

## ORGANIZATION OF EVIDENCE SYSTEMS OF LOGISTICS COSTS

Grzegorz Zimon\*

\* Department of Finance , Banking and Accounting, Rzeszów University of Technology,  
Rzeszów 35-505, Poland, Email: gzimon@prz.edu.pl

---

**Abstract** The article presents the essence and role of costs. There characteristic of logistics costs was done. There were presented costs accounting systems in companies allowed by the Accounting Act. There were also presented simplified cost accounting methods both according to the account type and the places where the costs are incurred. There were discussed the full records of costs with the use of by type accounts and functional accounts. The division and classification of logistics costs due to the nature of the business were shown. With the help of analytical accounts, the accounts for logistics costs were set up. Then the logistics cost accounting systems for commercial, service and manufacturing companies were featured with the use of analytical accounts of logistics. There were also presented the benefits for the company when it applies the analytical accounts of logistics costs.

**Paper type:** Literature review

**Published online:** 19 October 2015  
Vol. 5, No. 5, pp. 459-470

ISSN 2083-4942 (Print)

ISSN 2083-4950 (Online)

© 2015 Poznan University of Technology. All rights reserved.

**Keywords:** *costs, system, logistics*

---

## 1. INTRODUCTION

The competition, which occurs in every industry and in every area of management forces companies to seek solutions that will improve management efficiency, increase sales, improve the situation concerning liquidity, optimize the level of costs. The area associated with managing costs is basically the first which deals with companies control when they are interested in improving their financial performance. This is a relatively easy management area, as cost cuts in individual departments immediately improve the financial performance of the department. But often it is only a short-lived effect. It is important, however, to draw up corresponding calculations determining how it will affect cost reduction for the department, on sales revenue? What will be the impact on quality? If, however, the reduction of costs will also cause a drop in sales, then such a process of costs optimization does not make sense.

The area, which gives a lot of opportunities leading to cost optimization, is the organization of logistics in the company. Modern logistics management is an area where there are numerous opportunities for reducing costs. Still, in many companies managers do not bring any tools that could optimize logistics costs. Logistics can be defined in many ways. M. Christopher in his definition defines logistics as "... the process of managing orders, flow and storage of goods (and information) in the organization so as to maximize profits (Christopher, 2011, p.2). So it is a process associated with managing of the flow of information, goods and their storage. It should lead to setting up such a level of costs in the company which will guarantee the highest sales revenue. But in order to determine the optimal level of costs one needs to have detailed information about the kinds of costs and the place they are incurred. An analysis of financial reports gives only general information about cost, there is the information of e.g. costs related to logistics. For this purpose, it is worth making appropriate cost accounting systems that will provide such information. Knowledge about them will be favourably influence on the shaping of the level of logistics costs and facilitate their systematic monitoring and analysis.

## 2. COSTS IN A COMPANY

Any economic change in a company has an impact on costs or revenues. Costs are an area where the attention of managers is focused for many reasons (Karamańska, 2007, p.11):

- From the point of view of company financing the investment in product manufacturing of service providing define the scale of the need for financial resources to enable business activities,
- From the point of view of profitability costs determine the financial result,
- From the point of view of the competitiveness of products, and services of companies, costs are relevant for pricing,

- From the perspective of company tax Policy costs are an instrument to influence the size of income tax

According to the Accounting Act the cost is a probable decrease during the reporting period of economic benefits of a reliably determined value in the form of a reduction in value of assets or increase of liabilities and reserves that will lead to a decrease in equity or an increase in a different way than the withdrawal of funds by shareholders or owners. (Act of 29 September 1994. Accounting (Journal of Law of 2013, item 330, Art. 3 section 1 paragraph 31).

In turn, financial accounting claims that costs should be understood as intentional reduction in assets or an increase in liabilities necessary to make and sell products or provision of services in the ordinary course of organization.

Costs are incurred in order to obtain revenue. Their management is, therefore, dependent on the strategy that the entity applies. Are companies adjusted to the aggressive actions and conduct offensive policy of selling services or are they focused on activities that secure their functioning and use conservative strategies. This choice will have an impact on costs management. Companies that manage the company aggressively will bear the high costs associated with penalties for late payment of liabilities, the high costs of lending multiple recipients. When analyzing costs in manufacturing and service companies the definitions of manufacturing costs should be provided.

The manufacturing cost of the asset includes direct costs of production of various finished products, work in progress and semi-finished products and the justified part of indirect costs of production attributable to the period of their manufacturing.

For the costs of production, after which the assets are valued do not include general administrative costs, i.e. the cost of a company operation as a whole and its management, cost of sales of finished products, merchandise and other tangible assets as well as other operating expenses and financial expenses (Act September 29, 1994. Accounting (Journal of Law of 2013, item 330), Art. 28 paragraph 3).

### 3. LOGISTICS COSTS

Cost management in a company should improve financial performance by increasing resource efficiency and business processes (Zysnarska-Dworczak, 2012, p. 27). The main objective of cost management is to reduce costs. According to Zysnarska cost management is such an impact on costs, which aims to (Zysnarska-Dworczak, 2012, p. 29):

- Achieve the optimum level of costs,
- Control costs incurred,
- Get to know mechanisms and causes of costs,
- Impact on the development of cost structure and dynamics of changes in their level,

- Identify their capabilities and areas of cost reduction,
- Shape the cost policy-oriented product costs throughout the product life cycle,
- Estimate the impact of strategic decisions on the future level of costs.

It should be noted, however that cost management should affect on the optimization the level of sales. It may happen that the company must incur additional costs in certain areas to increase their level or change the structure but these changes will result in the desired increase in sales revenue. In such case the cost increase is desired. The area included in the management, in which executives could gain a lot by introducing appropriate accounting and costs management systems is logistics.

Logistics costs are a key quantitative measure of efficiency and modernity of logistics processes (Twaróg, 2003). Therefore, a detailed records and systematic control are very important. Costs of logistics are also referred to as logistic costs. They can be defined as "... expressed in cash consumption of human labor, resources and objects of labor, financial expenses and other negative effects of extraordinary events that are caused by the flow of material goods (raw materials, materials, products, goods) in the enterprise and between enterprises, as well as maintaining inventories "(Skowronek & Sarjusz-Wolski, 2003, p.263).

There are many criteria for allocating the costs of logistics. The first one, which is very important from the point of view of pricing of the product or service that a company does, is this division into variable and fixed costs.

Variable costs are those costs that vary with the change of production volume or the services provided. They include all the cost components that vary in proportion to the size of the logistics activities, e.g. fuel consumption (Skowronek & Sarjusz-Wolski, 2003, p.263).

Fixed costs are the group of costs which are not affected by the volume of production or services. Fixed logistics costs are those costs components which in some limits of the logistics operations are unaffected by changes e.g. the cost of storage (Skowronek & Sarjusz-Wolski, 2003, p.263).

One of the major divisions of logistics costs is a division according to the basic components of logistics processes into three groups: (1) costs of physical flow, (2) inventory costs, (3) costs of information flows.

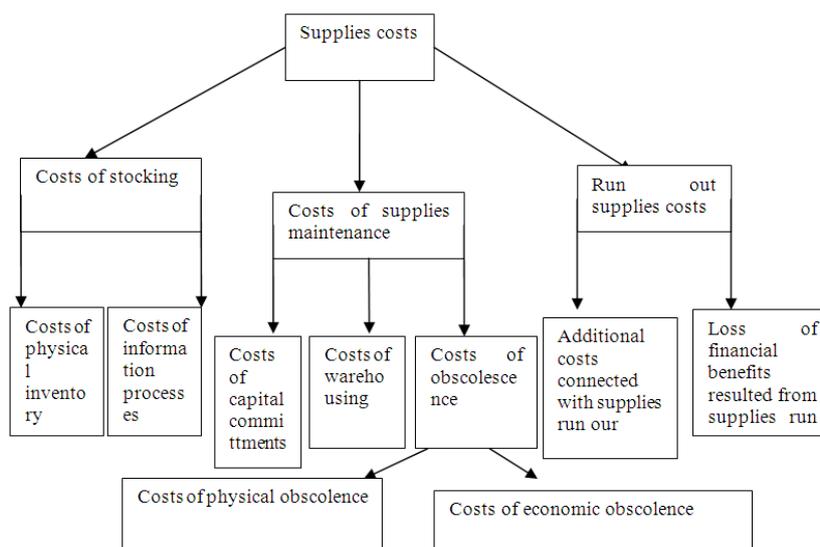
The costs of the physical flow of supplies are one of the major cost categories. They are shaped mainly by the following components (Twaróg, 2003, p.62):

- costs of assets depreciation,
- labor costs,
- costs of materials, fuels and energy,
- other costs such flow. Property tax, tax on means of transport.

The costs of the material flow relate all three phases of movement, i.e. the purchase, production and distribution. They mainly include external transport costs (foreign services) and internal one. An important feature of these costs from the point of view of records is the ease of assigning them to individual departments. For example, external supply costs are the costs associated with the purchasing department, the

cost of distribution with the sales department or department of transport external costs and handling are the department costs (Skowronek & Sarjusz-Wolski, 2003, p.268).

The costs of inventory management are a key element of logistics costs. The costs of inventories are determined as inventory management costs, resulting from activities which are associated with inventory, so their creation, maintenance and exhaustion (Karmańska, 2007, p.77). A detailed division of the cost of inventory management is shown in Fig. 1.



**Fig. 1** The division of inventory management costs; own research based (Skowronek & Sarjusz-Wolski, 2003, p.316)

The first group are costs associated with the creation of inventories. It covers the costs of creating physical inventory and costs of information processes related to the purchase of materials, goods, products. The information inventory costs include: costs of vendor selection, order preparation costs, costs of negotiation, order preparation costs (Twaróg, 2003, p.64).

The second group are costs of maintaining stocks. In this group, managers can earn the most by introducing appropriate inventory management methods leading to their optimization. The amount of these costs depends on the sales forecasts, which translates into inventory levels, which in turn affects the costs. The most expensive element in this group are different storage costs. The last group of inventory management costs are costs until the stock is out. They express the loss of benefit that the company would incur as a result of a lack of inventory at a time when the customer needs them. Otherwise, these are the costs of lost benefits that

the company could achieve if they possessed the appropriate inventory in the right place and the right time (Karamańska, 2011, p.13).

The costs of information processes can be further divided according to two criteria. According to the place of origin and by type. This division is very large to facilitate the creation of capital account plan, taking into account logistics costs. In the case of division of the where they arise it is worth to divide them into the following groups (Skowronek & Sarjusz-Wolski, 2003, p.285):

- the costs of purchasing information processes
- the cost of production information processes
- the costs of distributing information processes

If one performs a division of costs due to the nature, the following groups can be distinguished: (Skowronek & Sarjusz-Wolski, 2003, p.285):

- depreciation costs for hardware and software
- costs of materials and energy used in the information processes
- labor costs with surcharges
- costs of external services,
- other costs, e.g. lease payments for equipment rental, lease payments

#### **4. COSTS ACCOUNTING SYSTEMS**

Operating expenses include costs incurred for the production and sales of products, services, purchases and sales of materials, goods and business unit management. They can be grouped into two different sections (Nowak, 2003, p.63)

- In the prime arrangement (the account group No. 4)
- According to the types of activities (account of group No. 5)

These are simplified cost accounting systems. The way which offers the most information there is the third method known as full costs accounting of the accounts records of the group No. 4 and 5 combined.

Businesses can run cost accounting by using one of three approaches.

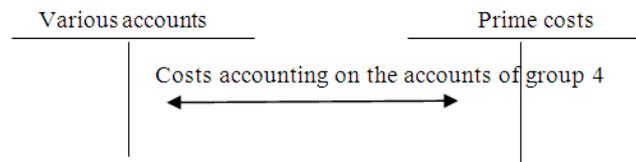
##### **4.1. Costs accounting only in a prime system, on accounts under group 4**

The system includes the prime that is, which cannot be divided into more elementary components.

It can be used by all companies, because regardless of the type of business, in each company the same types of costs can be distinguished. The group of accounts No. 4, i.e. prime costs include:

- Depreciation where the followings are booked: amortization charges relating fixed and intangible assets

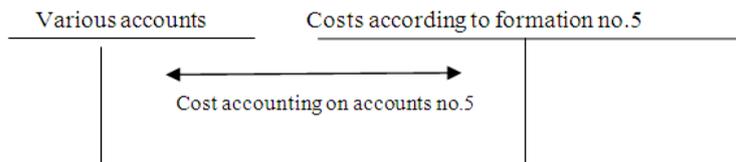
- Consumption of materials and energy, it groups the costs of waste basic and auxiliary materials, fuels, packaging, stationeries, magazines, etc.,
- External services, the cost of works and services provided by other entities, such as transport services, rent, lease, banking services, information technology,
- Taxes and fees, stamp duties and administration fees, notary, legal, tax on means of transport, property tax, non-deductible value-added tax,
- Salaries, payroll costs in cash or in-kind benefits paid to employees of the company under the employment contract, contract of mandate, contract work and others,
- Insurance and other benefits, the costs of social security contributions in part borne by the employer, the cost of compulsory contributions to the Labor Fund, Guaranteed Employee Benefits Fund, Bridging Pension Fund, and the costs of training for employees, write-offs for capital fund social benefits, costs related behavior health and safety,
- Other costs, other costs which cannot be classified as the groups described above, e.g. employees' travel expenses, representation expenses, advertising costs, lump sums paid to employees for the use of private cars for business purposes, the cost of contributions to the organization to whose membership is mandatory.



**Fig. 2** Scheme of costs accounting on the accounts of group 4; own research

It is necessary to keep in mind that, prime costs are recognized both as expenses of the current period and for future reporting periods. In the profit and loss account drawn up in a comparative system, cost adjustments in future periods are accomplished by the change in a product.

Costs accounting only according to the types of activity, on the accounts of group no. 5.



**Fig. 3** Scheme of cost accounting on accounts of group 5; own research

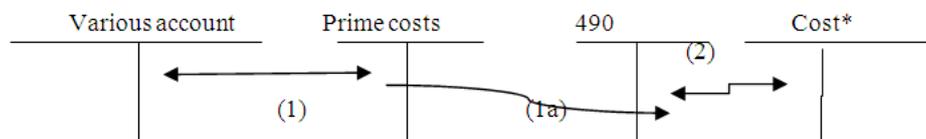
A calculation set of costs divides the costs according to their formation. This group of costs includes the following accounts:

- Costs of core business are the costs associated with the core business of a unit e.g. the cost of used materials, raw materials for production, direct packaging, manual workers' wages. Within the core activity there are: manufacturing, service and trade.
- Departmental costs, i.e. costs indirectly of production arising in manufacturing departments, related to maintenance of machinery and equipment, inter-division transport, administration, depreciation of costs.
- Sales expenses, costs associated with operating and acquiring new customers, forwarding of manufactured products, goods and services, such as: shipping, packaging, marketing research costs, compensation of employees directly employed in the sales department.
- Auxiliary costs cover units within the department which provide services for other businesses. An example of such an activity is internal servicing of equipment, repair and overhaul for production and administration departments.
- Management expenses include administrative and economic costs, i.e.: wages of executive officers, administrative premises costs, general costs of production, storage maintenance. costs of materials and finished products, the cost of maintaining the office.

In the calculation version of profit and loss account the problem of matching costs does not appear. The construction of expenses in the calculation version allows to include in an expense of a given period only that part of the cost, which applies to sales in the reporting period of products, goods and materials.

#### 4.2. Costs accounting by nature and by type of activity

This is the full records of costs. The companies that run cost accounting in such a way are fully informed about the costs. They have information on the type of costs and locations/departments in which they are incurred.



\*cost according to the place of their incurring

1 - costs recording on accounts by type

1a- re-booking of expenses by type on the account 490 - settlement of prime costs

2 - re-booking of costs according to the place of incurring

Fig. 4 Scheme of cost accounting on accounts in groups 4 and 5 together; own research

## 5. LOGISTICS COSTS ACCOUNTING

Enterprises to provide information on logistic costs incurred should introduce auxiliary account, or analytical accounts. The rules of the analytical accounts require only a single clause making them. It is a copy of the record carried a synthetic account.

By creating an analytical accounts for the cost of logistics should pay attention to what type of activity leads the individual. Is it a trading company or production or service? It is of great importance for the selection of a cost accounting system. Trading Companies generally use the account team No. 4. On the other hand, manufacturing companies and service providers use the account team No. 5. For all companies, the best solution is to use full cost accounting on accounts under group 4 and 5 combined. In small units where there is no clear division between the departments, organizational units you can cancel your account team No. 5. In large commercial units lack of details of accounts team No. 5 would be a big mistake. No information about the places cost would be significantly impeded in the process control costs.

### 5.1. Logistics costs accounting in commercial companies

To provide information on logistics costs incurred companies should introduce auxiliary account, or analytical accounts. The rules of the analytical accounts require only a single clause on them. It is a copy of the record carried out on a synthetic account.

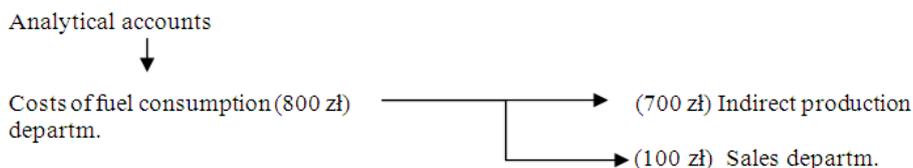
**Table 1** Typical accounts plan of group no. 4 including logistics costs; own research

1. Synthetic accounts	Analytical and logistics accounts
2. Depreciation	Means of transport depreciation Other assets depreciation connected with logistics
3. Material and energy consumption	Logistics materials consumption Fuel consumption Energy consumption for logistics needs
4. External services	Transport Loading and unloading Leasing Telecommunication services Renovation services
5. Salaries	Salaries for drivers Salaries for other Logistics employees
6. Social insurance and other benefits	Social insurance and other benefits for drivers, e.g. 1. Socia Insurance fees, 2. trainings and spendings on healthcare 3. expenditure for Health and Safety
7. Fees and taxes	Means of transport taxes Property tax concerning logistsics Environmental protection fees Other fees, e.g. stamp duty, court fee
8. Other prime costs	Insurance Business trips of Logistics employees Advertising Other costs

By creating an analytical accounts for the cost of logistics one should pay attention to the type of activity the company runs. Is it a trading or production or service company? It is of great importance for the selection of a cost accounting system. Trading companies generally use the account group No. 4. On the other hand, manufacturing companies and service providers use the account group No. 5. For all companies, the best solution is to use full cost accounting on accounts under group 4 and 5 combined. In small companies where there is no clear division into the departments, they can give up from the account group No. 5. In large commercial companies the of accounts of the group No. 5 would be a big mistake. No information about the places where the costs are incurred would be a significant barrier in the control costs process.

Companies in most cases can only use the accounts group no. 4 while cost accounting. It is a simplified form of cost accounting. Table 1 below shows the characteristic accounts of group 4 for which the following examples of solutions that can be used for conducting the logistics costs were given.

A very good solution for trade companies would be to apply additionally an account group No. 5 such as administrative expenses, sales expenses and trading costs for logistics costs directly related to the activity carried out. Such an extended costs accounting would inform of the nature and places of incurring costs An example of the accounting of the fuel costs is shown in the figure 5. Materials and energy consumption ( 800 zł ) – Synthetic Account.



**Fig. 5** Scheme of cost accounting on accounts under group 4 and 5 together; own research

## 5.2. Cost accounting of logistics costs in manufacturing or service companies

In the case of companies offering their products or services cost accounting on accounts under group 5 is required – according to the places where the costs incur. In such companies account shown in Table 2 are used.

In order to make a more detailed logistic cost accounting the Purchasing cost account can be applied. It would encompass the operating costs of purchasing department, warehousing of materials, transportation, loading, unloading, handling (Biernacki & Kowalak, 2010, p. 60).

In companies that have secondary production department dealing with transport one should be aware that costs that it generates at the end of the reporting period should be re-booked for the basic departments that it provided transport services. These types

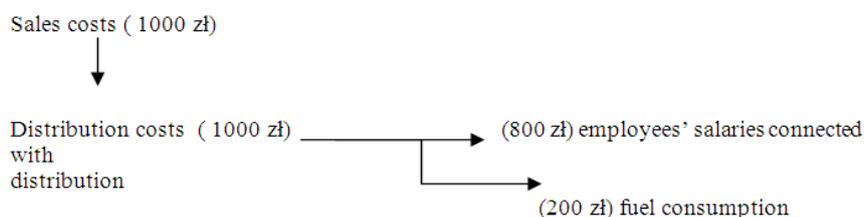
of costs belong to internal costs. In the analysis of logistics costs it is necessary to extract the costs incurred for the results that are identified as (Krawczyk, 2011, p. 233):

- External ones, i.e. those that are incurred within individual actions that can be directly attributed to the result,
- Internal, i.e. those which are recorded in the general accounts.

**Table 2** Typical chart of accounts group No. 5, taking into account logistics costs; own research

Synthetic accounts	Analytical-logistics account
<b>1. Departmental costs</b>	Inventory costs
	Transport costs
<b>2. Sales costs</b>	Distribution costs
<b>3. Costs of management</b>	Costs of order
<b>4. Costs of back up production</b>	Costs of internal transport

This division of costs could constitute a preliminary analysis of logistics costs.



**Fig. 6** Scheme of logistics cost accounting in the accounts of groups 4 and 5 together; own research

When one analyzes the costs on accounts in group 5 it should be remembered the account of the primary production cost is the account where the costs related to logistics processes do not get, as only those expenses that are related to the production costs or a service are paid in.

To explain the incurred logistics costs it is necessary to introduce the account group number 4. The details are shown in Figure 6.

## 6. CONCLUSION

Summing up the use of solutions that would enable to apply cost accounts by type and accounts indicating the locations of making costs, would allow compa-

nies to control costs efficiently. The precondition for this is, however, further registry of logistics costs on analytical accounts for individual groups 4 and 5. The use of these accounts in the place of making costs and for the costs types provides a lot of information. On this basis managers receive information about the types of costs and the places where they are incurred. This type of information should allow in a simple way to analyze the size of additional logistics costs incurred. An additional extension of information on the logistics costs is also to create a division into internal and external costs at the end of the respective reporting periods. Such information would show size, type and in which areas the company should introduce a solution that would lead to profitability increase.

## REFERENCES

- Biernacki M. & Kowalak R., (2010), *Rachunek kosztów logistyki w zarządzaniu przedsiębiorstwem*, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław.
- Christopher M., 2011, *Logistic & supply chain management*, Fourth Edition, FT Prentice Hall
- Karmańska A. (ed.), (2007), *Zarządzanie kosztami jakości, logistyki, innowacji, ochrony środowiska a rachunkowość finansów*, Difin, Warszawa.
- Krawczyk S. (ed.), (2011), *Logistyka Teoria i Praktyka v.1*, Difin, Warszawa.
- The Act of 29 September 1994 on Accounting (Journal of Law 2013, item 330).
- Skowronek Cz. & Sarjusz-Wolski Z., (2003), *Logistyka w przedsiębiorstwie*, PWE, Warszawa.
- Twaróg J, (2003), *Koszty logistyki przedsiębiorstw*, Biblioteka Logistyka, Poznań.
- Zysnarska –Dworczak B., (2012), *Jak zarządzać kosztami w przedsiębiorstwie*, Difin, Warszawa.

## BIOGRAPHICAL NOTES

**Grzegorz Zimon**, PhD, Eng. in economics, a title given by the Council of the Faculty of Management at Warsaw University. Assistant Professor at Rzeszów University of Technology, at the Faculty of Management in the Department of Finance, Banking and Accounting. Research interests focus on issues related to management accounting, capital management and cost management in logistics. He teaches the following courses: Cost Management, Cost Management in Transport, Costs Account of Logistic Activities, Accounting, Managerial Accounting.