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NEW APPROACHES TO THE CLASSIFICATION OF LOGISTICS COSTS OF INDUSTRIAL ENTERPRISES IN THE CONDITIONS OF GLOBALIZATION

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Чукурна О.П. Новітні підходи до класифікації логістичних витрат промислових підприємств в умовах глобалізації.

В статті проаналізована проблема обліку логістичних витрат в фінансовій звітності промислових підприємств. Запропоновано переглянути традиційні методи обліку логістичних витрат, які прийняті у бухгалтерському та управлінському підходах. Пропонується виділення у фінансовій звітності промислових підприємств двох основних статей логістичних витрат: витрати на транспортування та витрати на управління запасами. Запропоновано вдосконалити класифікацію логістичних витрат, яка доповнена двома ознаками: витрати за логістичними операціями та витрати відносно до фінансових показників. Передбачено, що запропонований підхід щодо класифікації логістичних витрат буде враховувати повні витрати в межах кожного логістичного ланцюга. Це дозволить розрахувати ефективність функціонування окремих логістичних ланцюгів, що набуває особливої актуальності в умовах глобалізації.

Ключові слова: логістичні витрати, промислові підприємства, глобалізація, класифікація логістичних витрат

Чукурна Е.П. Новые подходы к классификации логистических затрат промышленных предприятий в условиях глобализации.

В статье проанализирована проблема учета логистических затрат в финансовой отчетности промышленных предприятий. Предложено пересмотреть традиционные методы учета логистических затрат, предусмотренных в бухгалтерском и управленческом подходах. Предлагается выделение в финансовой отчетности промышленных предприятий двух основных статей логистических затрат: расходы на транспортировку и расходы на управление запасами. Предложена усовершенствованная классификация логистических затрат, которая дополнена двумя признаками: затраты по логистическими операциями и затраты по отношению к финансовым показателям. Предполагается, что предложенный подход к классификации логистических затрат будет учитывать полные затраты в пределах каждой логистической цепочки. Это позволит рассчитать эффективность функционирования отдельных логистических цепочек, что особенно актуально в условиях глобализации.

Ключевые слова: логистические затраты, промышленные предприятия, глобализация, классификация логистических затрат

Chukurna O.P. New approaches to the classification of logistics costs of industrial enterprises in the conditions of globalization.

The article analyzes the problem of accounting for logistics costs in the financial statements of the industrial enterprises. It is proposed to revise the traditional methods of accounting logistics costs provided for in the accounting and management approaches. Proposed allocation of the financial statements of the industrial enterprises of the two main items of logistics costs: the cost of transportation and the cost of inventory management. An improved classification of logistic costs, which is supplemented by two signs: the cost of logistics operations and costs with respect to financial performance. It is expected that the proposed approach to the classification of logistics costs will take account of the full costs within each supply chain, which will calculate the efficiency of the individual supply chain, which is especially important in the context of globalization.

Keywords: logistics costs, industries, globalization, the classification of logistics costs

The main motivating factors of influence of globalization on modern logistics development is rapid economic growth and increasing company profits. The need for the development of new markets for sustained growth was the main driving force that prompted the company to look for customers outside of the national economy. The main driving force of logistics globalization has become common among the manufacturers and big distributors orientation of the business on the logistics chain as a whole. Earlier logistics was engaged in the reduction of costs of procurement and production within the framework of individual companies. Traditionally, enterprises tried to keep the logistics process under its full control, trying to self-perform a greater number of the most important operations and functions. This orientation on the internal operations are usually provided large logistics costs on the operation of private warehouses, transport fleets and processing systems. With the spread of globalization, the practice of the organization of logistics operations have shown that a more efficient method of doing business, is the application of logistics outsourcing. This meant the transfer of logistics functions to intermediaries, which was accompanied by the formation and structuring of logistics costs on processes, not functions. That is, the emergence of global supply chains, when business development is associated with its extension beyond national boundaries and the formation of several business areas in other regions and countries has given rise to the need of the accounting of logistical expenses for each business process. This approach allows us to calculate the economic efficiency of logistic operations for each line of business. Currently, however, there is a problem such assessment of efficiency of logistics costs because of financial reporting costs aggregated usually accounting articles management accounting. According to this approach, there is no way to determine the costs associated with certain activities or by the formation of certain supply chain and operations. The practice of grouping costs in the regulatory accounts, such as wages, distribution costs, administrative expenses, depreciation, does not allow to identify or to establish the scope of the operational responsibility for logistical costs. In the event that the

company prepares financial statements for each type and direction of the business, it facilitates the analysis of logistics costs, but does not fully meet the requirements of the analysis of the total cost.

In the circumstances there is a need to evaluate the impact of logistics costs of Ukrainian industrial enterprises on the total of their yield. This will reveal the greatest impact of individual types of costs in total revenue of the industrial enterprises and show the most problematic areas in financial statements.

Special attention deserves the issue of accounting in the financial statements of industrial enterprises, transport costs and the costs of inventory management. It's two main sources of logistics costs in the economy of industrial enterprises, which are not fully reflected in the balance sheet. Regarding transport costs, it should be noted that in reporting industrial enterprises they are recorded in the article "cost of sales" and in the practice of retailers, transport costs are charged to costs of treatment, is considered as part of the cost of purchased goods. For industrial enterprises and retail businesses, it is not possible to allocate this type of logistics costs. Of the articles of the aggregate balance. With regard to the inability of cost accounting to inventory management in the financial statements of industrial enterprises, this problem includes two aspects. First, statements have not painted the full costs associated with the maintenance of stocks, and secondly, the financial costs associated with the "freezing" of working capital in inventories of raw materials and goods, unfinished production and stocks of finished products, not possible to accurately set, measure, and separate from other forms of capital expenditure incurred by the company. This is partly possible only in the case of the same kind of business, but not in the case of multi-operational business. Despite the fact that Ukrainian enterprises have implemented the international standards of financial accounting, there are still some differences in financial accounting from different countries of the world. It can be stated the fact that there is a need to improve the traditional accounting methods of cost accounting that will allow you to track logistics costs by types of activities. In particular, in the financial statements is necessary to allocate two main sources of logistics costs: transportation costs and costs of inventory management.

Analysis of recent researches and publications

In scientific literature much attention is paid to estimating the cost of logistics operations in terms of the increasing role of globalization and integration processes. The need to improve in this area of logistics has led to the emergence of a large number of scientific publications of foreign and Ukrainian authors. Problems of estimating logistics costs engaged in such foreign scientists as: Ronald Lewis [9], Michael O'Guin [10] Robert S., Kaplan and H. Thomas Johnson [11]. Despite the huge contribution to the theory of the classification and evaluation of logistics costs, there is a need to perform the practice of assessment of logistics costs

of Ukrainian industrial enterprises. Among the Ukrainian scientists, the greatest contribution to the development of the concept of logistics has made such scientists as: M.A. Oklander [2], E.V. Krykavsky [3], N.I. Chukhrai [5] etc. However, the problem of accounting and assessing logistics costs is studied not deep enough and requires more detailed study in the practice of Ukrainian industrial enterprises. In addition, the principles of classification of logistics costs, which are presented in the scientific works of these scholars differ significantly, due to differences in the perspectives and directions of their research. Without specifying the requirements of national financial reporting standards, most of the approaches to the classification of logistics costs can't be used in financial and management accounting

The aim of the article is assessment of influence of logistics costs of Ukrainian industrial enterprises on the overall yield that will reveal the greatest degree of influence of individual types of costs in total revenue of the industrial enterprises and show the most problematic areas in financial statements.

The main part

In accordance with traditional approaches of financial accounting logistics costs include the group of administrative expenses. The emphasis on this issue did the scientist E.V. Krykavsky, who noted that logistics costs as the sum of the costs of management and implementation of logistics processes within a certain range of movement of material flows are not allocated for cost accounting of the enterprise. It is difficult to assess their level and assess their performance. It is therefore important to define the criteria (characteristics), classification (separation) of logistics costs [3]. In this context, the scientist offers to assess them at the place of occurrence; object cost; the analytical account of expenses; the phases of the logistics process. E.V. Krykavsky says the fact that, in practice, and economy-wide assessment of logistics costs mainly classify logistic functions and spheres of movement of material flows, that is, the costs of physical distribution, the costs of reserves and administrative costs. In this regard, it should be noted that in the form of a balance sheet such items as: "supplies", "WIP", "final goods" and "economic resources" refer to the working capital of the enterprise and reflected in the second section of the Asset Balance. Such articles as: "distribution costs", "administrative expenses" and "operating expenses" reflected in the form of Report on financial results. Thus, in practice, industrial enterprises carried out the calculations of logistic costs from the data reporting forms, where it is impossible to allocate the costs of each type of logistics operations and to calculate their effectiveness.

It is necessary to focus attention on the fact that the effectiveness of enterprise logistics system is directly dependent on the organization of financial accounting of logistical expenses. The lack of a proper level of financial accounting affects the lack of information about logistics costs and inaccessibility for management. In fact, the accounting of logistical

expenses generates an information logistics system in the enterprise, which leads to the development of a unified approach to the classification of logistics costs.

Currently there are the following two basic approaches to the classification of logistics costs,

which are based on the peculiarities of the organization of the material flow at an industrial enterprise. If the functioning of the material flow is organized in separate functions, the calculation of logistics costs is performed functional areas of logistics (fig. 1).

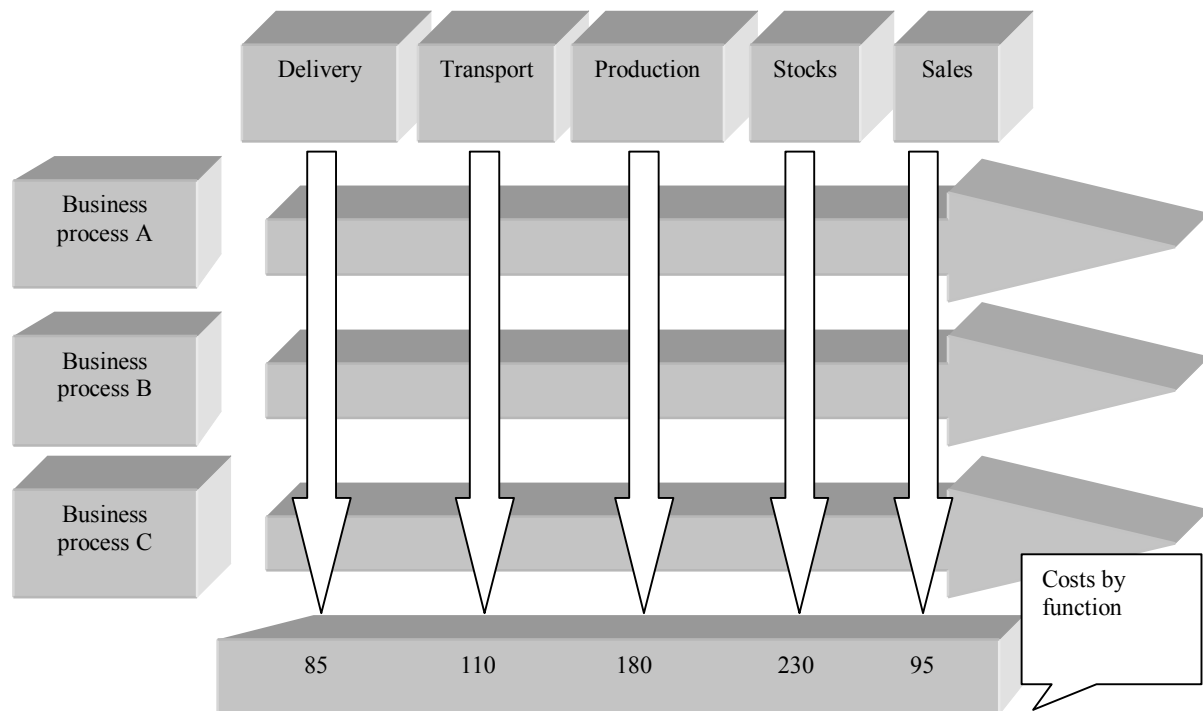


Fig. 1. The accounting system of logistical costs by function
Source: Compiled by the author according to the materials [6]

This approach does not allow to allocate the costs of the individual logistics processes to generate information about the most significant costs and the nature of their interaction with each other. For example, to fulfill a customer's order is necessary to carry out the following operations: order taking, order processing, credit check, paperwork, equipment ordering, shipment, delivery, invoicing. Thus, the costs associated with the order fulfillment process consists of a variety of types of costs that occur in different areas, and it is difficult to integrate them into a single item of expenditure in the framework of the functional accounting. In addition, traditionally the costs together in large aggregates that does not allow for a detailed analysis of the different origin of the costs to consider in detail all the consequences of managerial decisions. As a result, decisions taken in one functional area may lead to unexpected results in other, related, areas [6].

The second approach to the classification of logistics costs involves the introduction of functional expenses all along the path of flow of material. The result of this approach is the possibility of the accounting of logistical expenses for each business process, which significantly affects the efficiency of logistics (fig. 2).

In logistics, the key event and the object of analysis is a customer order and procedures to implement this order. The costing should be used to determine whether a specific order profit and how to reduce costs for its implementation. Cost accounting process gives a clear picture of how are the costs associated with customer service and the share of each of the units. Summing all costs across, you can determine costs associated with a separate process, order, service, product, etc. [6].

The focus should be on reducing costs, with the biggest shares in the total of all logistics costs. As practice shows, the main components of logistic costs are transportation and procurement costs (not more than 60%) and the cost of maintenance of stocks (not more than 35%). Therefore, there is a need to highlight these two articles logistics costs in the financial statements of the company. This will allow to apply the system of accounting logistical costs for processes in the practice of industrial enterprises.

Interesting approach to the classification of logistics costs, in our view, is the approach proposed by A.A. Andrukova and I.A. Yakimov [1]. The approach proposed according to the scholars proposed to divide logistics costs into 4 groups in which it is necessary to record and evaluate. To such groups, they include the following:

- The costs of logistics (procurement management, order management, inventory management, organization of transport, organization of warehouse activities and management warehouse technological process);
- Support costs production (technological processes control, managing orders in the production, organization and storage of stocks in the shops inventory management, control of production inventory production, support of standards of quality and logistic service, organization of in-plant technological transport, control methods, cost accounting for production and calculation of production costs);
- The costs of distribution (transportation and warehouse activities, pricing, planning of distribution channels, management of technological process of warehousing, inventory management, support of standards of product quality and logistic service);
- Spending on information technology (management of the consolidation process of logistics costs and identify areas of information flow, cost control on the formation of information flows, the creation and maintenance of a common management information and logistics system).

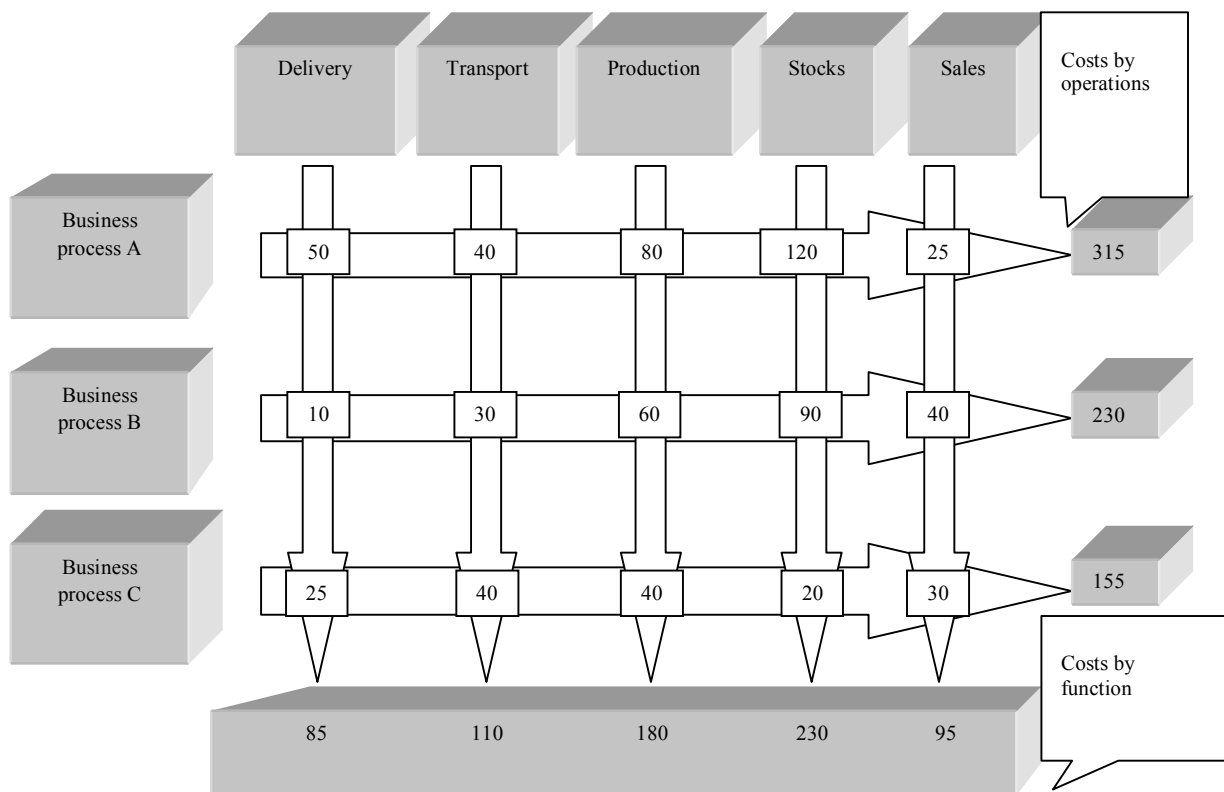


Fig. 2. The accounting system of logistical costs by the processes
 Source: Compiled by the author according to the materials [6]

The authors of this approach to the classification of logistics costs allocate the costs of information, which is an innovative approach. However, the proposed classification system considers the logistics functions and provides accounting and cost estimation functions, which makes it difficult to assess the effectiveness of all logistics operations in the company.

The author of this study considers the classification of logistics costs on operations more relevant and reflects the economic requirements to the enterprises in conditions of globalization. Supplemented and improved by the author classification of logistics costs is represented in Fig. 3.

While scientific interest is the system for assessing the impact of logistics costs on the overall financial performance of Ukrainian industrial enterprises. To

accomplish the task, was used the regression-correlation analysis. For analysis were used data of financial statements of the leading Ukrainian machine-building enterprises. From the form of the balance sheet were analysed articles like "supplies", "WIP", "finished goods" and "goods" that can be correlated with logistics costs inventory management. Of the Report on financial results there were analyzed the article "cost of sales" and "administrative expenses", which also presents logistic costs.

As can be seen from table 1, the income from the sale of all analyzed companies is greatly influenced by the level of inventories and distribution costs, as evidenced by high values of correlation coefficient in all engineering enterprises, which were analyzed. For the two articles logistics costs, the values of correlation coefficients range from 0.62 to 0.91.

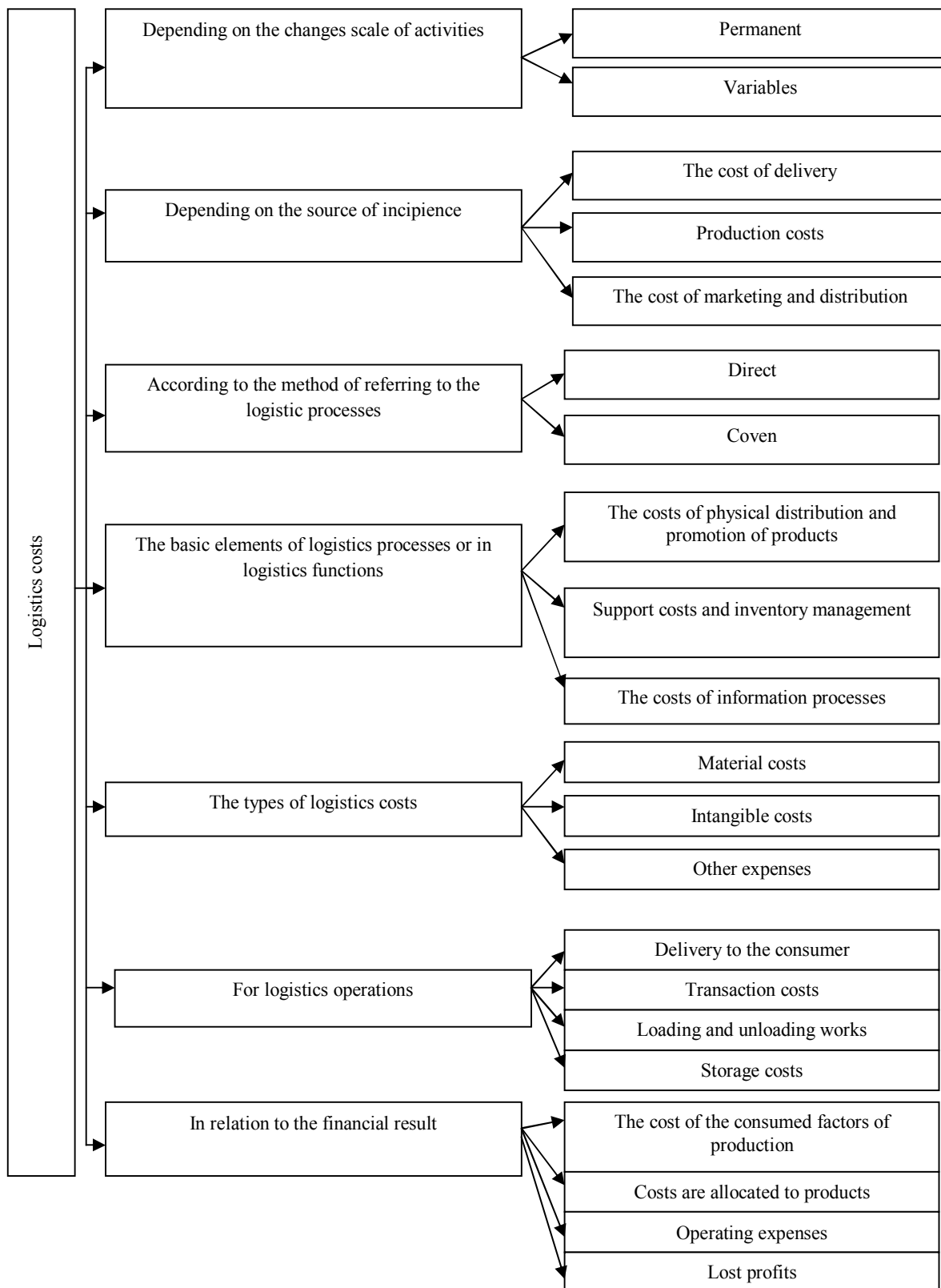


Fig. 3. Classification of logistics costs
 Source: Own elaboration

Which indicates the high dependence of machine-building enterprises of income from these two articles logistics costs. Administrative costs, the average effect on income of engineering companies. The highest value of the correlation coefficient for this expenditure observed in the enterprise SOE "Pervomayskdizelmash" (0.82) and PJSC "Dniprova-

gonmash" (0,72), which indicates a high degree of impact of administrative costs on the income of the two companies. PJSC "Umanfermmash" and PJSC "Azovzagalmash" observed average values the impact of administrative costs on the income of these companies.

Table 1. Summary table of calculations of the impact of logistics costs on the income from the sale of the machine-building enterprises with the help of correlation coefficient

Enterprise	industry	The correlation coefficient (elements of logistics costs for items in the financial statements)					
		supplies	WIP	finished goods	goods	cost of sales	administrative expenses
PJSC "Azovzagalmarsh"	railway coach manufacturing	0,85	0,45	-0,11	0,078	0,87	0,51
PJSC "Dniprovgonmarsh"	railway coach manufacturing	0,87	0,94	0,57	0,0092	0,91	0,72
PJSC "Kryukivskiy railway coach manufacturing plant"	railway coach manufacturing	0,77	0,24	0,64	-0,27	0,82	0,45
PJSC "Stakhanovskiy vagonobudivniy zavod"	railway coach manufacturing	0,79	0,57	-0,25	0	0,84	0,64
PJSC "Umanfermmash"	farm machine industry	0,83	-0,076	0,25	0,27	0,62	0,53
SOE "Pervomayskdizelmash"	production of diesel engines and components for marine vessels	0,66	0,12	-0,22	0	0,75	0,82

Source: Compiled by the author according to the materials [8]

This type of logistics costs as "finished goods" quite high correlation coefficient observed in PJSC "Dneprovagonmarsh" (0,57) and PJSC "Kryukivskiy railway coach manufacturing plant" (0,64). Low values of correlation coefficient for the "finished products" in all other engineering companies indicates a reduction in logistics costs by reducing finished goods inventory in the warehouses. This is a progressive practice of business, characteristic of B2B markets, when the number of products fully meets the demand, reflecting a reduction of cost of storing finished products in warehouse.

The calculations allow us to conclude that the General trend for all engineering companies is a high impact on the revenues of these enterprises such articles logistics costs as inventories, cost of sales and administrative expenses. Such articles logistics costs as "construction in progress" and "finished goods" have low values of correlation coefficient, which indicates the absence of their influence on the revenues of engineering companies.

Calculations of correlation coefficients logistics costs showed that the degree of influence of logistics costs in revenues the enterprise, you can perform only on indicators, which are reflected in the financial statements. Thus, there is no way to track the level of logistics costs and the extent of their influence over business processes. You can only make a general conclusion on the enterprise and to identify a general trend for the industry. In the context of globalization, when big companies shape their distribution channels in international markets, the need arises of accounting for and calculation of efficiency of logistics costs on logistics operations, which will form the optimal logistics chain.

Conclusions

In the study posed problems of accounting logistical costs in the financial statements of industrial enterprises. Currently in the financial statements of industrial enterprises logistics costs are usually aggregated accounting articles managerial accounting, which makes it impossible including expenses that arise as a result of the formation of global logistics chains. The consequence of this approach is the need to revise the traditional methods of accounting logistical costs adopted in the accounting and management accounting. Proposed allocation in the financial statements of the industrial enterprises of the two main items of logistics costs: transportation costs and costs of inventory management. The proposed approach requires also a revision of the generally accepted classification of logistics costs, which should be improved with additions of two more signs. First, depending on logistics operations, the cost can be divided into: shipping costs; transaction costs; costs of loading, unloading; storage costs. Secondly, in relation to financial performance, logistic costs should be divided into: the cost of consumption of production factors; expenditure on clean production; operating expenses; costs associated with loss of profits. It is assumed that all the proposed types of logistics costs should be taken into account within each logistic chain. This allows you to calculate the efficiency of individual logistics chains that globalization is the most pressing problem.

This article illustrates an example of the calculation of the impact of logistics costs on the income of engineering companies, which revealed a general trend for companies that were analyzed.

Abstract

The article analyzes the problem of accounting logistics costs in the financial statements of the industrial enterprises. It is proposed to revise the traditional methods of accounting logistics costs provided in the accounting and management approach. It is proposed the allocation of the financial statements of the industrial enterprises of the two main items of logistics costs: the cost of transportation and the cost of inventory management. Currently, the financial statements of the industrial enterprises are aggregated logistics costs typically accounting for items of management accounting, which makes it impossible to cost accounting, resulting from the formation of the global supply chain. The proposed approach is also requires a revision of the standard classification of logistic costs, which should be improved by its complement two other features. Firstly, according to the logistic operations, the costs can be distinguished: the postage costs; transaction costs; the costs of loading and unloading operations; storage costs. Secondly, relative to the financial performance, logistics costs should be divided into: the cost of consumption of factors of production; costs correlated to clean products; operating costs; costs associated with the loss of profits. It is assumed that all of the proposed types of logistics costs should be accounted for within each supply chain. It is possible to calculate the efficiency of the individual supply chains, in the context of globalization is the most urgent problem. This article shows an example of calculating the impact of logistics costs on the income of machine-building enterprises, which revealed a general trend for companies that were analyzed.

JEL Classification: L62, F63, C40.

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