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## **IMPLEMENTATION OF THE LOGISTICS CONTROLLING CONCEPT IN THE MANAGEMENT OF TRANSPORT ENTERPRISES**

**Nadiya Perederii, Oksana Ovdiienko, Volodymyr Marchuk.** *"Implementation of the logistics controlling concept in the management of transport enterprises". The article considers the peculiarities of the logistics controlling practice in managing transport enterprises. The depth of the logistics controlling implementation helps to analyze the functioning of logistics controlling and identify opportunities for further improvement. To determine it at the transport company, it is necessary to evaluate and analyze the performance of the logistics controlling tasks and the use of its tools. To carry out such an assessment, 20 indicators of the depth of logistics control implementation are used.*

*Determining the depth of the logistics controlling implementation for transport enterprises goes through three stages: organizational, content-technological, and practical. The goal of the organizational stage is to create a group of experts and prepare relevant materials for the survey. The goal of the content-technological stage is an expert evaluation of the indicators of the depth of the logistics controlling implementation. The goal of the practical stage is to determine the depth of the logistics controlling implementation by experts. In the third stage, the analysis and discussion of the results of the assessment of the depth of the logistics controlling implementation are carried out, and further areas of improvement of logistics controlling are determined to increase the efficiency of the logistics processes management. Evaluation of the depth of the logistics controlling implementation was carried out at two transport enterprises; the results showed the intensity of the tools' use in their management.*

*The authors conducted an analysis that made it possible to determine directions for improving the logistics processes management for domestic transport enterprises based on logistics controlling, and to single out the stages of improving the management of transport industry enterprises. Mentioned steps are the following: assessment of the level and depth of the logistics controlling implementation, ensuring the functioning of logistics controlling as a continuous process based on Web-based and IT technologies, and using a wide range of primary and special logistics controlling tools.*

**Keywords:** logistics controlling, logistics activity, logistics processes, depth of logistics controlling, indicators of the depth of the logistics controlling implementation, transport enterprises.

**Надія Передерій, Оксана Овдiєнко, Володимир Марчук. «Реалізація концепції логістичного контролінгу в управлінні транспортними підприємствами».** У статті розглянуто особливості використання логістичного контролінгу на практиці в управлінні транспортними підприємствами. Для аналізу функціонування логістичного контролінгу та виявлення можливостей його подальшого удосконалення визначають глибину реалізації логістичного контролінгу. Для її визначення на транспортному підприємстві потрібно оцінити та проаналізувати виконання завдання логістичного контролінгу та використання його інструментів. Для проведення такого оцінювання використовуються 20 індикаторів глибини реалізації логістичного контролінгу.

Визначення глибини реалізації логістичного контролінгу для транспортних підприємств проходить три етапи: організаційного, змістово-технологічного та практичного. Ціль організаційного етапу є створення групи експертів та підготовка відповідних матеріалів для проведення опитування. Ціль змістово-технологічного етапу - експертна оцінка індикаторів глибини реалізації логістичного контролінгу. Ціль практичного етапу - визначення експертами глибини реалізації логістичного контролінгу. На третьому етапі проводиться аналіз та обговорення результатів оцінки глибини реалізації логістичного контролінгу, визначаються подальші напрями удосконалення логістичного контролінгу для підвищення ефективності управління логістичними процесами. Оцінювання глибини реалізації логістичного контролінгу було проведено на двох транспортних підприємствах, результати якого показали інтенсивність використання інструментів в їх управлінні. Оцінювання глибини реалізації логістичного контролінгу було проведено на двох транспортних підприємствах, результати якого показали інтенсивність використання інструментів в їх управлінні.

Проведений аналіз дав можливість визначити напрями удосконалення управління логістичними процесами для вітчизняних транспортних підприємств на основі логістичного контролінгу, виокремити стадії удосконалення управління підприємствами галузі: оцінка рівня та глибини реалізації логістичного контролінгу, забезпечення функціонування логістичного контролінгу як безперервного процесу на основі Web-базованих та IT-технологій, використання широкого спектру основного та спеціального інструментарію логістичного контролінгу.

**Ключові слова:** логістичний контролінг, логістична діяльність, логістичні процеси, глибина логістичного контролінгу, індикатори глибини реалізації логістичного контролінгу, транспортні підприємства.

**Introduction.** The processes taking place in the economy, and in particular in the transport sector of Ukraine, are characterized by high instability and uncertainty. High dynamics of the external environment and rapid scientific and technical development pose many challenges to transport

enterprises and force them to implement modern practical management tools.

More and more complex tasks are faced by transport enterprises, which can be solved only under the conditions of comprehensive management of flow processes. Current business conditions require significant



transformations from transport enterprises, the application of new modern concepts, and innovative management methods. In recent years, the role of controlling in the management of logistics processes has increased.

Implementation of the concept of logistics controlling will make it possible to increase the efficiency of management of logistics processes, as well as to optimize logistics costs and increase the profitability of the enterprise. Managers will receive the necessary information to make economically justified management decisions.

**Recent research and publications analysis.** A wide range of issues related to logistics controlling are insufficiently researched and have a fragmented nature or use separate logistics and controlling tools. Because of this, problems arise regarding the practical use of logistics controlling in the management of enterprises of various industries, in particular, transport.

The toolkit of logistics controlling by Ukrainian scientists is insufficiently researched. Therefore, special attention was paid to researching the works of foreign scientists: S. Abt, H. Blum, Y. Weber, J. Herold, I. Hopfert, J. Cole, G.-U. Küpper, V. Mennel, V. Prumper, G.-K. Pfol, T. Reichman, G. Fandel, T. Fermast, M. Haberek, M. Christopher, E. Schiffers, K. Schult, W. Kersten, C. Martin, M. Kummer, K. Schwarz, C. Lennertz, S. Wadhva.

A significant unsolved problem is the creation of transparency in the use of logistics controlling in practice and the possibility of assessing the depth of its implementation in order to determine the degree of application of logistics controlling tools and improve the efficiency of enterprise management as a whole.

**The aim of the article.** The purpose of the study is to generalize the theoretical aspects of logistics controlling and to develop applied provisions for its implementation in the management of transport enterprises.

**The main material.** In order to comprehensively assess the functioning of logistics controlling and identify opportunities for its further improvement at the enterprise, it is suggested to evaluate the depth of its implementation [1]. For this purpose, an algorithm for determining the depth of the logistics controlling implementation for transport enterprises was developed.

The first stage is organizational. It covers the creation of an expert group to conduct the survey. The expert group should consist of 5-10 persons sufficiently competent in the logistics activities of the transport enterprise. The number of experts depends on the enterprise's size and is determined by the head of the expert group. The more interviewed experts, the more reliable results of the analysis. At this stage, the team's work is organized and relevant materials are prepared, periods are set. The result of the evaluation depends on the competence and professionalism of experts, and their attitude to the elements that form logistics controlling at the enterprise. An essential factor in this process is the motivation of experts for deep and thorough analysis.

The second stage is content-technological (expert assessment of indicators of the depth of the logistics controlling implementation). Based on the vast volume of the analyzed literature, the main tasks of logistics controlling and its tools, 20 indicators were singled out, outlining the theoretical types of activities within the framework of logistics controlling and characterizing the depth of its implementation (Fig. 1). All indicators are divided into three groups depending on the factors that are influenced by logistics controlling: revenue, costs and essential tools that ensure the management of logistics activities of transport enterprises (Fig. 1). Experts can make changes to the presented base of indicators.

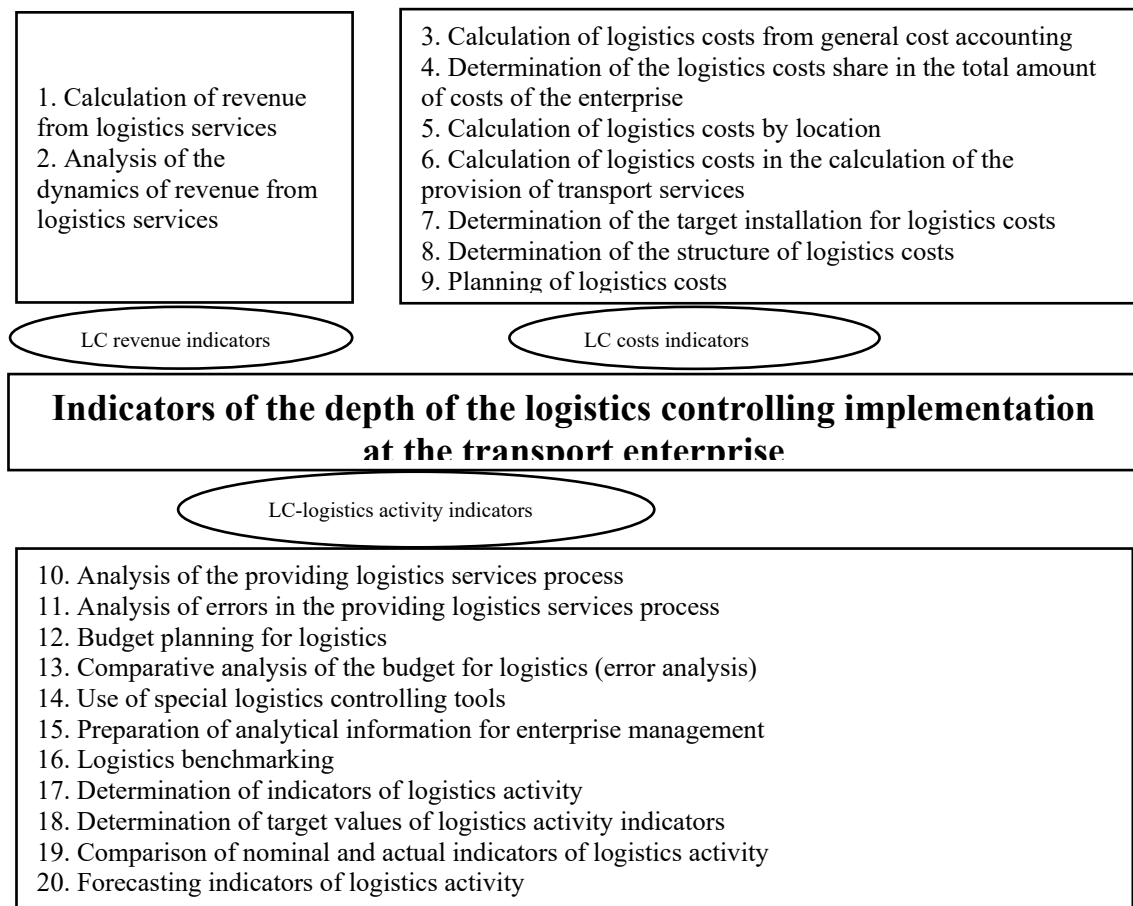


Figure 1 – Indicators of the depth of the logistics controlling implementation at the transport enterprise

In particular, an expert assessment of each indicator is carried out by filling out the corresponding questionnaire on an adapted Likert scale. The Likert scale is a psychometric scale often used in questionnaires and survey research [2, p. 85]. When working with the scale, the expert evaluates the degree of his agreement or disagreement with each judgment (indicator).

Experts, based on their own opinion, evaluate indicators that are simple and clear. A three-point gradation is used for evaluation: absent, partially present, and fully present. Experts should form an answer depending on the indicators' content. One means that this indicator is not used, is not calculated; two - this indicator is used, is partially calculated; three - this indicator is fully used, and is calculated in the logistics processes' management at the transport enterprise. The

proposed scale provides relative reliability even with a small number of judgments, while the obtained data are easy to process.

The third stage is practical (determination by experts of the depth of logistics controlling implementation). Expert analysis of each indicator, in particular, will make it possible to assess the depth of individual tools and components of logistics controlling use. It is essential to discuss the results of the evaluation by a team of experts. The result of the assessment is obtaining objective information for the strategic and operational management of logistics processes and determining directions for their improvement.

In order to improve the level of logistics controlling for all transport enterprises, the possibility of an in-depth analysis of the logistics controlling implementation in



practice is critical. The proposed algorithm to estimate the depth of logistics controlling implementation was conducted at two enterprises.

Eight experts formed an expert group at enterprise #1. They assessed each indicator, in

particular, independently, filling out a questionnaire on a three-point scale. The results of the expert assessment of the depth of the logistics controlling implementation of are presented in fig. 2.

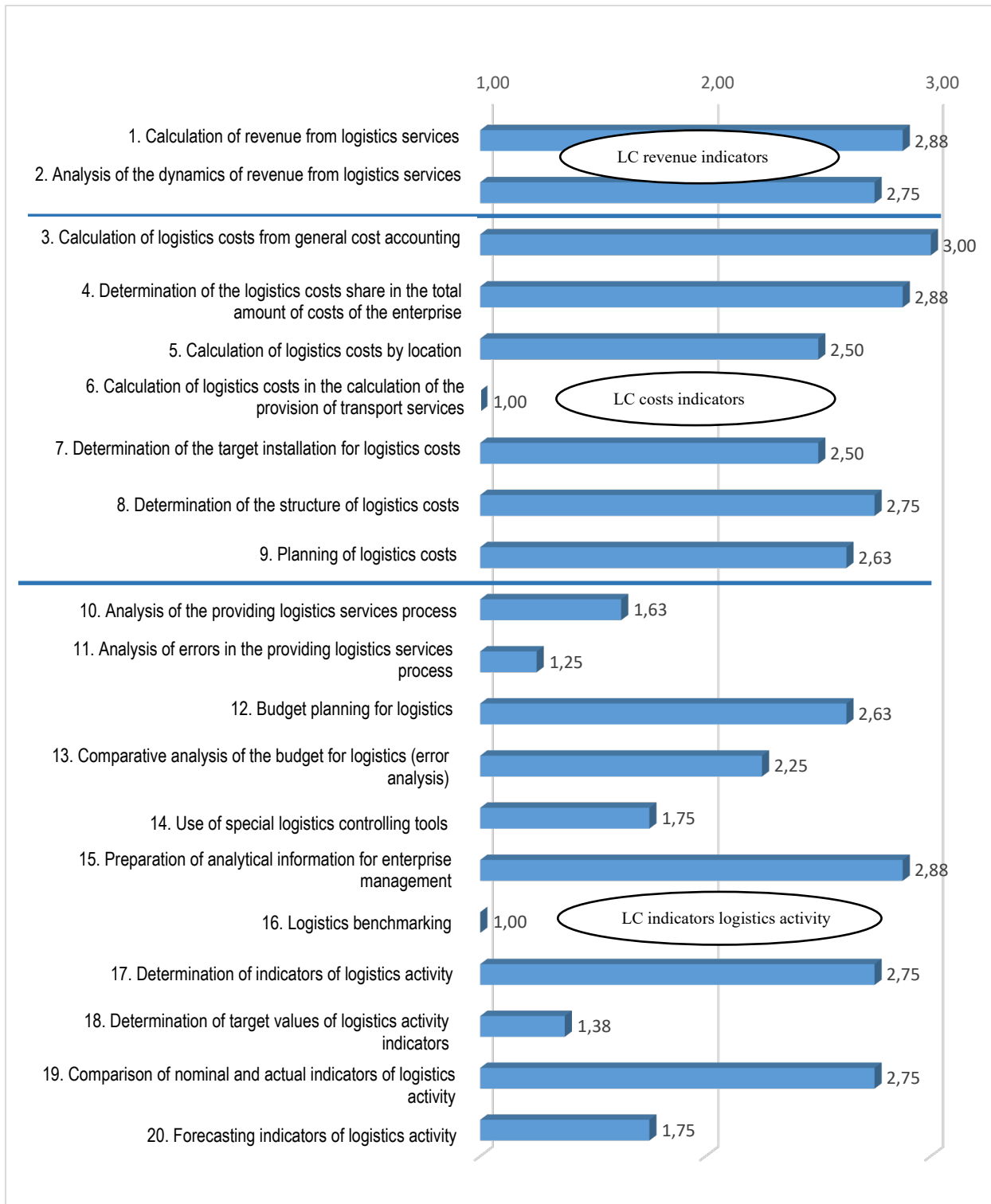


Figure 2 – The depth of the logistics controlling implementation on enterprise #1

Logistics controlling (LC) indicators are grouped into three blocks: "LC-logistics activity indicators", "LC-cost indicators", and "LC-revenue indicators". The most often used indicator in the block "LC-logistics activity indicators" among 11 existing is "preparation of analytical information for the management of the enterprise" (2.88). It requires quick access to the necessary information and the basis of using Web-based and IT technologies. According to the results received on enterprise #1 the priority used tools are the following: determination of logistics activity indicators (2.75) and comparison of their nominal and actual values (2.75). To obtain objective information, special attention should be paid to the target values of logistics activity indicators (1.38) and their forecasting (1.75). An essential instrument of logistics controlling is budget planning for logistics (2.36) and, accordingly, its comparative analysis for a certain period (2.25).

Indicator "use of special logistics controlling tools": analysis of deviations, analysis of bottlenecks, ABC analysis, XYZ analysis, analysis of logistics chains, analysis of logistics cost factors, business simulation, SWOT analysis, PEST analysis, profitability analysis, logistics portfolio, strategic maps, enterprise logistics profile analysis, modeling, etc. is relatively low (1.75), and logistics benchmarking is not used at all (1.0). In the case of benchmarking and special tools, this can be explained by their irregular use, the lack of appropriate practical skills in their use, and the lack of relevant reliable information. The use of the tools analyzed above has significant reserves for increasing the efficiency of enterprise management based on the adoption of economically sound management decisions.

Particular attention should be paid to the low values of the indicators "analysis of the providing logistics services process" (1.63) and "analysis of errors in the providing logistics services process" (1.25). Analysis of errors in the process of providing logistics services will make it possible to identify problem areas in order to eliminate them.

All the values of the "LC-cost indicators" block, with the exception of indicator "calculation of logistics costs in the calculation of the provision of transport service", are in the range of 2.5 to 3.0 and are relatively high, which shows the depth of their application. The enterprise calculates logistics costs by their place of occurrence (2.5), determines logistics losses from the total accounting of costs (3.0), the share of logistics costs in the total amount of costs of the enterprise (2.88), the target set for logistics costs (2.5), the structure of logistics costs (2.75), planning logistics costs (2.36). The smallest value from this block gives the calculation of logistics costs in the calculation of the provision of transport services (1.0). Analysis of logistics costs and their optimization through the implementation of logistics controlling will allow reducing the total costs of the enterprise as a whole.

Revenue from logistics services (2.88) and analysis of its dynamics (2.75) are essential for enterprise #1. Finding new customers and providing them with a full range of transport and logistics services will increase the revenue of the enterprise as a whole.

Based on the conducted analysis and assessment of the depth of the logistics controlling implementation, directions were developed for improving the management of the logistics processes of enterprise #1, taking into account their priority:

1. Use of Web-based and IT technologies.
2. Quick and easy exchange of information between users, convenient administration.
3. Ensuring the functioning of logistics controlling as a continuous process.
4. Search for individual logistics solutions for the client.
5. Transparency and relevance of reported information.
6. Continuous control of all critical parameters and indicators and their optimization.
7. Use of particular logistics controlling tools.

8. Implementation of logistics benchmarking projects.

Similarly, such a study was conducted at enterprise #2. The group consisting of five

experts determined the depth of the logistics controlling implementation. The results of the assessment are presented in fig. 3.

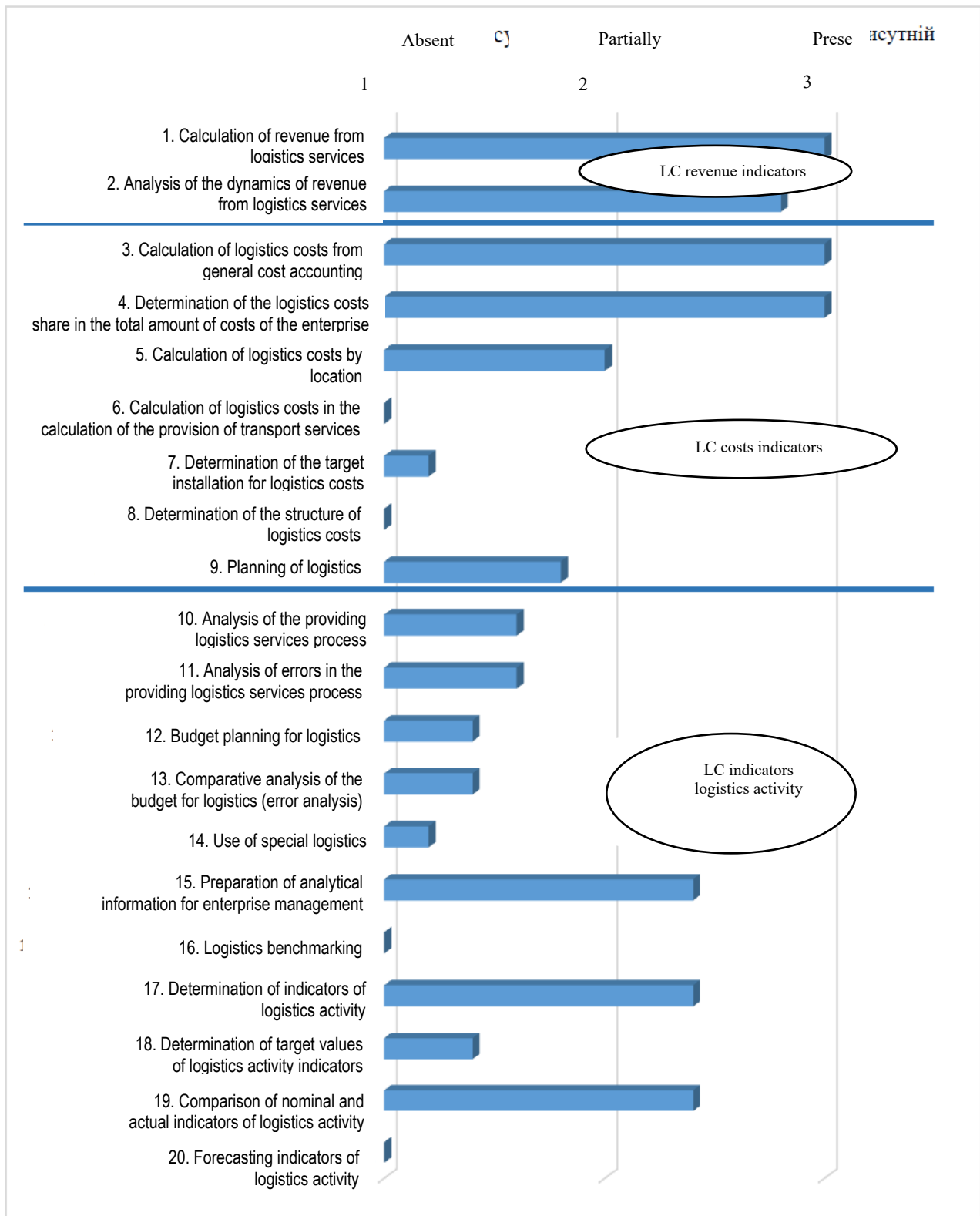


Figure 3 – The depth of the logistics controlling implementation on enterprise #2

The values of most indicators are in the range of 1.0 to 2.0. This indicates a relatively low depth of the logistics controlling implementation at enterprise #2. Analysis of the "LC-logistics activity indicators" shows that the most important thing for the enterprise is the preparation of analytical information for the management of the enterprise (2.4), the determination of logistics activity indicators (2.4), and the comparison of nominal and actual indicators of logistics activity (2.4). Using the analysis of logistics activity indicators, it is necessary to take into account the target values of logistics activity indicators (1.4) and carry out their forecasting (1.0).

Particular attention should be paid to budget planning for logistics (1.4) and, accordingly, to its comparative analysis for a certain period (1.4). The formed budget allows organization and control of the financial flows of the logistics system. Insufficient attention is paid to the analysis of the providing logistics services process (1.6) and the analysis of errors in the providing logistics services process (1.6). Such instruments as conducting logistics benchmarking (1.2) and using particular logistics controlling tools (1.0) are almost not used at all. However, it is essential to use these tools to obtain objective information for making management decisions. The analysis of the indicators related to the group of the "LC-costs indicators" showed the different intensities of application of these tools in practice. At enterprise #2, logistics costs are determined from the total accounting of costs (3.0), the share of logistics costs in the total amount of costs of the enterprise (3.0), the calculation of logistics costs by their places of occurrence (2.0), planning of logistics costs (1.8).

Calculation of logistics costs in the counting of the provision of transport services (1.0), determination of the target set for logistics costs (1.2), and determination of the structure of logistics costs (1.0) are not carried out at the enterprise.

The provision of a full range of transport and logistics services is important for the enterprise, as evidenced by the high assessment of the "revenue from logistics services" indicators (3.0) and the analysis of its dynamics (2.8). Expert analysis of the depth of the logistics controlling implementation at enterprise #2 introduced significant reserves for improving the efficiency of logistics process management through their improvement and implementation at the enterprise. Proposed directions for improving the management of logistics processes at enterprise #2, taking into account the priority of implementation, are the following:

1. Increasing the automation of the accounting sphere through the implementation of IT solutions adapted to the enterprise's business processes.
2. Increasing the automation of the calculation base by routes with the help of modern Web technologies.
3. In-depth analysis and monitoring of logistics costs.
4. Logistic services accounting and analysis of their errors.
5. Budget planning for logistics.
6. Monitoring of logistics and control indicators using the software.
7. Use of particular logistics controlling tools.
8. Implementation of logistics benchmarking projects.

Transport companies that do not recognize their weaknesses in logistics activities are at a competitive disadvantage. Therefore, the proposed evaluation model is important for transport enterprises, as it helps to determine the level of logistics controlling implementation and the possibilities of its improvement. It is aimed at identifying weak points in logistics management and preparing objective information for making effective management decisions.

The analysis of the depth of the logistics controlling implementation gave an opportunity to evaluate which tools are used in the management of the enterprise. This made it possible to determine priority

directions for improving the efficiency of logistics process management at transport enterprises (Fig. 4).

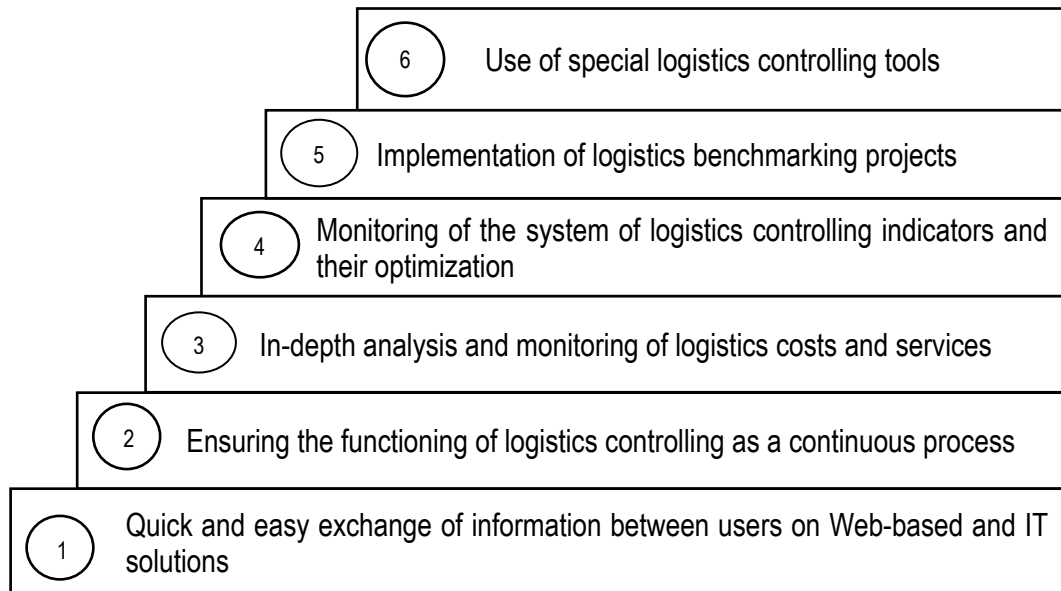


Figure 4 – Directions for improving the logistics processes management based on logistics controlling

The enterprise needs to implement new modern solutions, borrowing the experience of successful global companies in the transport services market to deepen the use of logistics controlling tools.

Business development planning is important for success in the market. The development plan has a structure depending on the directions of each element [3]:

- a plan for the development of new products and services types;
- an automation plan and implementation of new equipment and technologies;
- a plan to improve the organizational structure and management;

- a plan to improve work organization;
- a plan for the introduction of measures regarding the economical use of raw materials, fuel, materials, and energy;
- plan of social development of employees;
- a plan of environmental protection measures.

Taking into account the experience of foreign transport and logistics companies and based on the results of the analysis of successful domestic companies, the main ways to improve their management based on the concept of logistics controlling are proposed (Fig. 5).

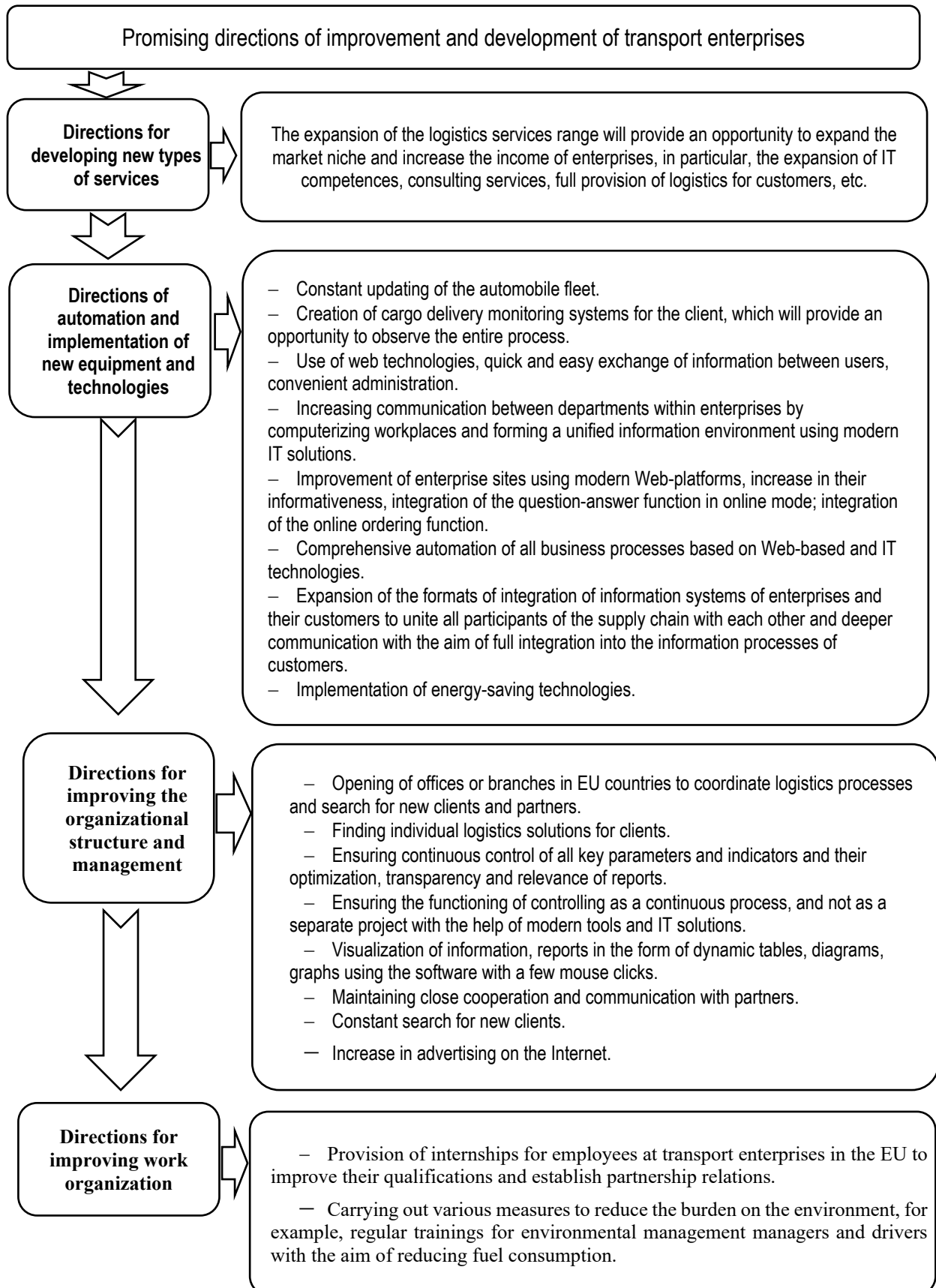


Figure 5 – Perspective directions for transport enterprises to improve and develop

The proposed directions were grouped according to individual elements of the

enterprise's development plan. The main ones include the development of new types



of services, automation, the introduction of new equipment and technologies, improvement of organizational structure and management, and improvement of work organization. In particular, it is possible to highlight such promising areas as the expansion of the logistics services range (outsourcing, contract logistics), the constant search for new customers, and the development of individual logistics solutions for them. It is also fair for improving communication between divisions within enterprises by using modern Web-based and IT technologies to form a unified information environment and quick, simple exchange of information between users, convenient administration and deeper integration with clients; improvement of enterprise websites, increasing their informativeness to improve advertising on the Internet. Recommended worth directions are as well the integration of online ordering functions and the function of receiving answers for customers online; staff training in the use of software; opening of offices or branches in the EU to deepen integration and more effective coordination of logistics processes with customers.

Provided that the proposed directions are implemented, it is possible to maximize the efficiency of business processes, accounting and planning activities, and the functioning of controlling in the future, which is a necessary step on the way to the development of transport enterprises in conditions of instability of the external environment and fierce competition.

That is why enterprises in the transport industry need to pay special attention to modern IT solutions that are able to provide all the accounting, planning, and controlling needs of the enterprise and, at the same time, fully automate the management of all logistics processes.

**Conclusions.** To analyze the functioning of logistic controlling and identify opportunities for further improvement, a methodological toolkit for assessing the depth of its implementation was used. For this purpose, an algorithm was applied, which consists of three stages: organizational, content-technological, and practical, and their essence was examined in detail in practice. Evaluation of the depth of the logistics controlling implementation was carried out at two enterprises, the results of which showed the intensity of the use of tools in their management.

The study of the depth of the logistics controlling implementation at enterprise #1 showed the intensity of the tools' use by the enterprise's employees. Similarly, the analysis of the depth of the logistics controlling implementation was carried out at enterprise #2. The obtained evaluation values are on average 1 point lower than the obtained values at enterprise #1. Considering obtained analysis result, the authors determined the degree of application of the logistics controlling tools, proposed the directions for improving strategic and operational management of logistics processes, and developed individual recommendations for deepening the use of logistics controlling tools.

Based on the results of the research, directions for improvement and development of the activities of transport enterprises have been developed, which relate to individual elements of the enterprise development plan. The purpose of the developed measures is the implementation and use of logistics controlling based on innovative technologies focused on a continuous improvement process.

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