MODEL OF LOGISTICS COST ACCOUNTANCY

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Abstract

The primary tool allowing for the logistics costs record keeping is a well-functioning logistics costs account, which should be identified with a system allowing for determination of the level of costs incurred in connection with the implementation of logistics processes in a given unit of time [1]. On the other hand, to be able to achieve the goals of the logistics costs account (The basic functions of the costs account include: evidence, registration, statistical information, planning, optimization, control, price-setting and analytical functions.), the account should be available in many forms and sections. Forms of the logistics costs account are dependent on the requirements and needs of business practice for the acquisition of information necessary to conduct a proper evaluation and to take rational economic decisions [2]. The diversity of purposes of the logistics costs account contributed to the creation of different forms and sections of the cost accounts [3].The problem lies in the selection of an appropriate costs account. The theory and business practice have not developed a single, universal solution that would meet all the requirements for the costs account.

The aim of the article is to propose a model of the costs account of logistics operations, based on the analytical breakdown of expenses by type, which is also an example of the extension of the existing account by a current, additional system of settlements focused on logistics.

Keywords: Logistics costs, logistics costs account

1. INTRODUCTION

To propose a costs account aimed at obtaining information on costs in the area of logistics activities of a company, which on the one hand meets the requirements arising from the statutory regulations concerning the record and settlement of costs, and on the other hand, implements its objectives set by the users of information in the field of logistics activities, is not a simple and straightforward task. Difficulties arise already for the conceptual understanding of the essence of the logistics costs account. The definition of the logistics costs account that would enable to understand the essence of the problem should be relatively simple and straightforward. An attempt to include in the definition all the activities related to the execution of logistics activities generating the logistics costs is from the beginning doomed to failure, because the scope which is covered by the logistics activities of business entities is subject to continuous evolutionary changes and leads to raising a legitimate allegation of incompleteness of such way of defining the logistics costs account.

2. ANALYSIS OF LIMITATIONS AND OPPORTUNITIES RELATED TO THE LOGISTICS COSTS RECORD

The logistics costs are a primary concept in relation to the logistics costs account and therefore should be first explained thoroughly and in detail. Instead, an attempt to present sense of the logistics costs account should include only its essence, without an additional indication of the scope of the logistics activities, and therefore for the purposes of this study, a definition created based on a formula developed by V. Skrodzka was proposed. Therefore, the logistics costs record is understood as a system allowing for determination of the amount of costs incurred in connection with the implementation of logistics processes in a given unit of time.

J. Twaróg [4] mentions two basic principles that should guide a properly structured model of the logistics costs account:

- the costs account system should reflect the material movements, which means that it should be able to identify the costs that accompany the customer service,
- the system should allow for the separation of the costs and making the analysis of revenues by the types of customers and market segments and distribution channels.

The proposed principles were created based on the analysis of the weaknesses of the traditional costs accounts. This problem is due to a significant increase in the general management cost and difficulties related to this issue in assigning this category of costs to any cost carriers. [5]

The problem lies in the selection of an appropriate costs account. The theory and business practice have not so far developed a single, universal solution that would meet all the requirements for the costs account. To a large extent, an obstacle is a great variety of business subjects and the related different approaches to the specific costs of logistics, methods of accounting, calculating and analysis. Any analysis of the logistics costs has a chance to fulfil its role under the condition that in the creation of the costs account the relevant standards relating to accounting and grouping of costs will be applied. Only a detailed knowledge of the causes of and relationships and proportions of the various components, may allow the actual use of the costs account to rationalize the logistics processes.

The business practice significantly contributed to a distinction of the following possibilities of shaping the logistics costs account:

- a partial extension of the applicable costs account which in its overall structure remains unchanged. In this case, the shaping of the logistics costs account is associated with recording the types of costs with a greater diversification and improved recording of internal logistics services costs,
- occasional supplementing of the costs account by a logistics-oriented special account. With this method of the logistics costs account keeping, normally not present costs of logistics services are added as a supplement to the first method,
- extension of the existing costs account by a current, additional system of settlements focused on logistics. [6]
- In this solution, we are dealing with the improvement of the classical costs account, which on the one hand, is focused on implementing the information needs of the area of production, and on the other hand makes it possible to meet the demand for information of the logistics.

The process of creation and application of the logistics costs account is usually accompanied by more difficulties than facilities. This results in a situation that the hopes for its introduction should be considered as unfulfilled. According to the author, the primary sources limiting the usefulness of the logistics costs account application in the business practice include:

- human factor,
- legal regulations,
- technical considerations,
- financial considerations,
- organizational considerations.

Analyzing the constraints that determine the level of suitability of the logistics costs account, noteworthy are mainly two issues, namely the limitations on the part of the human factor and typical organizational limitations. In the case of the human factor, it does not matter whether it concerns the regular employees or executives. Everything results from the approach of employees to their duties. A very important problem seems to be the right motivation, without which it is difficult to enforce any action and the necessary degree of commitment into the recording matters, and then the analyzes of logistics costs. Also, the previously mentioned organizational

constraints, affect the effectiveness of the used logistics costs account. In this area in particular there are no precisely delineated duties and responsibilities in terms of recording and the lack of giving an appropriate rank and importance to the logistics costs analysis is highlighted. Other sources of limitations do not affect, in a decisive way, any reduction of possibilities and expediency of the cost analyzes based on data provided by the costs account, expanded by the logistics costs record.

Legal regulations on accounting do not allow for the possibility of direct taking into account the logistics costs in a mandatory system of costs accounts and financial statements, but they do not limit expandability and raising the level of complexity of the applicable costs account by means of analytical solutions.

Technical capabilities of the applied financial and accounting programs also do not constitute a barrier in the way of recording and presenting the enterprises logistics costs data. The implementation of the costs account logistics concept in practice usually requires only taking the measures aimed at adding appropriate analytical accounts to the traditional system of accounts.

Due to the low cost of the software used to record and analyze the logistics costs, the financial considerations also have no impact on the performance and usefulness of the costs accounts in a company. Despite these risks, a rationally used logistics costs account can be considered as a fundamental tool to support business management. It should be noted that the solutions proposed by the theory, sometimes differ significantly from the solutions developed by the business practice. This is generally due to the fact that the theoretical solutions are too complex and it is hard to translate them into a mandatory system of recording.

The literature and economic practice contributed to the development of the following three methods of the logistics costs recording:

- fast, one-time diagnosis,
- systematic, full recording,
- random registration of costs.[1]

The fast, one-time diagnosis is not about the recording of costs, including the logistics costs, but about determining their level in the context of the total costs incurred, using the estimation methods. Those estimates are supposed to answer the question, as to what is the level, or what is the amount of total costs, or one of their subsystems, in the examined period. As in case of any operation involving only the estimation, also in this case, the results of this method are burdened with a large margin of error. A further disadvantage of this method of the costs registration (although in this case it is difficult to speak of an actual registration costs within the meaning of accounting), is the possibility of the estimation distortion due to the impact of part of the factors at the time of diagnosis. In some situations, the disadvantage of this method may also be due to the subjectivity of perception of the person conducting the estimates. In turn, the advantages of the method certainly include the short time of its conduct, and the low cost of the diagnosis.

The opposite of the fast, one-time diagnosis is a systematic, full recording. It involves extracting from among all costs incurred during the period, only those components that are accepted as logistics costs by the given economic entity. To be able to keep records in accordance with the discussed method, it is necessary to precisely determine which costs are considered as the logistics activities costs. The other issues to be solved involve the division classifying the logistics costs, to meet the information requirements of the costs account and identification of specific technical solutions enabling the logistics costs recording. This method is certainly more complicated and expensive than the one-time diagnosis, but its benefits usually compensate for these limitations. The positive sides of the full recording include the ability to:

- *obtain data on the logistics costs in the adopted sections classifying them,*
- *tracking current information on the logistics costs,*
- *immediate response in the event of adverse developments within the logistics activities costs.*

The third method of logistics costs recording is the random costs registration within which general logistics costs are divided into two groups. The costs of the first group are recorded on the basis of a complete recording, and for the other group the one-time diagnosis is applied. It happens that the economic entities completely forgo the costs account using the one-time diagnosis and keep only a complete record within the selected area or areas of logistics activities. This method is used if you wish to focus your attention solely on the area which seems to be strategic from the point of view of the amount of the incurred logistics costs and possible reduction opportunities. The disadvantage of the random registration of the logistics costs is a limited range of data for the areas covered by the record, which can lead to irrational decisions in relation to the global logistics costs.

In turn, taking into account the technical methods of recording the logistics costs, it is possible to use one of the three solutions. The first of them is to record manually, i.e., without the help of appropriate computer programs. Due to the archaic nature of this method, caused by too much effort to use it, and essentially limited possibilities of its further use, it is rejected as an object of analysis. A similar decision was taken in relation to other solution, namely the record using additional programs, operating outside the basic financial and accounting program, through which all business operations related to the management are recorded. The disadvantage in this case is the need to record when using the two different computer programs. This solution is conducive to generating errors, primarily consisting in bypassing the logistics costs registration and focusing solely on registration for tax purposes. The third way, which appears to be optimal due to the smallest amount of work necessary for its application, is based on recording of logistics costs by using typical financial and accounting programs tailored in terms of the additional information requirements.

Thus, the full record of the logistics costs is associated with the registration of economic operations involving this category of costs in the appropriate accounts. The record can be kept on nominal and off-balance accounts. However, largely the registry of costs is kept on the nominal accounts which are subject to appropriate modification. This change consists in the introduction to the nominal accounts of the subsequent analytical accounts in order to refine the information and bring out of the entries in the accounts this part of the cost which is really related to the logistics activity.

3. PROPOSAL OF THE UTILITARIAN MODEL OF THE LOGISTICS COSTS RECORD

Due to the fact that most of the incurred logistics costs involve the operating expenses, the design of the proposed model of the logistics costs registry starts with a basic recognition of the operating expenses by type. **Table 1** shows the recognition of the operating expenses in the accounts under group 4.

Table 1 Numbering of the accounts of costs by type

Account number	Cost type
400	Depreciation
401	Usage of materials and energy
402	External services (Due to the logistics costs record by means of account No. 402 (external services), the scope and values of the logistics activities can be determined by a business entity itself (insourcing) or outsourced.)
403	Taxes and fees
404	Wages and salaries
405	Social security contributions and other payments
406	Other costs by type

Source: own elaboration

The next step is to enable the separation of the group of generic costs the costs related to the logistics or not logistics activities. It is also possible a situation where a given cost can be partially attributed to the logistics costs, while in the remaining part it is not a logistics cost. For this purpose a detailed description of entries of the subsequent costs by type by two numeric designations for analytical accounts is made. Individual accounts of the costs by type (400 to 406) should be extended by analytics (0 and 1), where the digit 0 will mean that a given cost is not a logistics cost and the number 1 will assign to this category of costs. **Table 2** shows an example of the accounts designation in accordance with the proposed analytics extension.

Table 2 Sample numbering of the accounts of costs by type broken down into logistics and non-logistics costs

Account number	Cost specification
400-X-0	Depreciation of office equipment in the management board units
400-X-1	Depreciation of the finished goods warehouse

Source: own elaboration

The new solution will reduce in a significant way one of the major shortcomings of the previously used models of the logistics costs records, namely frequently omitted, usually by mistake, logistics costs records. With the proposed solution it is necessary to distinguish the cost on the basis of their adherence to the logistics activities for each nominal operation and confirmation of the decisions taken, by giving adequate (0 or 1) analytical designation. The second advantage is the ability to exercise more effective control over the conscientiousness of employees involved in the logistics costs recording, through the easier way to extract a cost which was assigned the status 0, meaning not associated with the logistics activities, to find in this group possible costs which should have the status 1.

The next step in the model creation is the division by type of the costs which were classified as logistics costs, according to the criterion of the goods movement stages and the cost centres, according to which the following categories can be distinguished:

- *- costs of the procurement logistics* - *10*
- *- costs of the production logistics* - *20*
- *- costs of the distribution logistics* - *30*
- *- costs of the waste management and complaints logistics* - *40*

Table 3 shows examples of reference numeric designations of the logistics costs, broken down by the goods movement stages and the cost centres.

Table 3 Sample numbering of the logistics costs accounts broken down by the goods movement stages and the cost centres

Account number	Cost specification
400-X-1-10	Depreciation of a car used for the purpose of the department purchases
400-X-1-20	Depreciation of a warehouse building of the production in progress
400-X-1-30	Depreciation of a car used for the purpose of the distribution department
400-X-1-40	Depreciation of equipment used for waste disposal

Source: own elaboration

To refine the scope of information on the logistics costs within the various stages and cost centres, it is required to enter the next level of analysis, within which concrete feasible operations will be presented. **Tables 4, 5, 6**

and **7** present the breakdown classifying the logistics costs in the individual stages together with the associated activities.

Table 4 Classification of accounts the purchases logistics costs

Account number	Cost specification
40X-X-1-10-01	Transport costs
40X-X-1-10-02	Costs of inspection and acceptance of inventories
40X-X-1-10-03	Costs of orders organizing
40X-X-1-10-04	Costs of purchases planning
40X-X-1-10-05	Cost of information services managing the inventory purchases movement processes
40X-X-1-10-06	Other costs of the purchases stage

Source: own elaboration

Table 5 Classification of the production logistics costs accounts

Account number	Cost specification
400-X-1-20-01	Costs of inventory movement between the technology seats
400-X-1-20-02	Costs of collecting and maintaining materials inventories
400-X-1-20-03	Costs of information streams handling controlling the inventory movement
400-X-1-20-04	Other production stage costs

Source: own elaboration

Table 6 Classification of distribution logistics costs accounts

Account number	Cost specification
40X-X-1-30-01	Transport costs
40X-X-1-30-02	Costs of the distribution channels organization and operation
40X-X-1-30-03	Cost of collecting and maintaining inventories of finished products within the distribution channels
40X-X-1-30-04	Cost of servicing the information streams controlling physical processes of the finished products distribution
40X-X-1-30-05	Other costs of the distribution stage

Source: own elaboration

Table 7 Classification of waste disposal and complaints logistics costs accounts

Account number	Cost specification
40X-X-1-40-01	Transport costs
40X-X-1-40-02	Costs of waste collection
40X-X-1-40-03	Costs of waste disposal
40X-X-1-40-04	Costs of waste storage
40X-X-1-40-05	Other const of the waste stage
40X-X-1-40-06	Costs of maintenance and operation of the complaint department
40X-X-1-40-07	Other complaint costs

Source: own elaboration

Presented in **Tables 4, 5, 6** and **7** classifications of the accounts within the various stages of movement and cost centres, will certainly significantly contribute to detail the information about the logistics costs within the adopted criterion. However, according to the author, a complement of the logistics costs recording model within the operating costs is the latter criterion detailing the logistics costs according to division into fixed and variable costs. The criterion the costs variability, including the logistics costs, makes it possible to perform a series of analyzes. This classification is in fact the basis of management accounting, proposing a number of useful economic tools, which enable in-depth analysis of logistics costs. For this reason, within the proposed model it was decided to take into account this classification criterion. **Table 8** shows examples of the logistics costs broken down into fixed and variable costs.

Table 8 Example of the logistics costs classification, taking into account the criterion of the costs variability over time

Account number	Cost specification
40X-X-1-10-01-0	Salary costs under the employment contract, for an employee of the purchasing department involved in the supplies organization
40X-X-1-30-01-1	Costs of waste collection

Source: own elaboration

Due to the fact that the costs associated with the business management include not only the operating costs but also other operating costs and financial costs, the same situation also applies to the logistics costs. Therefore, in this model, it is proposed that the other operating costs and financial costs, among which the logistics activities costs will appear, are subject to the same schedule of analytics as the operating costs. The account of extraordinary losses, according to the author, does not require analysis allowing for the identification of logistics costs, because records of transactions on this account concern extraordinary and random events, not related to normal business activities, including the logistics activities of the company. According to the author, a common mistake is including the total logistics costs of the extraordinary losses, because in this way the actual level of the logistics activities costs is distorted.

For completeness of data on the logistic costs incurred for the given period, it is proposed that the cost of lost revenue which arose as a result of an inefficient logistics system, are recorded in the off-balance accounts.

CONCLUSION

The presented multi-sectional model of the logistics costs recording should largely meet the information requirements of the users of this information.

Of course, assessing the proposed model it cannot be said that it gives the possibility to obtain full information about the logistics costs, since it would require a much more complex model of records, which, however, instead of the additional advantage, would cause many organizational difficulties. The proposed accounting model of the logistics costs should not be regarded as a cure for all ills of the business management, but only as a useful tool, which should support managers in making rational decisions from the point of view of the business economics

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