

THE CHALLENGES OF THE ROAD FREIGHT MODAL IN BRAZIL AND THE IMPACTS ON E-COMMERCE

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Abstract: The objective of this article is to understand how the challenges of the road freight modal in Brazil impact the competitiveness of companies in e-commerce. For this, a bibliographic research was carried out, with a quantitative approach and with an exploratory objective, which was built through theoretical basis in books, theses, dissertations and articles. Moreover, it was possible to realize through the studies that with technological advances, e-commerce has been gaining prominence, leading Brazilian companies to adopt strategies to remain competitive. Logistics costs, especially in the transportation sector, represent a significant part of companies' expenses and are focused on the road modal.

Keywords: Logistics; Transportation; Road; E-commerce.

OS DESAFIOS DO MODAL RODOVIÁRIO DE CARGAS NO BRASIL E OS IMPACTOS NO E-COMMERCE

Resumo: O objetivo deste artigo é de que forma os desafios do modal rodoviário de cargas no Brasil impactam a competitividade das empresas no e-commerce. Para isso, foi realizada uma pesquisa bibliográfica, com uma abordagem quantitativa e com um objetivo exploratório, que foi construída por intermédio de embasamento teórico em livros, teses, dissertações e artigos. Ademais, foi possível perceber através dos estudos que com o avanço tecnológico, o comércio eletrônico vem ganhando destaque, levando as empresas brasileiras a adotarem estratégias para se manterem competitivas. Os custos logísticos, especialmente no setor de transportes, representam uma parte significativa dos gastos das empresas e são voltados para o modal rodoviário.

Palavras-chave: Logística; Transporte; Rodoviário; E-commerce.

1. INTRODUCTION

Brazil is a country of continental dimensions. According to [1], the Brazilian nation has a territory measuring 8,515,770 square kilometers, is one of the largest in the world and has the largest economy in South America.

Every day, technological advances help Brazil adapt to the new e-commerce model, causing Brazilian companies to look for strategies to remain competitive. According to [2], serving this slice of the market is no longer an option. In addition to increasing competitiveness, having a virtual store increases the company's reach (area of operation); the electronic medium allows customers to make their purchases at any time; the costs of maintaining commerce are lower; and stock can be managed more easily due to automation.

When it comes to logistics costs, it is understood that the largest share is allocated to the transportation sector, which includes: freight, tolls, insurance, taxes, among others. According to the study published by [3], corresponding to the survey: Logistics Costs in Brazil 2018, spending in the logistics sector consumes 12.37% of companies' revenue, which they reveal they mostly use on the country's highways (75.9%).

Therefore, this article will study the main challenges of the transportation activity related to the road modal with regard to e-commerce. According to [4], in 2022 total e-commerce sales were around 169.6 billion reais. With the increasing number of online purchases, consumers are demanding shorter delivery times as a way of deciding whether or not to buy from certain platforms.

For this reason, the general objective of this article is to analyze how the challenges of road freight transport impact on the competitiveness of e-commerce companies.

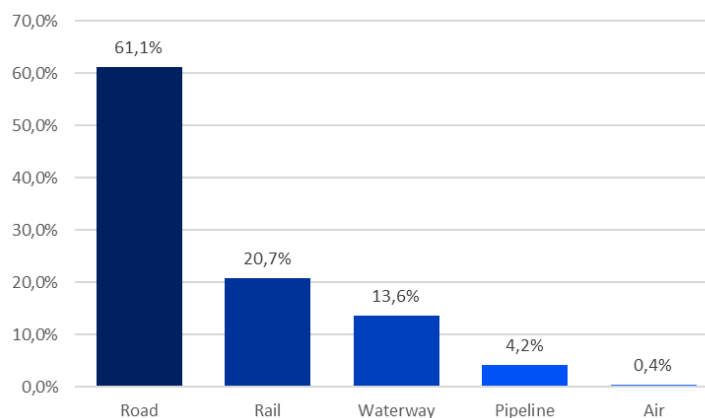
In addition, the specific objectives are: to understand the importance of road transport in the Brazilian transportation network; to present the challenges of this mode; to explain e-commerce and list the impacts on the competitiveness of companies arising from this mode.

1.1 The Road Freight Modal and Its Main Challenges

Considering the historical reasons for Brazil's modes of transport, one can understand why road transport is the most widely used in the country, as well as the key factor, which is that it is the only mode that has direct contact with the consumer. According to [5], the roads that Brazil currently has only began to develop with the arrival of the automobile industry in the country, setting the stage for the development of industrialization and consequently putting the Brazilian nation on the map of the world economy.

According to data from the survey carried out by [6] in 2019, around 61.1% of the Brazilian transportation matrix was made up of road transport in relation to the movement of cargo and passengers.

Figure 1 shows the large share that road transport takes in comparison to the others in the Brazilian transport matrix, but looking at a comparative geographical analysis between Brazil and some countries around the world, the Brazilian nation has great potential for transporting products, in addition to its main source, which is roads, however, the point is that this potential needs to be invested.

Figure 1 - Brazilian transport matrix in 2019, by modality

Source: Adapted [6].

Even though measures are being taken to modernize Brazil's transport modes, it is understood that many years have passed in which the road mode has monopolized the movement of cargo within the country and it is important to stress that including these measures it is still possible that the situation will remain the same for years to come. As cited in [7], the consumption of the modes, in general terms, is estimated at around 28% of Brazil's total energy, and 92% of this consumption comes from the road mode.

Due to the extent of Brazil's territory, the price of diesel has a direct impact on the cost of road transport. Between 2010 and 2021, diesel accounted for an average of 27% of the cost of this mode of transport, while in 2022 it was expected to increase by 10% compared to previous years [8].

In addition to the fuel issue, the road freight modal presents a major challenge in relation to its roads, according to [9], in the CNT Yearbook of Transport, the Brazilian road network in 2019 extended over 1,720,700.0 km, with only 213,452.0 km paved, which corresponds to 12.4% of paving of these roads, the data becomes more alarming when compared to the percentage of 61.9% of the roads that were evaluated in the year 2020, presented some adversity in their total situation.

According to [10], inadequate maintenance and defects in road surfaces are one of the major factors that lead to more frequent road accidents. Likewise, the lack of infrastructure for truck drivers to take breaks during their journey compromises their professional performance, which in turn can lead to accidents.

In a 2019 report on truck accidents on highways, Brazil recorded 14 deaths per day on federal highways.

As cited in [6], another aggravating factor for drivers transporting cargo by road is the excess of robberies and thefts, which unfortunately are growing every year. The latest estimates show that from 1988 to 2017, more than 285,000 cases of cargo theft were recorded in Brazil, totaling a loss of more than R\$16.3 billion.

The situation in 2022 was not very different, according to [12], with the release of data from the CNT Business Profile Survey, the theft of goods afflicts 62.5% of road hauliers (TRC). This represents a major challenge for the road freight modal, due to its direct influence on the relationship between companies and consumers.

The road transport scenario is indeed extremely precarious. Cargo theft is a major challenge for those who travel the roads, and situations like these have a direct impact on the relationship with the consumer, since the road transport sector has

been affected by the challenges faced and, as a consequence, customer satisfaction will be influenced by them.

1.2 E-commerce in Brazil and the Road Freight Modal

One of the most impactful moments in society was when the world was hit by the COVID-19 pandemic. In Brazil, the first case of the viral disease was recorded on February 26, 2020 and from that moment on, with each passing day there was a significant increase in registrations and in March of the same year, the country declared that sectors of society should remain in "lockdown".

With consumers away from the shop windows, commerce had to adapt to meet social demand and need. According to [13], before the health crisis forced the closure of physical stores, online sales accounted for an average of 9.2% of revenue. However, in July 2021, just four months into the pandemic, this figure more than doubled to 19.8%. And by June 2022, it was already at 21.2%.

"In this way, people who have never bought by computer, started to place their food orders online and through applications, especially those considered in the risk group, people over 60, who should stay at home." According to ([14], p.16.)

It's notorious how the class and quality of our e-commerce reflects how companies and entrepreneurs have adapted over the years. According to [4], by 2023, the expectation for this sector is around 9.5%, reaching R\$186 billion by the end of the year. In this way, it is understood that e-commerce is in fact a business model that is becoming increasingly present in the lives of Brazilians.

It is clear that a company practicing the e-commerce model needs to make decisions throughout its supply chain, taking into account its competitiveness in relation to its competitors. When we present this concept, it is important to understand that the Brazilian logistics system is practically entirely driven by roads. Following this line of growth, it is important to highlight the importance of road freight and the impact it has on companies in this sector. For any company to be competitive in the e-commerce segment, it must be effective in its transportation logistics.

As cited in [15] (2019):

"The logistics professional must check their stocks, consumption patterns, requests and requesters; where suppliers, processing industries and consumers are strategically located and how products are transported with agility and integrity between the actors in the logistics chain to satisfactorily serve the customer" ([15], p. 73-74).

The challenges faced by these companies, which come from road transportation, are real and often play an effective role in performance indicators, both for those who work in logistics operations and for those who work in the commercial and customer service sectors, leading to customer satisfaction. The relationship between late deliveries and high freight costs influences consumers to give up on purchases and ends up becoming a problem for entrepreneurs to deal with.

As [16] (2018) mentions:

"Risk managers then emerge, companies that specialize in managing risks and basically tracking and acting in real time directly on the vehicle in order to thwart and/or prevent theft events from occurring and also have greater

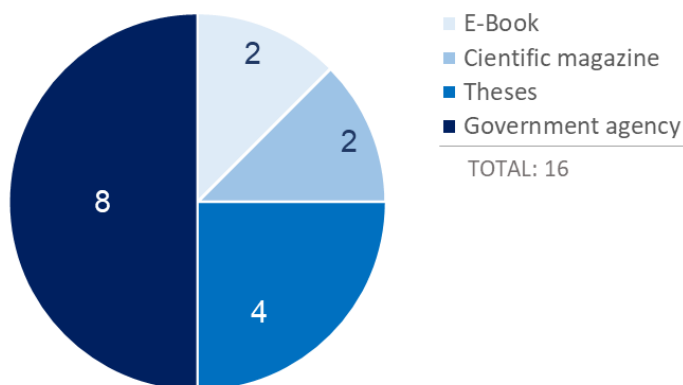
control over vehicle telemetry information with the aim of reducing the risk of accidents involving cargo vehicles." ([16], p. 35)

In this sense, the risk of damage during the journey to the end consumer is crucial for companies that rely on road freight. This point also influences the price of freight, as GRIS (Risk Management) is included in the table that generates transportation quotes.

2. METHODOLOGY

The methodology used was based on a bibliographic survey using the keywords "logistics, road transport, e-commerce and the Brazilian logistics network", consulting scientific articles researched on the Google Scholar platform, as shown in figure 2 below, as well as researching specialized entities and government bodies.

Figure 2 - Theoretical framework used in the article



Source: From author, 2023.

The most cited papers on the platform were used for this article. The data was analyzed in a descriptive manner, seeking to identify and describe the main challenges facing road freight in Brazil and the impacts on e-commerce. Data analysis followed a qualitative, exploratory approach. The research also included the definition of a problem and the formulation of objectives, with the aim of directing data collection and analysis.

3. RESULTS AND DISCUSSION

Road transport is undeniably the most widely used mode of transportation throughout Brazil, as mentioned by [6]. This distribution sector is necessary for the country's logistics chain to function. However, the almost exclusive use of this mode has negative consequences for both the supplier and the consumer.

At the beginning of the 1990s, Brazilian companies began to adopt the concept of globalization, which led to the Brazilian market opening up to the world [5]. In order for Brazil to prepare for the entry of the foreign market, it was necessary to invest in new technologies, as well as to adopt a new strategic vision regarding the delivery of products to the consumer.

Due to the shortage of other modes, the road system is overloaded [7], and this situation has affected delivery times, which in turn undermines credibility between supplier and consumer. However, the problems go beyond the relationship

between the customer and the seller: the lack of infrastructure on the roads, whether it's paving or rest stops, or insecurity due to cargo theft, plague road hauliers, which in turn has a direct impact on freight [8].

In this sense, the means of transportation is an important factor in the competitiveness of e-commerce companies.

If delivery is scheduled for a specific day and is carried out without delay, the level of satisfaction and possibly the customer's preference for the company increases [15], otherwise the loss of those who move the market, i.e. the consumer, will result in losses.

4. CONCLUSION

The modal of road freight transportation is extremely important for the development of the country due to direct contact with consumers, in addition, the sector is responsible for motivating industrial growth, since vehicles pass through the country's highways.

On the other hand, we have the constant growth of e-commerce in Brazilian society and with this it is understood that one of the main keys to the development of such is that the road freight modal has an efficient and continuous logistics flow.

The general objective of this research was concluded when we highlighted the main impacts of the road freight modal on the competitiveness of companies, from which it was possible to understand the challenges it has been facing that interfere with and dictate the development of e-commerce companies.

In this way, this article opens the way for future studies and research in the field, such as: dropshipping, cross docking e transit point.

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