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## CONTROLLING OF LOGISTICS PROCESSES AT THE ENTERPRISE

## КОНТРОЛІНГ ЛОГІСТИЧНИХ ПРОЦЕСІВ НА ПІДПРИЄМСТВІ

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The article is devoted to the current issues of specifying the main principles and methods of individualizing the controlling of logistics processes and their role in improving the efficiency of the enterprise. Within the study, it has been proven that the dilution of the content of logistics process controlling (as an economic, managerial, or general scientific category) and its subsequent individualization have formed the process of adapting these processes to the specific characteristics and needs of a particular enterprise. The focus of the individualization processes of the logistics controlling system on the specifics and needs of a particular enterprise (namely its strategic goals, industry requirements for logistics, scope of activities, organizational structure needs, available resources, and level of technological development) has been highlighted. The content of the formulated conclusions creates prospects for the further development of a methodology for individualizing the logistics controlling system of the enterprise.

**Keywords:** operations, logistics, information flows, logistics processes, controlling concept, economic efficiency.

Стаття розглядає сучасні аспекти конкретизації основних принципів та методів індивідуалізації контролінгу логістичних процесів та їх вплив на підвищення ефективності діяльності підприємства. У межах дослідження було підтверджено, що розмивання змісту контролінгу логістичних процесів (як економічної, управлінської або загальнонаукової категорії) та його подальша індивідуалізація обумовили процес адаптації цих процесів до специфічних особливостей та потреб конкретного підприємства. Процеси індивідуалізації системи контролінгу логістики орієнтовані на специфіку та потреби конкретного підприємства, зокрема його стратегічні цілі, галузеві вимоги до логістики, обсяг діяльності, потреби організаційної структури, доступні ресурси та рівень технологічного розвитку, що підкреслюється в дослідженні. Доведено, що орієнтація контролінгу логістичних процесів на досягнення стратегічних цілей виявляється у випадку, коли підприємство має амбіції стати лідером за рівнем обслуговування клієнтів. В такому випадку система контролінгу акцентується на показниках, пов'язаних з якістю та швидкістю постачання. Доведено, що спрямованість контролінгу логістичних процесів на галузеві вимоги до логістики формується тоді, коли для підприємства критично важливими є конкретні логістичні процеси, а не всі загалом. Наприклад, у ритейлі це можуть бути швидкість постачань та управління запасами, у виробництві – надійність постачань та оптимальність виробничих процесів, а в сільському господарстві – сезонність та залежність від погодних умов. Доведено, що спрямованість контролінгу логістичних процесів на обсяг діяльності підприємства та потреби його організаційної структури формується, коли їх зміст враховує складність планування, впровадження і контролю ефективного переміщення і зберігання товарів, послуг та інформації від точки походження до точки споживання. Доведено, що спрямованість контролінгу



логістичних процесів на ресурсні та технологічні можливості підприємства формується через впровадження та використання різних методів та інструментів контролінгу. Зміст сформованих висновків визначає перспективи для подальшого розвитку методології індивідуалізації системи контролінгу логістики підприємства.

**Ключові слова:** операції, логістика, інформаційні потоки, логістичні процеси, концепція контролінгу, економічна ефективність.

**Problem statement.** In the modern business environment, the necessity to enhance the efficiency of logistics processes becomes increasingly apparent as the impact on overall competitiveness and enterprise development continues to grow.

Logistics, as an integrated system managing material and information flows, encompasses a wide range of operations, from sourcing raw materials to delivering finished products to consumers. These operations involve not only specific tasks such as route planning, mode of transport selection, warehouse management, goods receiving and dispatching, monitoring material quality, and ensuring delivery deadlines but also unique approaches to resolving them.

For example, in route planning and mode of transport selection, it is possible to minimize costs and leverage the advantages of different transport modes to achieve maximum efficiency in product delivery. Regarding warehouse management, optimization of space utilization, use of specialized inventory management systems, and cross-docking can maximize efficiency in handling goods at the warehouse.

In this context, logistics controlling becomes an increasingly unique tool that allows enterprises to track and optimize logistics processes, thereby enhancing efficiency and reducing costs.

**The analysis of recent researches and publications.** The logistics controlling concept as a distinct management approach within enterprises carries some ambiguity regarding its specification and definition.

Studies by authors such as Balog L. V., Kindratska L., Radetska L. P., and Soroka I. Y. notably point out the need for a clearer definition and elaboration of the content of this managerial approach. Within these studies, attention is also drawn to the ongoing transformations in the content of the category of logistics controlling processes, noting that despite their iterative nature, they have not received adequate attention in scientific literature.

Further development of logistics controlling is hindered by the lack of proper identification of principles, tools, and methods that would make it more effective and adaptive to enterprise needs.

**Goal setting (formulation of goals of the article).** According to the provided statements, the article aims to specify the main principles and methods of individualizing logistics controlling processes and its role in enhancing enterprise efficiency.

**The paper main body with full reasoning of academic results.** Since the 1960s, logistics has been actively developing as a scientific discipline that studies the processes of managing material and information flows. This development has contributed to the emergence of new methods and tools for logistics management, including controlling. However, with the increasing complexity of production processes, expansion of sales markets, and intensifying competition, the complexity of logistics systems has significantly increased, and the significance of controlling has become less clearly defined as an economic, managerial, or general scientific category.

Specifically, with the expansion of sales markets and the globalization of business, enterprises began working with many suppliers and consumers from different countries. It led to an increase in quantity and diversity of logistics operations, such as procurement, transportation, customs clearance, warehousing, distribution, and more. Each of these operations requires specific knowledge and skills.

So, the development of information technologies has opened new opportunities for the logistics processes automation and optimization. Specialized software products for logistics controlling have emerged, allowing the collection, processing, and analysis of data on logistics operations. However, this has also intensified the challenges of individualizing the logistics controlling system.

Additionally, consumers now expect faster and more accurate delivery of goods and a high level of service, prompting enterprises to continuously optimize logistics processes. It demands reliability, transparency, and efficiency from their controlling systems.

It would not be an exaggeration to state, as the authors have, that the application of controlling allows for the identification of bottlenecks, resource utilization optimization, reduction of order fulfillment time, and improvement of

customer service quality most accurately if the processes it shapes are unique. 3In the modern practice of logistics controlling at enterprises such as Nova Poshta, DHL, and IKEA, uniqueness is formed by [2; 5]:

1. Aspects through which the implementation of controlling at the enterprise can impact the state of the logistics system.

2. Fundamental principles, ideas, or rules underlying the concept of logistics controlling processes.

3. A system of methods ensuring the overall formation and individualization of principles and basic aspects of logistics controlling processes.

Among the aspects of logistics controlling that transform it into an individual tool for enhancing competitiveness and ensuring overall development are: goal setting and planning; monitoring and analysis; identification and elimination of bottlenecks in core logistics processes; cost optimization; risk management; integration with other management systems; continuous improvement.

Indeed, the combination of these outlined aspects (Table 1) allows logistics controlling to gain significant importance in enterprises as a powerful toolkit for achieving strategic goals, enhancing competitiveness, and ensuring overall development.

The content of the outlined aspects of controlling logistics processes allows for completeness by its characteristic principles, which, due to the fragmentary nature of modern research, need to be formalized and systematically characterized.

Indeed, the fundamental principles, ideas, or rules underlying the concept of individualized controlling of logistic processes are oriented towards [1; 3]:

1. The principle of systematicity and integration. In particular, logistics controlling considers the logistics system of the enterprise not just as a single entity, but takes into account all interconnections and interdependencies among various logistics processes and their functions. The implementation of this principle ensures a focus on integrating logistics with other functional areas of the enterprise, such as production, marketing, finance, and others.

2. The principle of comprehensiveness and continuity. Specifically, logistics controlling encompasses the fundamental aspects of enterprise logistics activities – from planning and organization to monitoring and analysis. The action of this principle ensures a focus on

continuous monitoring, analysis, and adjustment of logistics processes for prompt responses to changes.

3. The principle of results orientation and economic efficiency. Specifically, logistics controlling is aimed at achieving specific, measurable results expressed in quantitative and qualitative indicators. The action of this principle ensures a focus on finding ways to reduce costs in the implementation and operation of the controlling system while ensuring their adequacy (particularly, these costs should be less than the benefits obtained).

4. The principle of adaptability and flexibility. Indeed, logistics controlling should strive for adaptability, capable of adjusting logistics processes to changes in both external and internal environments of the enterprise. The action of this principle ensures a focus on making timely adjustments to logistics processes and strategies.

5. The principle of scientific substantiation and use of modern technologies. Specifically, logistics controlling should be based on the utilization of modern information technologies and scientifically grounded methods of analysis and forecasting. The action of this principle ensures a focus on making well-founded managerial decisions.

6. The principle of transparency and openness. So, the information obtained through logistics controlling should be accessible to all stakeholders. The action of this principle ensures a focus on the transparency of logistics processes and on building customer trust in the company's logistics.

7. The principle of accountability. So, every enterprise, as a participant in the logistics process, is responsible for fulfilling its functions and achieving set goals. The action of this principle ensures the efficiency and effectiveness of the overall logistics system.

The uniqueness of applying the principles and basic aspects of logistics controlling generates a highly varied system of methods that ensure their comprehensive formation and effectiveness [4].

In this defined area, a wide range of planning and standardization methods, accounting and analysis methods, control and regulation methods, as well as related tools and technologies are applied (see Table 2). The outlined systems of methods are not exhaustive. However, even in this format, their content demonstrates that there is no single universal approach to logistics controlling.

Table 1

**The complex of basic aspects of logistics controlling transforms it into a tool for enhancing competitiveness and ensuring overall development**

<b>Basic aspects</b>	<b>Direction of action in enterprise logistics systems</b>	<b>Advantages from the manifestation of aspects in logistics controlling processes</b>
Goal setting and planning <sup>1</sup>	Helps establish clear, measurable goals for logistics processes, develop detailed plans for their achievement, and ensure control over their execution	Helps avoid chaos and ensures purposeful development of logistics
Monitoring and analysis <sup>2</sup>	Helps ensure systematic monitoring of key performance indicators and identify deviations from planned values, enabling timely corrective actions to be taken	Helps identify trends and patterns, facilitating informed managerial decision-making.
Identification and elimination of bottlenecks <sup>3</sup>	Helps identify stages in the logistics chain that impede overall efficiency.	Allows focusing efforts on optimizing these areas and eliminating bottlenecks.
Cost optimization <sup>4</sup>	Helps identify sources of inefficient costs and propose ways to reduce them.	Helps optimize transport routes, reduce warehouse inventories, increase labor productivity, etc.
Risk management <sup>5</sup>	Helps identify and assess risks associated with logistics processes (e.g., delivery delays, cargo damage, data loss, etc.).	Helps minimize negative consequences and ensures the stability of the logistics system
Integration of controlling with other management systems <sup>6</sup>	Helps create an integrated management system with other systems such as ERP, CRM, WMS, etc.	Ensures a comprehensive approach to business management and enhances the effectiveness of decision-making
Continuous improvement <sup>7</sup>	Helps ensure continuous search for ways to improve the efficiency of logistics processes.	Facilitates the implementation of new technologies, optimization of business processes, training of personnel, etc.

Note:

1 Goal setting and planning in logistics controlling are processes aimed at achieving strategic and operational objectives of enterprise logistics.

2 Monitoring and analysis in logistics controlling is a systematic process of collecting, evaluating, and interpreting information about the performance of logistics operations and processes. Its purpose is to ensure their effectiveness and alignment with the enterprise's strategic goals.

3 Identification and elimination of bottlenecks in logistics controlling are identifying and resolving process the most critical constraints or issues that hinder the effective functioning of logistics processes.

4 Cost optimization in logistics controlling is a systematic process of reducing enterprise costs through logistics, production, trade, and other process improvements.

5 Risk management in logistics controlling is a systematic process of identifying, analyzing, assessing, monitoring, and controlling risks associated with the logistics processes of an enterprise.

6 Integration of controlling with other management systems in logistics means the ability of various information and management systems to exchange data and collaborate towards achieving common goals.

7 Continuous improvement in controlling logistics processes is a systematic process of continuously enhancing efficiency, quality, and logistical operations effectiveness.

*Source: formulated by the author based on [1-2; 5]*



Table 2

**The system of methods that ensures their comprehensive formation and effectiveness in logistics controlling**

The system of methods	Groups of methods that form their systems	Specificity of selection
Planning and norming	Budgeting, norming or standardization, development of graphical or network solutions, modeling	The choice of specific methods and tools for logistics controlling depends on the characteristics of the enterprise, its size, industry, strategic goals, and other factors. It is important that the selected methods and tools are adequate to the tasks facing the enterprise and ensure effective management of logistics processes
Accounting and analysis	Management accounting, benchmarking, ABC analysis (Activity-Based Costing analysis), XYZ analysis, classical variance analysis	
Control and regulation	Operational control, regular control, audit, corrective actions.	
Tools and technologies	Warehouse management systems (WMS), transportation management systems (TMS), enterprise resource planning systems (ERP), RFID-technologies, Internet of Things (IoT), cross-docking	

Source: formulated by the author based on [1–2; 5]

Therefore, there is no universal set of logistics controlling methods that would fit all. According to the content of modern research, the primary factor determining the variability in methods that ensure their overall formation and effectiveness in logistics controlling processes is directed toward available resources and the level of technological development of the enterprise. Regarding other factors that also influence the spectrum of available methods for logistics controlling, we have identified the following:

1. The variety of logistics processes, stemming from logistics covering a wide range of processes from procurement and transportation to warehousing and distribution. Each of these processes has its own specifics and requires specific methods of control. For example, inventory control may involve both ABC-analysis and XYZ-analysis, while optimizing transportation routes involves various specialized software tools.

2. The specifics of the industry and the enterprise must be taken into account when selecting logistics controlling methods. Specifically, methods are chosen that best align with the industry's characteristics, the size of the enterprise, its organizational structure, strategic goals, and other factors. For example, logistics controlling methods in retail will differ from those used in manufacturing or agriculture. In retail, ensuring timely delivery of goods to stores and end consumers is crucial. Therefore, inventory control methods (such as ABC and XYZ analysis), transportation route optimization (TMS), and order management are widely used

here. Agriculture is characterized by seasonal production, which demands a special approach to inventory management and logistics. Here, methods such as crop yield forecasting, managing seasonal fluctuations in demand, and optimizing storage of products are often applied.

3. The dynamism of the external environment is driven by logistics processes occurring under conditions of constant change, including demand fluctuations, resource price changes, the emergence of new technologies, and so on. Therefore, controlling methods should be flexible and adaptive to ensure effective logistics management in uncertain conditions. For example, prices of fuel, electricity, raw materials, and other resources can fluctuate due to various factors such as global oil prices, political situations, natural disasters, and more. These fluctuations can lead to increased logistics costs and reduced profitability. Therefore, controlling methods such as cost analysis, optimization of transportation routes, and seeking alternative suppliers should help minimize the impact of price changes on logistics expenses. For example, in response to rising fuel prices, optimizing delivery routes can help reduce fuel costs.

4. The development of modern information technologies opens up new opportunities for logistics controlling processes. For example, the use of warehouse management systems (WMS), transportation management systems (TMS), RFID technologies, and the Internet of Things (IoT) enables the automation of data collection and processing. It enhances the accuracy of analysis and forecasting while facilitating

real-time responses to changes in logistics processes.

5. An individualized approach that considers the specific needs of each enterprise is essential.

Considering the content of these provisions, it is important to emphasize the importance of individualizing the logistics controlling system aimed at the specificity and needs of a particular enterprise (including its strategic goals, industry logistics demands, operational scale, organizational structure needs, available resources, and technological development level).

**Conclusions from this study and prospects for further exploration in this direction.** Within the study, it has been demonstrated that the refinement of logistics controlling as an economic, managerial, or interdisciplinary category, along with its further individualization, has shaped the process of adapting these processes to the specific characteristics and needs of individual enterprises. According to the outlined provisions:

1. It has been demonstrated that the orientation of logistics controlling processes towards achieving strategic goals is formed when an enterprise aims to become a leader in customer service levels. Its controlling system focuses on metrics related to quality and delivery speed.

2. It has been proven that the orientation of logistics controlling processes towards industry-specific logistics demands is formed when not all, but specific logistics processes are crucial for

enterprises. For example, in retail, this includes delivery speed and inventory management; in manufacturing, it involves supply reliability and optimizing production processes; in agriculture, it pertains to seasonality and weather dependency.

3. It has been demonstrated that the orientation of logistics controlling processes towards the enterprise's activity levels and organizational structure needs is formed when their content adjusts the complexity of planning, implementation, and control of effective movement and storage of goods, services, and information from point of origin to point of consumption. For example, large enterprises with complex logistics networks require more sophisticated and comprehensive controlling systems compared to small enterprises with simpler logistics processes.

4. It has been proven that the orientation of logistics controlling processes towards the resource and technological capabilities of the enterprise is formed through the implementation and utilization of various controlling methods and tools. For example, enterprises with limited resources may utilize simpler and more accessible controlling methods, whereas enterprises with advanced infrastructure may implement complex information systems and utilize cutting-edge technologies.

The content of the formulated conclusions shapes perspectives for further developing a methodology for individualizing enterprise logistics controlling systems.

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