. M. Plekan et al. [5] conduct an analysis of a company's logistics expenses, pointing out the necessity of constant monitoring to ensure market competitiveness.

O. A. Rusanovska [6], in her dissertation research, examines controlling logistics activities within enterprise management systems. The author notes that effective controlling enables timely detection of deviations in logistics processes and the adoption of corrective actions.

At the international level, J.-M. Kim et al. [7] explore the allocation of costs in refrigerated logistics warehouses. They propose a methodology for allocating shared logistics costs, which is relevant for companies dealing with products requiring special storage conditions.

A. Mesjasz–Lech [8] addresses the challenges of green logistics related to urban air pollution. The author emphasizes the need for implementing "green logistics" to reduce negative environmental impacts.

N. Rozhko and co-authors [9] analyze the use of network intralogistics and fulfillment for the functioning of transport and warehouse complexes. They note that integrating these concepts enhances the efficiency of logistics operations and meets customer needs.

In the work by U. Plekan et al. [10], organizational aspects of creating a logistics strategy for a motor transport enterprise are studied. The authors stress the importance of strategic planning to adapt to changes in the market environment.

The digitalization of transport companies is the subject of research by N. Rozhko et al. [11]. The authors point out current challenges and development prospects associated with the implementation of digital technologies in logistics.

S. M. Russo et al. [12] propose a multi-method approach to designing urban logistics hubs for cooperative use. This contributes to optimizing urban logistics flows and reducing transport burdens.

Finally, J. Żak et al. [13], in their work, present advanced concepts, methodologies, and technologies for transportation and logistics. They focus on innovative solutions that can be implemented to enhance the efficiency of logistics systems.

Thus, the analysis of literary sources indicates a growing attention among researchers to issues of optimizing logistics costs, implementing information technologies, and greening logistics processes. This underscores the need for further research in this field and the practical application of the obtained results.However, approaches to the organization of logistics costs for transportation enterprises remain insufficiently developed.

The aim of the article. The aim of the article is to define and substantiate a process-oriented approach to organizing logistics costs in a transportation enterprise for their identification, control, and optimization.

The tasks of the article are as follows:

1. To review the approaches of domestic scholars regarding methodologies for organizing logistics costs

2. To develop the concept of a process-oriented system for organizing logistics costs in a transportation enterprise

3. To investigate the impact of logistics indicators on the overall efficiency of the enterprise’s operations.

Results. A crucial component of a modern, efficient management system for a transportation enterprise is its logistics system, which can operate autonomously and serves as a key link in the enterprise's overall management. The application of management standards

that account for logistics processes contributes to achieving competitive advantages for domestic enterprises. Specifically, an enterprise can gain competitive advantages by minimizing total logistics costs, making the category of "costs" fundamental within the logistics system of a transportation enterprise.

Summarizing the contributions of domestic researchers, logistics costs can be defined as the monetary expression of the aggregate material, labor, financial, and informational resources expended by the enterprise, which are related to supporting business processes and operations that involve the movement of material flows within the logistics system.

Proper identification and analysis of logistics costs are prerequisites for their successful optimization. Therefore, the organization of logistics costs in a transportation enterprise deserves particular attention. Most transportation enterprises use a functionally-oriented organizational model focused on the enterprise's functional units, where the responsibility centers are departments, workshops, and divisions. Regardless of the functions performed by a structural unit, responsibility is measured by the costs incurred. Logistics cost organization can also be structured by responsibility centers, meaning that the structural units involved in specific phases of the enterprise's logistics activities are accountable for costs.

Other criteria for assessing logistics costs can also be applied. The most common classifications of an enterprise's logistics costs include:

- by the place of origin,
- by cost carriers,
- by analytical cost accounts,
- by phases of the logistics process, etc.

Given the strategic objective of logistics activities – to maximize customer satisfaction in terms of product quality, delivery time, and location – managing individual phases of a company's logistics activities takes on special importance. It is advisable to focus on this aspect. The functionally-oriented organizational model does not fully meet market requirements, as employees in individual structural units are not always incentivized by the final result and are often not aligned with the enterprise's strategic goals.

Furthermore, the phases of logistics activities extend beyond individual structural units. In contrast, when using a process-oriented organizational model, the focus is on the phases of logistics activities rather than the structural unit. The phases of logistics activities are a constant factor in optimizing the enterprise's logistics operations, and their continuous improvement enables the achievement of logistics objectives – providing the client with a high-quality transportation service in the shortest time possible. For greater efficiency in organizing logistics costs at transportation enterprises, it is advisable to combine both the functionally-oriented and process-oriented systems to identify logistics costs at the level of structural units as well as by phases of logistics activities.

The main goal of organizing accounting and analytical support for logistics activities is to serve the interests of all stakeholders by promptly providing objective information about the status and dynamics of material, financial, and informational flows, among others. This goal can be achieved by structuring the accounting and analytical support in line with the processes occurring within the enterprise. The operation-based system of organizing logistics costs involves a process-oriented approach integrated with the enterprise's information system (Fig. 1).

Managing logistics activities in a transportation enterprise is complicated by its multifaceted nature. Effective management of logistics costs enables the enterprise to:

1. At the "pre-sale" stage – establish a foundation for future product sales, create a system for identifying and analyzing consumer demand, and more accurately determine the transportation services required by the market.

2. At the "during-sale" stage – fully and adequately meet customer needs and desires, reduce transportation time, create a positive image, and increase customer loyalty.

3. At the "post-sale" stage – ensure favorable conditions for further stable development and effective functioning of the enterprise's logistics system.

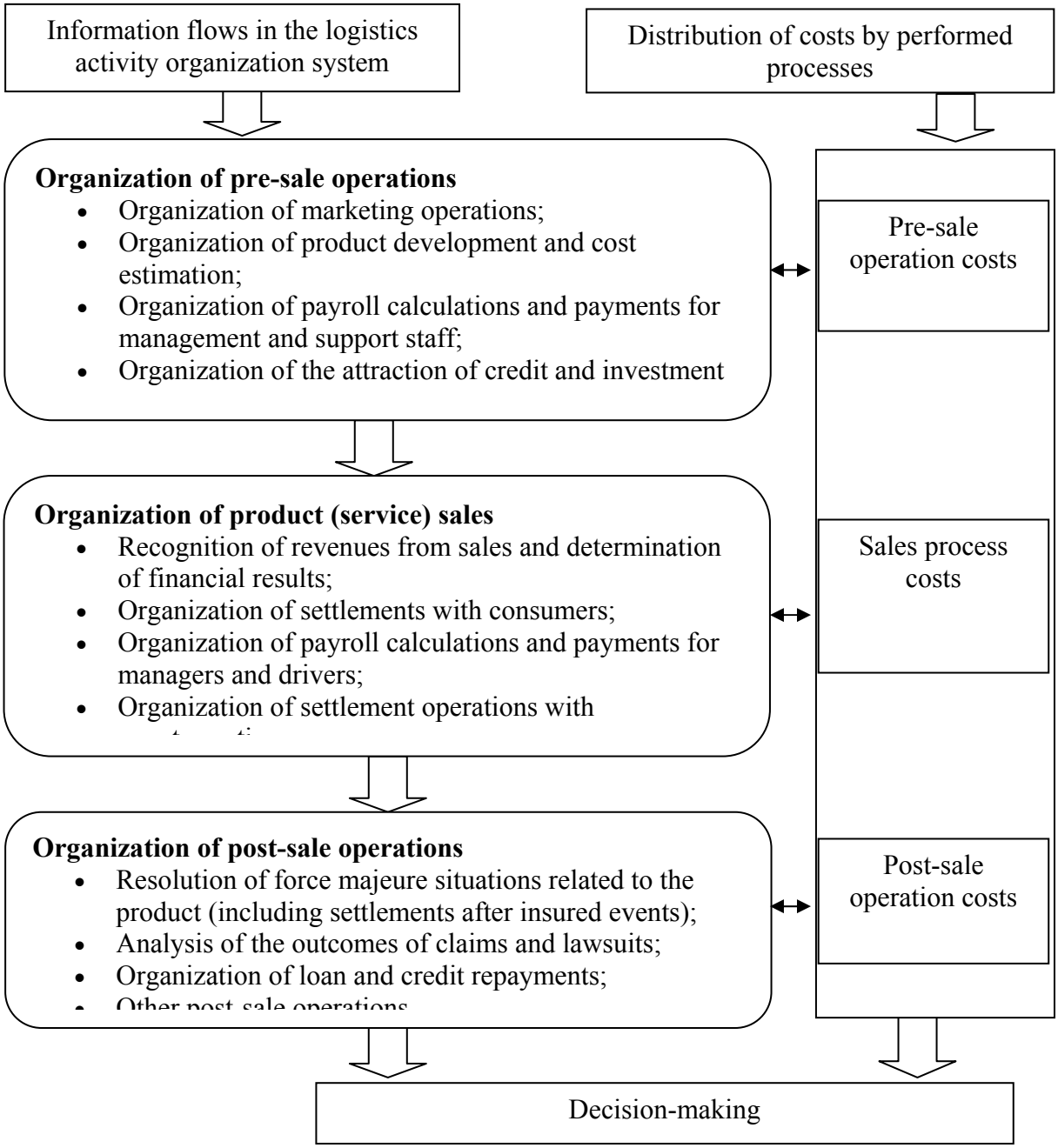

Figure 1- Concept of a process-oriented system for organizing logistics costs in a transportation enterprise

Source: formed by authors

Thus, the organization of an enterprise's logistics costs, integrated into the enterprise's information system, should provide managers with information at all stages of the transportation service process, as well as regarding pre-sale and post-sale operations. The

input operational and technical information includes primary documentation related to accounting operations, payroll calculation, revenue recognition from sales, and more.

The main tasks of a company's logistics department include:

- formation, development, and reorganization of the logistics system;
- development and implementation of the company's logistics strategy;
- internal and external logistics integration;
- management of material flows and related streams;
- logistics reengineering.

Addressing these tasks involves the execution of logistics operations, which in turn generate logistics costs that must be accurately recorded for further management decisions. Accurate and timely reflection of logistics operations requires prior organization of data recording related to this area. However, current methodologies face challenges in attributing logistics costs to specific business processes. It is proposed to modernize the accounting system to more effectively measure logistics costs through the use of an operation-based system, among others.

In the current accounting system at transportation enterprises, there is a contradiction where costs are grouped by elements or functions. Logistics costs are typically included in other corporate expenses and are not allocated separately, which prevents a proper assessment of their impact on the overall efficiency of the enterprise.

Let's review domestic scholars' approaches to the methodology of accounting for logistics costs. Some researchers argue that logistics costs should be accounted for separately to provide reliable data about them. It is advisable to isolate logistics costs separately, without requiring the restructuring of the existing information and regulatory framework of the enterprise. Scholars propose reflecting ongoing logistics costs by function, distinguishing between logistics costs in supply, production, and distribution. Another approach suggests expanding or detailing the existing method for accounting for logistics costs. Scholars suggest that to accumulate information on various costs associated with logistics activities, it is useful to reflect them in the following categories:

- logistics costs for supply;
- conditioned fixed logistics costs;
- conditioned variable logistics costs;
- logistics costs for administration.

Other researchers propose distinguishing the following groups of logistics costs:

- logistics costs for production;
- logistics costs for administration;
- logistics costs for distribution;
- logistics costs for transportation;
- logistics costs for order fulfillment.

Organization of logistics activities is a purposeful effort to create, structure, and improve logistics operations to generate relevant information flows and meet the needs of stakeholders.

The primary goal of closely integrating the management system with the logistics system is to enhance the analytical value of outgoing information flows and increase the efficiency of control at all stages of the enterprise's operations. The analysis of logistics costs helps improve the justification of management decisions aimed at adjusting business processes. It is important to note that logistics costs affect various aspects of the enterprise's activities, including personnel, customers, and the financial state of the transportation company (table 1).

Table 1 – Impact of logistics indicators on the overall efficiency of the enterprise

Activity aspects	Impact of logistics indicators
Financial component	reduction in the ratio of logistics costs to product cost; acceleration of inventory turnover for raw materials, semi-finished products, and finished goods; reduction in freight costs for raw materials and delivery time; increase in reliability of raw material deliveries
Personnel	reduction in logistics staff turnover; optimization of duties in the logistics department and increasing their involvement in enterprise operations
Customers	improvement in the reliability of finished goods delivery; reduction in freight costs and delivery time for finished goods; improvement in pre-sale, during-sale, and post-sale service; increased customer satisfaction

The tasks of organizing logistics activities can be summarized as follows: documenting logistics operations; timely, complete, accurate, and continuous recording of logistics operations; allocating logistics costs to determine the production and total cost of transportation services; processing data on logistics operations using appropriate procedures, methods, and techniques in line with the source information; compiling analytical reports and delivering them to stakeholders.

Typical list of logistics costs at an enterprise includes:

- drivers' wages;
- social security contributions from drivers' wages;
- payroll tax for drivers;
- depreciation of transportation and equipment;
- fuel costs for freight transportation;
- maintenance of warehouses for raw materials and semi-finished products;
- maintenance of assets required for storing raw materials, semi-finished products, and rolling stock;
- maintenance of warehouses for finished goods;
- loading and unloading;
- wages for workers handling internal freight movements;
- documentation processing;
- product labeling, coding, and packaging;
- pre-sale service;
- during-sale service;
- post-sale service.

This list is conditional and depends on the enterprise's specialization. Managerial accounting of logistics costs requires the adaptation of cost items to the specific operations of each enterprise.

The composition of logistics costs depends on factors such as state economic regulation, political processes in the country, social conditions, legal regulations, production characteristics of the enterprise, organizational structure, level of information support, and marketing policies. These factors are directly linked to the execution of logistics operations, which incur corresponding logistics costs.

Conclusions: 1. Crossing out logistics costs from the overall costs of a transportation enterprise and implementing an effective system for organizing them is an objective necessity for the successful operation of the company.

2. It is noted that in the overall structure of logistics costs for small transportation enterprises, the majority consists of labor costs, taxes, levies, other mandatory payments, depreciation charges, and material costs related to logistics processes. These cost items have the greatest impact on the formation of product costs and require the highest level of control.

3. The use of a process-oriented system for organizing logistics costs is proposed, focusing on the phases of logistics activities to ensure the effective recording of logistics costs.

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Логістичні витрати транспортного підприємства: організаційні аспекти

У статті проведено аналіз наукових досліджень щодо організаційних аспектів логістичних витрат транспортного підприємства. Належні ідентифікація та аналіз логістичних витрат є передумовами їх успішної оптимізації, тому розглянуте питання є актуальним. Більшість великих транспортних підприємств використовують функціонально-зорієнтовану організаційну модель, зосереджену на функціональних підрозділах підприємства, а центрами відповідальності виступають підрозділи, цехи, відділи. Організація логістичних витрат теж може здійснюватися за центрами відповідальності, тобто структурними підрозділами, що задіяні в окремих фазах логістичної діяльності підприємства. Метою статті є визначення та обґрунтування процесного підходу до організації логістичних витрат транспортного підприємства для їх ідентифікації, контролю та оптимізації.

Розглянуто функції аналізу логістичних витрат, висвітлено важливість удосконалення обліку логістичних витрат. Розглянуті підходи вітчизняних учених до методики організації логістичних витрат на підприємствах. Обґрунтовано й розроблено практичні рекомендації щодо організації діяльності, пов'язаної з забезпеченням організації логістичних витрат.

Для правильного та вчасного відображення логістичних операцій обов'язковою умовою є попередня організація фіксації даних щодо даного об'єкта. Наявна методологія характеризується проблемами пошуку бази віднесення логістичних витрат до певного бізнес-процесу, тому варто модернізувати систему дану ділянку для ефективнішого виміру логістичних витрат шляхом застосування пооопераційної системи з-поміж інших. Запропоновано використання процесно-орієнтованої системи організації логістичних витрат і сформовано базову концепцію процесно-орієнтованої системи організації логістичних витрат транспортного підприємства. Досліджено вплив логістичних показників на загальну ефективність роботи підприємства. Наведено структуру логістичних витрат типового підприємства.

транспортне підприємство, логістичні витрати, організація логістичних витрат, логістична діяльність, процесний підхід

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