

Calculation of Logistics Costs in Context of Logistics Controlling

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Abstract

Controlling can be understood as a control method for increasing the efficiency of the system through continuous and systematic comparison of the facts and the planned state, identifying the relative offsets, evaluation and search for causes, proposing measures to remedy the identified deviations or update plans. Logistics controlling is closely related to logistics costs, which are accompanied by logistics activities. Logistics costs are an important indicator for measuring the effectiveness of the company. The article deals with cross-section of world literature calculation of logistics costs in the context of logistics controlling. Text is focused not only on the calculation of logistics costs but also on logistics plans and budgets, internal accounting system of indicators of logistics and reporting. The article is based on a search of English, Czech, Polish and Slovak monographs on logistics and costing, articles from the Web of Science database and Scopus database related to calculation of logistics costs in the context of logistics controlling and other sources.

KEY WORDS: *cost calculation, logistics costs, logistics controlling, reporting*

1. Introduction

Logistics is seen as a supply chain functioning to meet customer needs [1, 2]. Logistics activities require adequate economic and environmental effectiveness of sustainability requirements [3, 4]. Controlling over the last few decades is very closely related to logistics and, above all, to logistics costs [5]. The historical background of controlling within the business management economy was first mentioned 80 years ago in the USA [6]. Through the efficient management process, logistics costs can be effectively reduced and, on the contrary, efficiency and better allocation of resources can be increased. The purpose of logistics controlling is to reduce costs and increase the competitiveness of businesses [7].

2. Literature Review and Methodology

Reducing costs and increasing reliability within the supply chain are among the most important business goals [7]. Logistics costs are divided into many industries and this causes difficulties in logistics cost accounting and management [8, 9, 10]. Many companies around the world misunderstood the importance of logistics costs [11, 12].

Logistics costs represent a significant component of the total cost of the company, but also of the manufacturing enterprise [13, 14, 15]. At present time a lot of attention is paid to these costs in Czech companies [16]. The survey conducted in Germany showed a high logistics cost for both types of businesses - 21.4% of total costs for manufacturing companies and 11.3% of total costs for business organizations. As this survey has shown, it must pay adequate attention to these costs [17, 18]. Logistics managers are usually interested in providing high quality services to their customers at minimum cost [19]. One of the key issues of logistics controlling is the measurement and assessment of the efficiency of logistics processes [20]. The high complexity of logistics systems and the rising cost of logistics performance add to the need for target planning, management, control and coordination of sub-sections of logistics [21]. These tasks then fulfil the so-called logistics controlling, which is to perform and ensure [22, 23, 24]:

- Permanent control of economy by comparing plan to reality in cost and performance.
- Making, densifying and providing information for decision making.

The construction of a complex system of costing and a system of logistic indicators as well as outputs can achieve a highly current way of operating logistic phenomena and processes. In addition, an explicit statement of the causal relationship (causes and consequences between cost and performance) is achieved. This implies a precise definition of performance reference variables and their basis for input/output relationships. The specific focus of controlling is decisively influenced by the field of activity, the policy of the company and the derived factors of success. Business-policy decisions include intentions in relation to capacities, services, fixed costs and budgets to be optimized by logistics controlling. The tasks of logistics controllers are related to the formation of logistics information management, co-operation in logistics planning and logistics control [25, 26, 27]. Providing speed and accuracy of information in logistics and in supply chain, is one of the main tasks of logistics controlling [28]. Logistics controlling typically uses tools such as logistics plan and budget, logistics cost calculations, in-house accounting and reporting [22, 23, 29].

The article deals with cross-section of world literature calculation of logistics costs in the context of logistics controlling. Text is focused not only on the calculation of logistics costs but also on logistics plans and budgets, internal accounting system of indicators of logistics and reporting. The article is based on a search of English, Czech, Polish and Slovak monographs on logistics and costing, articles from the Web of Science database and Scopus database related to calculation of logistics costs in the context of logistics controlling and other sources.

The logistics plan defines logistics goals at the level of strategic and tactical management; the operational procedures leading to the fulfillment of the established logistic plan are then processed into budgets. The objective of the budget is to determine the means to achieve the objectives and the economic outcomes to be achieved. Budgeting thus becomes the primary tool for promoting responsibility for the value level of the company's production value. With regard to logistics, the budget fulfills the function of the annual core budget of logistics. In the creation of budgets, input data are used for transport, individual warehouses, material intake, packing, order management, etc. The stock logistics, customs and tax rates can be determined in the logistics budget [30, 31, 32].

In logistics, budgets are generally narrowly focused on individual areas, such as purchasing and inventory budgets, consumption budgets for individual materials, fuel, etc. [30, 31, 33].

In literature and practice, these methods of budgeting are generally available: planned methods, standardized methods, one-off methods and budget estimates [30, 31, 34].

According to Sixta [35], businesses generally underestimate the importance of costing logistics costs. Logistics costs are often included in production, supply or sales overhead, in many cases only in overhead costs. In many cases, neither the owners of the companies nor the managers at all levels of control are aware of them [16].

The purpose of calculating logistics cost calculations can be seen in:

- Pricing for the logistics area.
- Get adequate documentation for product calculations.
- Obtain documentation for processing and checking the financial logistics plan.
- Obtain evidence for logistics performance and benchmarking.

Table 1

Cost levels within the calculation [author based on 16]	
Simple Calculation	Structured Calculation
Direct Material	Direct Material
Direct Wages	Direct Wages
Indirect (Overhead) Costs	Manufacturing Overhead
	Construction Preparation
	Sales and Distribution Costs
	Leadership Costs
	Marketing
	Research

Table 1 shows two approaches to creating calculations. Simple calculation consists of three components: direct material, direct wages and overheads, while structured calculations consist of direct material, direct wages and from manufacturing overhead, construction preparation, sales and distribution costs, leadership costs, costs from marketing and research [16, 36].

From the point of view of the cost structure, at the present time, attention is paid mainly to the minimization of overhead costs, whose development has recently shown an increasing tendency (see Figure 1) [37].

According to Popesko [38, 39], the calculation, especially in terms of costing, is nowadays regarded as the oldest and today also the most frequently used value management tool. One of the key needs of managers is to identify costs that are associated with the performance of business activities. Therefore, it can be stated that, given the importance of logistics costs in enterprises, the ability to assess the performance of logistics activities is one of the basic prerequisites for successful business [40].

The issue of costing calculations lies primarily in the classification of direct and indirect costs. Above all, the existence of overhead (i.e. indirect) costs and related problems in their allocation gave rise to different calculation methods and allocation principles [39, 40, 41].

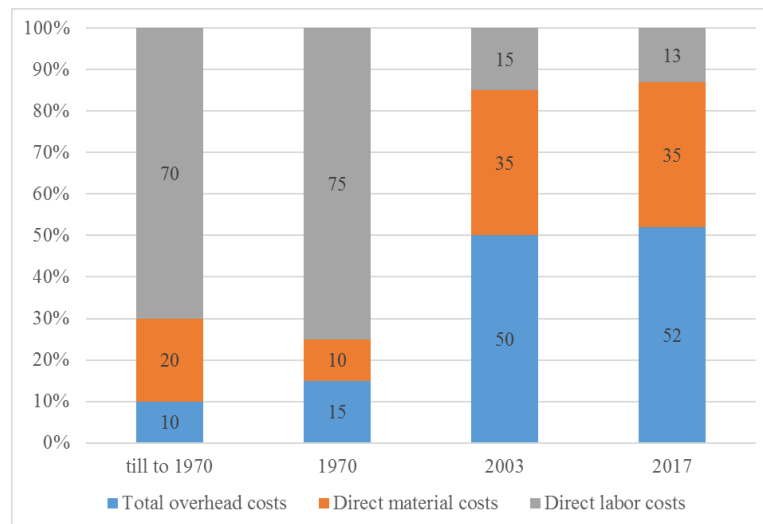


Fig. 1 Development of total costs of the firm [author based on 37]

It should be noted that a properly chosen costing calculation not only refers to the amount of each cost-per-performance group, but also gives an overview of which groups the cost of the performance is structured [41, 42].

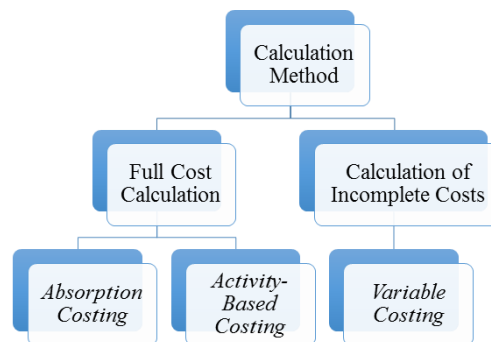


Fig. 2 Basic types of costing calculations [author based on 38, 39, 43, 44]

Figure 2 illustrates two possible approaches to calculation methods, namely the calculation of full costs and the calculation of incomplete costs. The subject of logistics calculations is the cost of all logistics operations that relate to [38, 39, 43, 44]:

- The unit of measurement, which represents the specific logistic power, the unit of measurement (kg, t, piece, pack, etc.) and the type of performance (warehousing, packaging, transport) to which the costs are related.
- The calculated quantity, expressing a certain number of calculating units related to time (pcs per day, per week, etc.) to the distance or volume.
- The calculation system consists of individual types of costing and calculation methods (division, surcharge, variable and fixed costs).

In order for internal accounting to be an effective tool for logistics management and measurement, it is necessary to modify both synthetic and analytical records so as to allow logistics costs to be monitored, for example, by the types of logistics (synthetic accounts) and corresponding logistics (analytical accounts) [34, 45].

However, in the framework of logistics controlling, the meaning of intercompany accounting is understood in the narrower sense. Through the information obtained from the accounting, it is determined whether the logistics costs were spent at the right time, in the right place and in the required amount, thus controlling answers to the question of why the company achieved profit or loss in the given period [45, 46, 47].

According to [48, 49, 50] there are three types of performance measures - Key Result Indicators (KRI), Performance Indicators (PI) and Key Performance Indicators (KPI).

KRI - Key Result Indicators tell the user how they acted in their activities. These include, for example, customer satisfaction indicators, net pre-tax profit, and employee satisfaction, return on capital injected. According to [48, 49, 50], these are typical information indicators for the board of directors, which is not involved in

everyday management. These indicators typically cover a longer period of time than key performance indicators, are reviewed in monthly or quarterly cycles, but not daily or weekly.

PI - Performance Indicators tell the user what to do. KRI and KPI have a number of performance indicators that complement the KPIs and are used in the organization's scorecard. Examples of these indicators are: profitability of major 10% of customers, net profit of non-key production lines, percentage increase in sales of the major 10% of customers, number of employees participating in the improvement program.

KPI - Key Performance Indicators tell you what to do to significantly improve performance. KPIs are a set of benchmarks geared to the organization's performance considerations, which are the most critical for today's and future business success.

Effective use of these indicators in individual business activities such as purchasing, material flow and transportation, warehousing, distribution, production planning and management is conditional on taking into account several basic conditions [48, 49, 50]. These are, above all, the usability of the indicators in a particular business, the relationship between utility and the costs generated by the indicator and the ability of the indicators to display the given area. In addition, the indicators should specify the exact purpose of their use in the enterprise and also the responsible persons in the organization who have clear competencies [22, 41, 48, 49, 50].

The task of the reports is to provide comprehensive information to the users (managers), in this case logistics costs and performance, logistic indicators monitored, to the required extent, structure and time. Reports are typically standardized, but the exception is not an exception, both in terms of terms, structure and content [51, 52].

A separate topic related to this issue is also the level of the company information system used, i.e. the data platform, from which the necessary information for the reporting is obtained within the controlling. Today, there is no exception that so-called analytical management modules are available in enterprises, where the most commonly used reports are already preset. These applications are unnecessarily robust or inaccessible for many small businesses. However, this does not mean that business reporting is compromised [33, 51, 53, 54].

One of the best forms of the report are nowadays electronic versions of outputs that contain structured data and can be easily processed and evaluated as needed in the case of a small business for example using a pivot table in MS Excel. Report users are not statically bound and can work with data as needed [53, 55].

3. Research Results and Discussion

The controlling concept is based on the constant comparison of actual logistics costs with planned enterprise costs, the detection of deviations and the causes of these deviations, the monitoring of the effect of deviations on the achievement of a predetermined target that is measurable by economic indicators. Controlling is based on defining the goals the company wants to achieve, i.e. reduce logistics costs. Figure 3 shows the entire controlling approach.

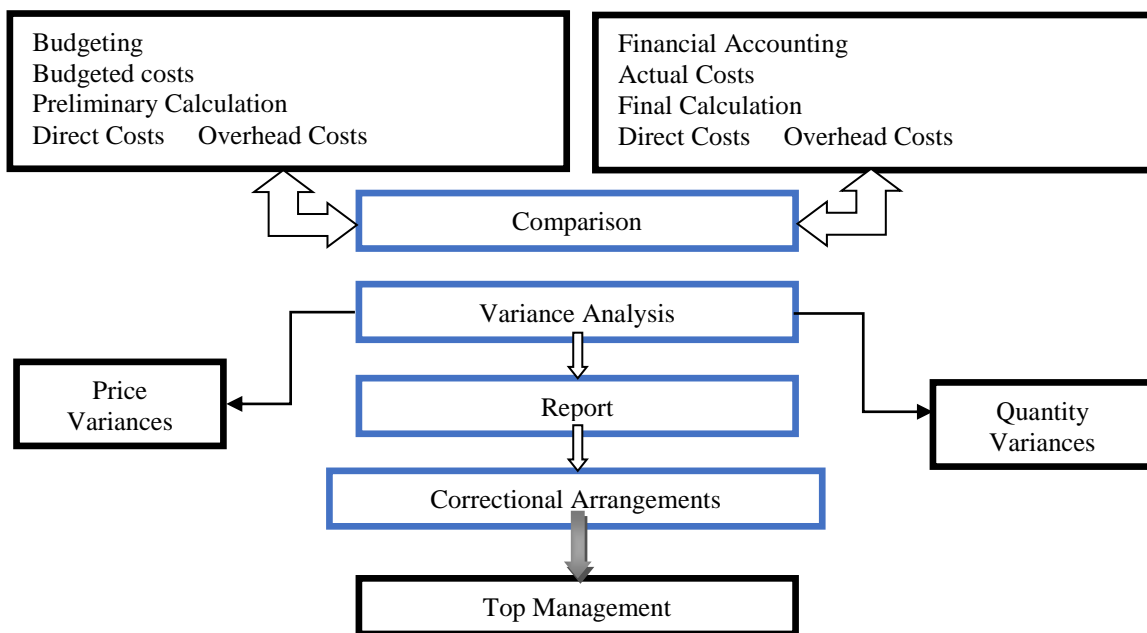


Fig. 3 Controlling approach [author]

The benefit to an enterprise that utilizes a controlling approach in managing logistics costs is to reduce the overheads, which can ultimately affect the price of products, thereby affecting demand and meeting customer requirements, increasing revenue from sales of products, lowering total costs, increasing profits. In addition to financial benefits, it is also necessary to perceive another aspect of this approach, namely to improve the information transmission system at individual management levels, to provide feedback in synergy with the customer, to eliminate inefficient activities in the chain of logistics processes.

4. Conclusions

The application of a controlling management concept presupposes having a highly qualified company management whose aim is to continuously increase the value of the business. The speed of realization of the individual phases of implementation of logistics controlling depends on the revelation, consistency and determination of the top management. In order to ensure the synchronization of the individual logistics processes, the availability of the information needed for the individual management and information levels, the staff assessment, the feedback from the customer and the flexibility in the deviations from the financial plan, it is necessary in today's conditions of high competition that the information flows are of high quality, flowed quickly and in optimal amounts. From this point of view, the place of controlling in the modern society is irreplaceable. Controlling can successfully manage critical business processes and enable the enterprise as a whole to build a concept of continuous improvement in the direction of reducing logistics costs.

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