# Chapter 2
# Cost Management of Logistics and Supply Chain Costs

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## ABSTRACT

*In order for a supply chain to thrive, it must be evaluated from a financial perspective. In particular, supply chain profits and profitability are important performance measures. However, since it is very difficult to evaluate the profit side of the supply chain, this chapter focuses on the cost management of logistics and supply chain costs. The premise of supply chain cost management is that each company participating in the supply chain is able to manage logistics costs appropriately. Therefore, the authors discuss the management of logistics costs by utilizing management accounting methods such as activity-based costing, total cost of ownership, and life cycle cost. Then, after clarifying what exactly is meant by supply chain costs, supply chain cost management is discussed. The management of costs incurred across multiple companies is much more difficult than the cost management of a single company, and the issues that must be overcome are clarified. Finally, directions for future research are presented.*

## INTRODUCTION

This chapter examines supply chain management from the perspective of cost management. Various possible measures are used to evaluate the performance of a supply chain, including financial and non-financial indicators. For example, shortening lead time, optimizing inventory, and determining whether related data is managed centrally are non-financial measures to evaluate supply chains.

However, for a supply chain to be maintained and developed over time, it is essential to evaluate it financially. In particular, the profit and supply chain profitability, backed by financial indicators, is an essential evaluation measure. The following formula expresses the profit of a supply chain.

Profit = Sales obtained from end consumers in the supply chain

- All costs paid by the supply chain members to obtain the sales.

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While a supply chain needs to earn as much profit as possible, measuring whether it efficiently earns profit is also important. Therefore, it is necessary to measure the supply chain profitability; there are several possible ways to do this, but the simplest way is to evaluate the ratio obtained by dividing the supply chain's profits by the sales. By expressing the profit as a ratio to the sales amount instead of an absolute amount, it is possible to compare the profitability of supply chains of different sizes. The higher the ratio, the more profit is earned with fewer sales, and the higher the profitability.

It is necessary to consider both the revenue and cost sides to evaluate a supply chain's profitability; however, it is challenging to evaluate the revenue side in practice. Since sales, which account for the majority of revenue, are easily influenced by external factors such as trends of rival companies and market conditions, it is essential to consider these factors in the evaluation. For the reasons mentioned above, it is difficult to evaluate sales, even for individual companies, but it becomes even more complicated when evaluating a supply chain's sales because of the organization's complexity.

Conversely, it is easier to evaluate the cost side than the revenue side because the incidence of costs is less affected by external factors; even if it is affected by external factors, the impact is limited. This is also because most cost-related factors depend on the supply chain's internal environment, and the costs incurred can be predicted with some accuracy.

Nevertheless, inherent difficulties arise when evaluating the costs of a supply chain. Since multiple companies participate in supply chains and the chain members are often replaced, evaluating the costs incurred in a supply chain is much more complex than evaluating the costs of individual companies. The question arises of allocating manufacturing overhead and various common expenses incurred in the supply chain to the participating companies.

It is not enough to simply evaluate its performance to make a supply chain financially successful and develop it further. Financial management is required to achieve better performance. Improving a supply chain's performance requires increasing revenue, reducing costs, or both. As mentioned earlier, management on the revenue side is difficult, so this chapter focuses on the supply chain's cost management and management of logistics costs in individual companies, which is the premise of management.

## BACKGROUND

The Japan Institute of Logistics Systems has been continuously surveying the ratio of logistics costs (the sum of transportation, storage, packaging, cargo handling, and logistics management costs) to sales. According to the Japan Institute of Logistics System's survey, the logistics costs to sales ratio in FY2020 is 5.70% (average for all industries) among the Japanese companies that responded to the survey. Figure 1 shows the logistics costs to sales ratio over the past 20 years. The ratio has hovered around the 4% range since the early 2000s but has increased rapidly in recent years. Reasons for this include an overall increase in the volume of cargo, a workforce shortage, and requests from logistics companies to raise freight rates.

As corporate activities become increasingly globalized and imports and exports proliferate, logistics costs are expected to rise even more in the future. The ratio of logistics costs to sales is 5%, which is not a low number. Higher logistics costs lead to lower profits for companies, leading to higher product prices, forcing consumers to pay more. Therefore, managing logistics costs is an essential theme in business administration.

According to Ballou (1992, pp.78-79), traditional cost accounting methods are not suitable for calculating logistics costs because they aim to calculate manufacturing costs accurately. He also pointed

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