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(Review Article)

The time of making a strategic decision in transport management: Own, outsourced or mixed fleet?

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Abstract

Transportation is responsible for delivering a product to the supply chain, which is why it is often cited as a potential factor of competitive advantage for companies. However, more and more companies are opting to outsource their transportation service demands instead of investing in their own fleet. This research falls under the qualitative research method with an exploratory investigation level based on a literature review. Based on the literature review conducted, it was possible to conclude that the main advantages of a company-owned fleet are primarily the availability of transportation to the company and control over drivers and deliveries. The general objective of this study was to conduct a comparative study on the decision moment between an own, outsourced, or mixed road transportation fleet. It sought to highlight the best option in terms of cost-benefit and profitability, for the most dynamic choice among these modes of operation, with the goal of business profitability and sustainability. The research indicates that outsourcing increases competitiveness when the company-owned fleet is not sufficient to meet the demand, constituting a profitable solution. However, the balance between cost and vehicle availability is in the acquisition of a mixed fleet.

Keywords: Transportation; Company-Owned Fleet; Outsourced Fleet; Mixed Fleet

1. Introduction

Currently, companies operate in a highly complex and incredibly competitive system. Therefore, they are seeking differentiation and the establishment of competitive advantages over their rivals [1].

In response to these challenges, companies are emphasizing the importance of cost and managerial accounting, utilizing them for cost reduction and expense control [2].

The transportation of goods, the subject of this study, is one of the fundamental activities in logistics, involving the movement of both raw materials and finished products. It is often considered the most significant activity due to its impact on logistical costs [3].

Outsourcing non-core activities has been adopted by companies as a means to reduce expenses. These are organizational activities performed by third parties, involving the transfer of support functions to external providers, resulting in a streamlined organizational structure and simplified processes. Among the services suitable for outsourcing is the transportation of finished products to customers, due to the presence of various specialized companies offering such services [2].

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In freight transportation, maintaining an in-house fleet requires careful planning and management of the resources involved, whether they are human or material. By outsourcing this sector, companies have the opportunity to focus more on their core business, directing the saved resources toward its optimization [4].

In Brazil, there is a high volume of commercial operations between states, and due to the country's low investment in transportation modes, the road transport sector ends up being primarily responsible for the majority of cargo movement. Trucks are commonly used for product delivery. When transportation is not the company's main economic activity, they can choose to outsource the activity or acquire their own fleet for product delivery, both of which result in costs and expenses for the companies [5].

Therefore, the decision-making process between having an in-house fleet or using outsourced services is one of the most discussed issues within organizations. To maintain product quality, companies must invest in transportation logistics to ensure that the product reaches its desired destination without damage, loss, or other product-related issues [6].

Therefore, the main objective of this study is to conduct a comparative analysis regarding the decision-making process between having an in-house, outsourced, or mixed fleet for road transportation. The study aims to highlight the best option in terms of cost-effectiveness and profitability, considering the dynamic selection among these operational modes, with the ultimate goal of achieving business profitability and sustainability.

The specific objectives established for this study are as follows: to describe the importance of transportation logistics, to discuss road transportation, and to investigate the advantages and disadvantages related to the choice between an in-house, outsourced, or mixed fleet.

The article is structured into four sections. The first section provides an introduction where the research objectives are explained. The second section presents a theoretical framework supported by various authors' perspectives on the same topic. The third section explains the methodology employed in the article's development. Finally, the fourth section presents the concluding remarks.

2. Material and methods

The development of this research was supported by a qualitative methodological approach, aiming to seek answers to the following research question: When is the strategic decision-making moment between in-house, outsourced, or mixed road transport fleet?

The procedures used for treating the collected data in the investigation followed the nature of qualitative research, consisting of analyzing the bibliographies gathered between December 2022 and February 2023.

Instead of attempting to reach a singular definition of qualitative research, Yin (2011, p.08) considers five characteristic features:

Studying the meaning of people's lives under real conditions. Representing the viewpoints and perspectives of people in a study. Involving the contextual conditions within which people live. Contributing to the understanding of existing or emerging concepts that may explain human social behavior. Striving to use multiple sources of evidence instead of relying on a single source [7].

Based on the qualitative research approach, an exploratory level of investigation was defined, as this type of research is intended to determine how variables are or manifest in a particular situation [8].

3. Literature Review

3.1. Transportation Logistics

The military logistics activities used in World War II significantly influenced the logistical concepts that are currently employed [9]. Logistics, derived from the French word "logistique," is the part of the art of war that deals with the planning and execution of "design and development, acquisition, storage, transportation, distribution, repair, maintenance, and evacuation of material for operational or administrative purposes. Logistics can also be defined as satisfying the customer at the lowest total cost" [10].

Logistics encompasses the management of information related to the receipt, storage, inventory, packaging, and transportation of materials and products. Therefore, the synchronization of these activities is of utmost importance to prevent customer dissatisfaction due to logistic inefficiencies [11].

In 1986, Michel Porter described in his book on the "generic value chain" the foundations of a modern supply chain, emphasizing that contemporary logistics operates in internal operations, encompassing both downstream and upstream operations, involving multiple links throughout the customer service process [12].

It can be observed that these concepts present Logistics as being responsible for the management (planning, implementation, and control) of the flow and storage of products, services, and information not only between suppliers and customers but throughout the entire supply chain (including raw material suppliers, transporters, warehouses, industries, distributors, wholesalers, retailers, service providers, and the end consumer). This is achieved through rationalization (speed, reliability, cost reduction, and quality) along this process, both internally within each organization and between organizations, with the aim of satisfying the customer (by meeting and even exceeding their expectations) [9].

Therefore, logistics not only benefits companies but also enhances local quality of life in terms of infrastructure development for its operations. The logistical theme is now vital for companies as it optimizes resources and increases quality, which means spending less for better results [13].

3.2. Road Transportation

Transportation is a technological and organizational system that aims to transfer people and goods from one place to another in order to balance the spatial and economic differentials between supply and demand [14].

Road transport operations are simpler and faster for shorter distances, offer a wide availability of vehicles for urgent transportation, provide door-to-door service, involve less cargo handling, and enable intermodal or multimodal transportation [15].

Road transportation is also characterized by its agility and adaptability to different geographic areas, both rural and urban. It serves various markets and audiences in these contexts, often through specialization in specific segments based on the nature of the cargo, type of vehicle, and its implements. However, transportation activities can become more complex when different products require specific handling, packaging, and temperature requirements, for example [16].

The transportation matrix in Brazil is predominantly road-based, representing approximately 96.2% of the passenger transport matrix and 61.8% of the cargo transport matrix. The road network is a fundamental part of supply chains, as it brings markets closer together and promotes regional and state integration [17].

3.2.1. The Cost of Road Transportation

Transportation is the activity responsible for the movement of goods internally and externally. Internal transportation occurs within the company, while external transportation involves moving products to meet customer needs through various modes such as road, rail, air, maritime, etc. [10].

This activity represents the most significant cost element in logistics for most companies and plays a fundamental role in providing customer service. Additionally, it incurs higher costs compared to other aspects [18]; [10].

Transportation has a direct relationship with overall production (the production of human existence in its relation to nature). Thus, if there is production, some form of movement, displacement, mobility, storage, and logistics (from simple to complex forms) exists. Transportation systems are essential conditions for human existence as they are crucial aids for human groups to obtain their means of subsistence from nature. Moreover, they are also means of production for social life [19]. Therefore, transportation represents, on average, 60% of the total logistics cost [12].

"World competition, lack of raw materials, sudden increases in oil prices, and rising global inflation were some of the economic factors that triggered the increase in transportation costs starting in 1970" [9].

Moreover, logistics costs related to transportation should be added according to each type of product and the routes to be used, including fees, taxes, tolls, fuel, tires, wages, and other expenses. Approximately 85% of the operational costs of road freight correspond to direct costs, while only 15% account for indirect costs. Ultimately, it is the end consumer who bears the costs, as companies include all expenses, including logistics, in the product price [20]. Therefore, road transportation entails both direct and indirect costs, which significantly impact the final process. The result of all this is the proportionality of performance in service delivery.

3.3. Private Fleet Versus Outsourced and/or Mixed Fleet

Road freight transportation in Brazil can be carried out for the transport of own goods and for the transport of third-party goods. It is called Own Goods Transportation when performed by individuals or legal entities, known as Own Goods Carriers, using vehicles owned or possessed by them, and the goods are exclusively for their own consumption or for products produced or marketed by the carrier themselves, thus not remunerated. This modality is not regulated by the market and does not require any type of registration with the federal regulatory agency for transportation, ANTT.

On the other hand, the activity of providing road transport services to third parties, for remuneration, is called Remunerated Freight Transportation, carried out by Remunerated Freight Carriers (TRRC), who can be individuals, referred to as Independent Freight Carriers (TAC), or legal entities that can be Transport Companies (ETC) or Transport Cooperatives (CTC) [21]. Outsourcing functions as a vehicle rental modality where fleet management is entirely the responsibility of the contracting company, which offers the contractor various customized and tailored solutions to their needs [22].

The market for road freight transportation in Brazil faces a series of problems, starting from the precariousness of the road infrastructure that serves as the basis for the execution of the activity and generates a series of tangible and intangible costs for carriers, including costs related to their work tools, the cargo vehicles, to the macroeconomic issues in Brazil that have resulted in an excess supply in the market, putting pressure on service prices. Reducing the operational costs of road vehicle fleets in Brazil, as well as making investments in this area, is of utmost importance for the competitiveness of companies in the sector [23]. Logistics costs in Brazil and the scarcity of information make it difficult for entrepreneurs and administrators to choose whether to acquire and maintain the expenses of a private fleet or opt for hiring an outsourced carrier [5]. The use of private fleets is not common in Brazil, as 83% of the largest Brazilian companies do not use them, and 90% of those that have their own vehicles also use third-party services to complement their transportation capacity. The decision-making process for fleet outsourcing by organizations must consider, in addition to cost and service quality, the financial profitability of the alternatives for carrying out the activity [24].

The low quality of transportation infrastructure has a direct impact on society as a whole. In order for entrepreneurs and administrators to make the right decision, it is necessary to assess the cost of maintaining a private fleet, including the investment in acquiring trucks, maintenance, depreciation, and salaries and benefits of fleet personnel, so that these costs can be compared with the cost of outsourcing the carrier and thus analyze which decision is more viable [5]. Silva and Curi (2017) present in Table 1 the minimum cost of transportation service, which is without profit margin, and may vary according to market conditions [25].

Table 1 Composition of Costs in Road Transportation

Composition of costs		
Maintenance	6.89%	R$ 200,00
Labor	9.96%	R$ 288,89
Management	4.31%	R$ 125,00
Road crossing tax	11.47%	R$ 333,00
Fuel	33.19%	R$ 963,34
Tires	10.42%	R$ 302,40
Transport Goods Insurance	4.31%	R$ 125,00
Charges	7.45%	R$ 216,23
ICMS	12%	R$ 348,24
Total Dry Freight	100%	R$ 2.902,11

Source: [25]

The decision on fleet ownership will be directly related to five factors: internal capability, sector competence, return loads, operation size, and modalities to be used. The table 2 below presents some advantages and disadvantages of an outsourced fleet to be reflected upon during analysis and reflection.

Table 2 Advantages and Disadvantages of Outsourced Fleet

Advantages	**Disadvantages**
Focus on the company's business	Risk in choosing the service provider
Downsizing of the administrative structure	Difficulty adapting features to your specific use
Release of working capital	Respond for labor obligations, if the service provider fails to comply
Service flexibility and agility	Loss of agility in making decisions about the use of a resource that does not belong to you
Pre-established costs	Abrupt change in costs

Source: [26]

Diniz and Paixão (2017) argue that fleet outsourcing has become an option for gaining competitiveness by increasing productivity in the company's infrastructure activities [23].

According to Silva, Gandolpho, and Carniello (2012), the outsourcing process significantly influences the reduction of operational costs and the analysis of the company's logistics process, suggesting that outsourcing is one of the mechanisms that can contribute to minimizing or even excluding them from this process [26].

Machado (2021) conducted a study to analyze the most advantageous alternative for a pharmaceutical and hospital products distributor in Goiânia, whether it would be through an in-house or outsourced fleet. The results obtained allowed determining the best option for the company, considering the cost, and it was concluded that fleet outsourcing would bring better and more profitable results for the distributor [27].

Based on the findings of Machado (2021), despite the high initial investment required, renewing the transportation fleet seems to be economically more advantageous for the company compared to outsourcing transportation services. Therefore, the researcher recommends investing in fleet renewal rather than subcontracting the distribution service [27]. It is worth noting that transportation companies are adopting fleet maintenance outsourcing; however, this still entails complex management due to the wide range of services and the number of required suppliers. This leads to a loss of focus, bloated teams, and difficulties in accurately measuring the costs involved [28].

Furthermore, nowadays many authors emphasize that mixed solutions can yield better results [29]. Mendonça et al. (2016), when comparing the proposal of fully outsourced delivery with the proposal involving company-performed trips and the difference observed over a period of five years, concluded that the utilization of mixed transportation is an excellent choice [30].

The proposed arrangement between the company's own fleet and outsourced services predicted savings of over R$180,000.00 over the course of five years, assuming that the company's demand increases as expected. However, it is crucial for companies to be aware of their own logistics costs before making a decision, in order to establish management practices aimed at minimizing them [28].

Therefore, it is evident that by having its own fleet, the company gains greater agility in terms of schedules, deadlines, and service conditions, while also maintaining control over the effectiveness of the service when not outsourcing its operations. However, when hiring a third-party outsourcing company, it is important to analyze the safety of the provided service as well as the cost and flexibility of negotiation, particularly in terms of conditions.

4. Conclusion

It can be concluded that the decision-making process regarding whether to have a company-owned or outsourced transportation fleet should be based on a specific analysis of the company's reality. This analysis is necessary to identify the differences and determine which type of fleet is more convenient, considering the advantages and disadvantages of managing either company-owned or outsourced vehicles, and how to utilize them effectively regardless of the case.

Nevertheless, through a literature review, it was possible to elucidate some advantages and disadvantages that can assist in making this choice. As advantages of a company-owned fleet, the availability of transportation to the company, control over drivers and deliveries, and greater precision in delivery deadlines stand out.

On the other hand, outsourcing transportation presents an opportunity to increase competitiveness, both in terms of production and customer service. If a company-owned fleet is not sufficient to meet demand, hiring an outsourced fleet can be a cost-effective solution. However, some disadvantages were identified, such as fluctuating transportation costs depending on demand, lack of complete control over deliveries, and a higher risk of product damage.

Outsourced companies will inevitably entail additional costs, such as vehicle maintenance or replacement costs, as well as costs related to drivers. However, the balance between cost and vehicle availability lies in acquiring a mixed fleet.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors assure that there is no conflict of interest with the publication of the manuscript or an institution or product mentioned in the manuscript and/or important for the result of the presented study.

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