ACCOUNTING FOR LOGISTICS SERVICES AND COST CALCULATION

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ANNOTATION. This article examines the role of accounting in logistics services and the importance of accurate cost calculation in modern logistics operations. Transportation, warehousing, inventory management, and distribution processes are all part of logistics, a crucial aspect of business operations where efficient cost control is necessary to boost productivity and competitiveness. The paper examines several costing strategies employed by logistics service providers, including both conventional and contemporary approaches like activity-based costing and multi-level cost allocation models. The study emphasizes the significance of precisely allocating both direct and indirect costs and examines worldwide literature on logistics cost management. The results demonstrate that sophisticated costing systems enhance managerial decision-making, increase transparency, and assist in determining the actual cost of logistical services.

KEY WORDS: Logistics services, cost accounting, cost allocation, Activity-Based Costing (ABC), Third Party Logistics (3PL), financial management

INTRODUCTION.

Logistics plays a key role in modern business by managing the movement, storage, and distribution of goods and services. It covers tasks like order processing, inventory control, transportation, and warehousing, all of which have a direct impact on a business's productivity and competitiveness. Accurate cost computation becomes crucial for managing costs and making wise managerial choices in such a complicated system. The starting data utilized in a logistics company's cost computation is displayed in this table. Each row contains a primary cost and a performance indicator for a cost object, such as a department, activity, or resource. The primary cost column details the direct monetary expenses attributed to each cost object. The performance columns outline the work volume of each unit and its measurement metric, such as hours, transactions, individuals, or kilometers traveled by vehicles. These performance metrics are significant as they facilitate the subsequent allocation of indirect costs among cost objects. In essence, the table furnishes the fundamental data required for a more precise calculation of total costs by establishing a connection between

LITERATURE REVIEW.

Zoltán Bokor notes that precisely determining logistics expenses is a challenging aspect of logistics and supply chain management. Research indicates that conventional costing techniques frequently fall short, particularly when accounting for indirect costs within

intricate logistics service frameworks. The academic literature frequently suggests Activity-Based Costing (ABC) as a successful strategy for enhancing cost precision. This methodology assigns costs according to activities and their associated drivers, enabling a more exact monitoring of logistics expenditures in domains like shipping, storage, and delivery. Simultaneously, scholars highlight the significance of employing Full Cost Allocation (FCA) for decision-making by management. Specifically, multi-tier cost distribution models offer a clearer and more comprehensive perspective on the connections between costs and performance in logistics service provider firms. In general, studies show that contemporary costing methods—particularly ABC and multi-level FCA—significantly contribute to improving the precision, clarity, and effectiveness of logistics cost calculation systems

International researchers A. Hatzis1, A. Koulidou2, D. Folinas3 noted that the literature emphasizes that Third Party Logistics (3PL) has emerged as a crucial strategy owing to outsourcing trends and its capacity to lower costs and enhance service quality. Logistics service providers have broadened their roles beyond conventional transport and storage to incorporate integrated services like inventory management, procurement, and customer support. A central topic in the literature is the significance of precise cost assessment in logistics services. Effective costing systems allow businesses to attain optimal resource distribution, enhance decision-making, and guarantee profitability. In the absence of dependable costing data, businesses could encounter erroneous decisions and subpar performance

Different costing systems are discussed in the research, including:

- Direct (Variable) Costing, which focuses on costs directly related to services,
- Absorption (Full) Costing, which includes both fixed and variable costs,
- Activity-Based Costing (ABC), which allocates costs based on activities and cost drivers.

Among these, ABC is often considered more advanced and effective, as it improves cost accuracy, identifies value-added activities, and enhances customer profitability analysis. However, many companies still rely on traditional costing methods. Overall, the literature suggests that adopting more sophisticated costing approaches, especially ABC, can significantly improve cost transparency, operational efficiency, and strategic decision-making in logistics service providers.

METHODOLOGY.

The study employs a theoretical and analytical framework to examine methods for calculating costs in logistics services. It encompasses the examination of scholarly literature, research papers, and applied studies regarding logistics cost accounting. Particular focus is placed on contemporary techniques like Activity-Based Costing (ABC) and multi-tier cost distribution. The research additionally contrasts conventional costing

techniques, including direct and absorption costing, to determine their advantages and disadvantages in logistics service providers. The approach aids in comprehending the formation and allocation of logistics costs, along with how various accounting systems can enhance cost precision and guide managerial decisions.

ANALYSIS AND RESULTS.

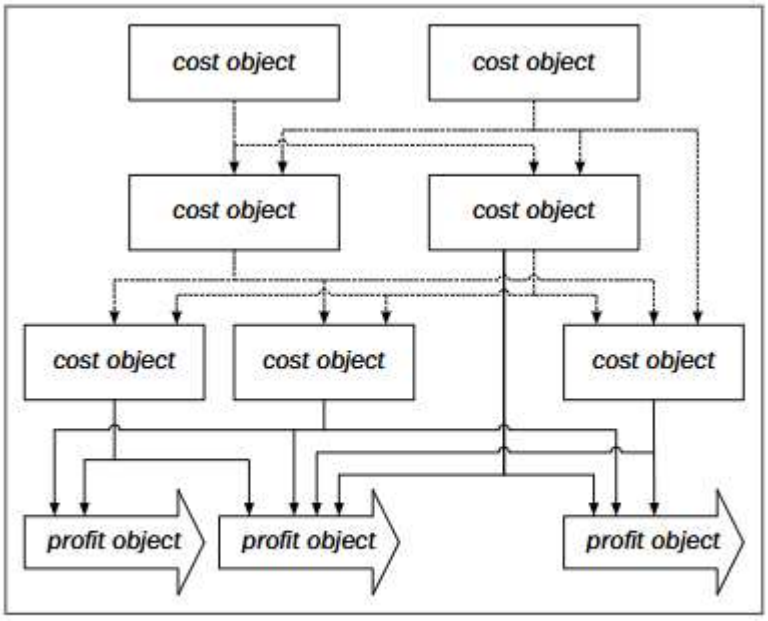

Figure 1 - Cost calculation model with multi-level indirect cost allocation

This figure shows how costs are calculated and distributed step by step in a multi-level system. The boxes labeled “cost object” represent internal units of a company such as departments, processes, or resources where costs are first collected. These cost objects do not work independently; they provide services to each other, which is why arrows connect them. This means that costs are not only assigned directly but also transferred between different units, creating secondary costs. At the top and middle levels, costs move from one cost object to another based on how much service or resource is used. This creates a chain of allocations where indirect costs are gradually passed down through several levels. Because of this multi-level structure, the model reflects real business operations more accurately than simple costing methods. At the bottom, the “profit objects” represent final services or products that generate revenue, such as logistics services offered to customers. These profit objects receive both direct costs and all allocated indirect costs from the cost objects above. After all costs are assigned, the total cost and profit of each service can be calculated. Overall, the diagram illustrates how costs flow from internal support units to final services, making it easier to understand the true cost of each service and improving pricing and decision-making.

cost object	primary cost (th MU)	performance	
		value	measure
gen. man.	20	1,500	(direction)
IT	40	3,000	(GB)
fin. man.	30	30,000	(transaction)
hum. man.	20	80	(person)
serv. plan.	30	3,800	(hour)
transp. c.	40	8,800	(disposition)
mainten.	430	4,000	(hour)
sales	170	19,000	(transaction)
warehous.	800	1,500,000	(sqm*hour)
drivers	720	23,300	(hour)
veh. typ. 1	310	600,000	(vehicle km)
veh. typ. 2	360	890,000	(vehicle km)
veh. typ. 3	410	970,000	(vehicle km)

Table 2 - Input data of cost objects

This table shows the initial data used for cost calculation in a logistics company. Each row represents a cost object such as a department, activity, or resource, and includes its primary cost along with a performance indicator. The primary cost column shows the direct expenses assigned to each cost object in monetary units. The performance columns describe how much work each unit performs and how it is measured, for example in hours, transactions, persons, or vehicle kilometers. These performance measures are important because they are later used to allocate indirect costs between cost objects. Overall, the table provides the basic inputs needed to calculate total costs more accurately by linking expenses to actual operational activity levels.

CONLUSION.

The research finds that accounting is vital to logistics services, since precise cost assessment is key for efficient management and decision-making. Logistics firms function in a complicated landscape where it is essential to accurately recognize and distribute both direct and indirect expenses to guarantee clarity and effectiveness. The study indicates that conventional costing techniques frequently fall short for contemporary logistics activities, whereas advanced methods like Activity-Based Costing (ABC) and multi-tiered cost allocation yield more precise and dependable outcomes.

Logistics companies are advised to implement contemporary costing methods, particularly ABC and full cost allocation models, to enhance cost precision and improve decision-making. Moreover, adopting integrated accounting and information systems can improve data accuracy and facilitate real-time cost tracking. Upcoming studies could concentrate on the digital transformation of logistics accounting and the effects of ERP systems on the efficiency of cost management.

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