

# LOGISTICS MANAGEMENT PRACTICES IN ROAD FREIGHT TRANSPORT COMPANIES

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## ABSTRACT

*The modal road freight transport is a relevant and outstanding activity in logistics. The data report on the issue of the profit system is the risk of the issue of the environmental system and logistics and associated system. Thus, the objective of this article is to identify the cost management practices of green logistics by trucking companies. It is a descriptive, qualitative and quantitative approach. The research instrument was structured with assertions on type scales. This is a protocol directed to managers of transport systems of companies, and is found in the Brazilian states and selected for its accessibility. The main reasons that have given the impression of occurrence due to certain occurrences related to the disposal of contaminated waste, the maintenance of the documents and the control and the reduction of the emission of gases and the absence of greenhouse effect, which are those that are not intensive its cost-effectiveness. Other finding is how the planned and green companies and also how an environmental accounting for the control of assets, gains, investments and power funds granted as growing. Thus, although the organizational perspective was broader in relation to social and environmental aspects, most of the research was developed for an update process in the companies surveyed.*

**Keywords:** Management, Green Logistics, Environmental Accounting, Environmental Costs, Road Freight Transport.

## INTRODUCTION

The economic growth of the local and global business flow increases the demand for logistics services, especially transport, which are increasingly essential in the performance of companies (Mckinnon, 2010). Road freight transport is one of the main factors of production in the economy, contributing to the generation of wealth and development. The importance of the sector is notorious, since, besides generating jobs, contributes to improve the distribution of goods and income of the population (CNT, 2012). However, economic growth and the continued pursuit of competitive advantages increase the environmental impacts caused by companies. From 1990 to 2005, Brazil increased by 70% the volume of gases released into the atmosphere, originating from the transportation activity, a number well above the global average growth of 35%. The United States registered growth of 27%, while in Germany there was a reduction of 2% (ILOS, 2015).

Mckinnon's (2010) study highlights that transport has already accounted for about 8% of total carbon emissions in the world, affecting the environment on a large scale. In turn, logistical activities emit about 5.5% of the world's greenhouse gases, including, in addition to the emission of carbon dioxide, all types of greenhouse gases, increasing at a very high rate when compared to other sectors of the economy.

This leads to negative consequences that impact on population health, food production and climate change, making road transport a major cause of internal and external costs to the company (Rodrigue et al., 2010). However, environmental management has been receiving more attention in recent years, mainly through the implementation of environmental policies and management systems, as ways of being more sustainable (ISO, 2004), as well as the implementation of green logistics in organizations (Srivatava, 2007).

Green logistics is an initiative that organizations are adopting to improve their environmental performance and provide them with competitive advantages, waste reduction and cost savings, since traditional logistics activities do not address environmental issues, as they them as costs (Wu & Dunn, 1995). The cost involved in green logistics has a great impact on management, since incorporating environmental aspects into the logistic context requires management of the costs involved in this new strategic positioning, as well as investments to meet this new methodology. This defines that the costs resulting from the new process constitute a significant barrier to the deployment of green logistics (Alkhidir & Zailani, 2009)

As a consequence, new types of controls are required. Thus, an important aspect is the development of adequate accounting systems for environmental analysis and measurement, considering the consumption of natural resources and the inclusion of pollution generated by companies in their activities, providing information relevant to those who need or can use (Gray & Bebbington, 2003).

The advantage of accounting is to create awareness about environmental costs, which in turn helps to identify techniques for reducing and avoiding costs of this type. Thus, environmental accounting generates and analyzes financial and non-financial information in order to optimize the company's environmental and economic analysis processes for business sustainability (Nunes & Bennett, 2010). Many environmental costs can be reduced or eliminated, influenced by corporate decision-making processes, such as operational changes and investments in new processes and products, along with environmental practices that are fundamental to corporate sustainability (Carter & Rogers, 2008; Nowakowska-Grunt, 2008). Therefore, logistics managers must play key roles in the decision-making process of companies, developing projects that fit economically in companies, controlling the environmental impacts of their activities and reducing costs with the implementation of green logistics (Wu, Dunn, 1995).

Although research has already been done on green logistics management, it is important to conduct more research that analyses managerial perceptions of road freight transport. Thus, this article is motivated by the importance of discussing concepts and definitions of green logistics for this activity, adding new knowledge of cost management and contributing to companies in the transport sector, if they wish to implement or better develop green practices.

Thus, the general objective of this article is to identify the green logistics cost management practices adopted by freight transport companies. This includes the respondents' perception of actions taken to reduce social and environmental impacts through the use of green logistics. Specific objectives include identifying the economic and environmental impacts, favourable or unfavourable, arising from the use of green logistics. We also investigate the adoption of environmental accounting practices adopted by the company in the management of assets, liabilities and environmental costs of green logistics. It is therefore necessary to verify the degree of adherence of business practice to theoretical developments on the subject.

This study is structured in five sections, the first being the introduction. The second is the review of the literature, followed by methodological procedures. The fourth section presents the analysis and interpretation of the results. Finally, the final considerations are followed, followed

by the list of references used in the construction of the study.

## **Previous Research**

### **Strategic cost management**

In the context of accounting evolution, the concern with the strategic management of costs-GEC is recent, originated by the loss of competitiveness of the companies and in the critic of authors of the accounting area. The objectives of GEC are related to the analysis and management of external and internal variables, seeking lower cost and higher returns than competitors (Bacic, 1994). Internally GEC operates at an operational level, seeking organizational efficiency through planning and better use of resources. On the other hand, externally, it acts at a strategic level in the search for efficiency, with a view to the market, surpassing the competitors (Kaplan & Cooper, 1998). As Johnson and Kaplan (1996) have pointed out, the changes in the market have come to require new management actions, such as the generation of information for the decision-making process. In this sense, the generation of managerial information needs to be able to meet the informational demands that aim to make the company's competitiveness reachable. For the authors, the changes in the competitive environment brought a reexamination of traditional cost accounting systems and managerial controls. As a consequence, a series of practices and procedures emerged, considered innovative and adequate to the new reality of the productive systems of the companies, highlighting, for the purposes of this study, the analysis of the costs of the supply chain, the costs of internal logistics and distribution, environmental management and environmental costs (Johnson & Kaplan, 1996).

### **Organizational sustainability and the triple bottom line**

The Brundtland Report of the World Commission on Environment and Development (1987) defines sustainability as the use of resources to meet the needs of the present without compromising the ability of future generations to meet their own needs (CMMAD, 1988). Thus, sustainability contributes as a potential way to reduce the long-term risks associated with resource depletion, fluctuations in energy costs, environmental liabilities, pollution and waste management (Srivatava, 2007). Sustainability refers, therefore, to the environment and natural resources of the world. Exhausting natural resources is one reason why sustainability is or should be a major concern for society and for enterprises (McKinnon, 2010), including logistic companies.

A sustainable enterprise contributes simultaneously to sustainability for economic, social and environmental benefits. These three elements together form the Triple Bottom Line - TBL, a concept used to describe a three-way trade (McKinnon, 2010; Elkington, 2004). Promoting TBL shows to all shareholders and stakeholders that the purpose of the company is not merely economic and immediate, but that environmental and social issues are also considered, since a sustainable company is the one that balances these three factors (Markley & Davis, 2007).

The environmental dimension includes the set of objectives, plans and mechanisms that promote greater environmental responsibility and incentives for development, as well as the diffusion of environmentally friendly technologies (Lehtonen, 2004). So as consumers become

more aware, companies focus more on green programs for their business, which improves their performance (De Giovanni, 2012). The social dimension refers to people and is one of the greatest challenges for sustainable development, as companies have several stakeholders with different goals, demands and opinions (Lehtonen, 2004).

The social impact of a business can be measured by customer and employee satisfaction, work practices, human rights and responsibilities. Therefore, a company that is sustainably committed will make decisions regarding the community and its workers, aiming at the growth of society (Markley & Davis, 2007). The economic dimension is easier to measure in companies and aims at the efficient use of resources to achieve the return on investment, long-term success and competitive advantage of the company. The economic factor, within the TBL, refers to the economic value and profits generated by a company (Lehtonen, 2004). A company that focuses on social and environmental aspects, provides, in the long run, economic growth to it and the community at large (De Giovanni, 2012).

### **Green logistics**

In line with TBL and sustainability, green logistics has been introduced as an environmentally sustainable initiative for the future. Logistics companies understand green logistics as a potential solution to sustainability and a balance in TBL (Mckinnon, 2010). Green logistics has been introduced as an environmentally sustainable initiative for the future so that logistics activities have the least possible impact on the environment in relation to material handling, waste management, packaging use and transport (Mckinnon, 2010).

The improvement of the efficiency of the logistical activities is made possible by the reduction of costs by the reduction of packaging waste and energy consumption, lower labor costs and shorter delivery times. These practices, in addition to reducing costs, can improve the company's performance and image (Rodrigue et al., 2010). Given this context, managers, according to Mckinnon (2010), should rethink activities in the protection of the environment and welfare of society, because green logistics is related to the environment, which includes, in addition to the logistics of acquiring raw materials, production, storage, transport and information, including reverse logistics.

Reverse logistics permeates the same definition of traditional logistics, however, dedicated to the planning, implementation and control of reverse flows during the process and after the use of products, especially at the end of their useful life, from the point of consumption of a given product, to its point of origin, with the purpose of recapturing value or giving adequate environmental allocation to it (Srivatava, 2007; Nunes & Bennett, 2010). Reverse logistics is associated with the recycling, repair, reuse and reprocessing of products in components and / or materials used, with the elimination of waste (González-Torre et al., 2009).

The flow of reverse logistics represents an instrument for the economic and operational development of the company's activities, as well as a differential in the search for competitive advantages through environmentally correct practices, reduction of environmental charges on final product disposal, reuse of components with added financial value, reduction of landfill costs and environmental responsibility of companies (Nunes & Bennett, 2010). Green logistics also includes other management practices and strategies to enable the reduction of environmental and energy impact on the distribution of goods, as shown in Table 1.

<b>Table 1 GREEN LOGISTICS PRACTICES</b>			
<b>Green Practices</b>	<b>Strategic Practices</b>	<b>Tactical Practices</b>	<b>Operational Practices</b>
Transport	Change of fleet of trucks Standardization of truck sizes Creation of distribution centers Selection of sustainable providers	Load palletization Freight consolidation Reuse of pallets and containers Modal choice	Control of carbon emissions Clean vehicles Fuel Efficiency Load optimization
Storage	Automatic storage Systems Design and construction of facilities	Selection of different equipment Recycling and reuse of pallets and containers Product Layout	Clean material handling equipment Fuel Efficiency Energy efficiency Process optimization Minimization of inventories Recycling of products
Services	Control of carbon emissions Green customer criteria Deployment of tracking systems	Environmental certifications Pallet and container grouping control systems Use of different technologies and packaging materials to reduce contamination	Environmental control reports Use of tracking and performance systems
Source: Thiell et al (2011)			

Because freight transport is an important logistics activity, and having a significant influence on the environment, it is one of the main components of green logistics (Xia & Wang, 2013). According to the authors, some green transport practices are: (1) modal choice: multimodal transport for the delivery of products, reducing transport costs and CO<sub>2</sub> emissions; (2) load consolidation: creation of distribution centers as a practice to integrate the operations of the company with those of its suppliers; (c) Clean Vehicles/Fuel Efficient: Proper maintenance programs are important to help keep vehicles in a safe and efficient working condition to control and reduce contamination; (d) reuse of pallets and containers: in addition to reducing waste, reuse protects natural resources; (e) standardizing the size of the truck: standardization helps the company to plan and optimize the transportation of goods. In this way, transportation is one of

the most challenging factors for adopting green practices. The government has the function of implementing green policies in order to encourage companies to adopt them. Companies, in adopting the green strategy for logistics, show that in addition to complying with legal requirements and seeking to reduce costs, they are also concerned with social issues, of which the environment has become the main factor in the chain (Dekker et al., 2012).

### **Environmental accounting**

All areas of organizations must adapt to meet the needs of companies in relation to environmental accounting and its orientation towards the environment. Thus, it is the function of the company's management to determine, through the use of accounting, a methodology to record the costs and effects of investments in environmental protection in its systems (Persic, 2011). Environmental accounting is responsible for environmental records, their analyzes and the disclosure of reports of financial impacts caused on the environment, providing users with the environmental performance of the economic enterprise system (Ienciu & Matis, 2010).

These reports should include information on environmental costs arising from the company's liability or irresponsibility for environmental aspects. The identification of these costs is necessary so that they can be controlled and optimized, and become a source of long-term benefits (Persic, 2011). Li (2004) adds that environmental accounting takes place both in the context of financial accounting and managerial accounting, namely:

1. Environmental Financial Accounting: focuses on environmental active and passive accounts and other significant environmental costs, providing environmental financial information to the company's external stakeholders - investors, creditors, government and others;
2. Environmental Management Accounting: it is the process of identifying, collecting and analyzing information about the consumption of resources, mainly for internal purposes of the company, as a way to help decision making to internal stakeholders, such as: operations planning; purchasing decisions, investments, costing and risk management; control of business results.

Within the equity structure, Ibracon (2016) defines that environmental assets are assets acquired for the purpose of control, preservation and recovery of the environment, composed of inputs used directly in the production process, to eliminate during operational procedures the emergence of water pollution, gases and solid waste that will be deposited in some way in the environment. Also, the environmental asset includes property, plant and equipment and investments related to equipment purchased, aiming at the elimination or reduction of pollutants; the expenses with research and development of technologies in the medium and long term, of individual protection, constituting integral amounts of deferred assets. It also consists of components represented by jobs and taxes generated; works of local infrastructure external to the company, schools, crèches, green areas and gardens that seek the development and social valorization of the region. The environmental liability, as highlighted by Braga (2013), corresponds to the contingency of resources to finance investment that a company m

Must make in order to correct the adverse environmental impacts generated as a result of its activities and that have not been controlled over the years of its operations, since the company is responsible for the consequences of these damages in society and in the environment. Thus, it consists of the value of the investments required to rehabilitate it, as well as fines and indemnities (Ibracon, 2016).

Braga (2013) adds that the company must allocate part of its capital to apply to the

environment, in prevention, recovery, monitoring and recycling activities. In addition, it may constitute reserves for environmental contingencies and donations or subsidies; the company will be able to keep Accumulated Environmental Profits or Losses, where it will record the result of the year calculated from revenues, expenses, environmental gains and losses (Braga, 2013).

In determining the result, environmental revenues are the resources generated by the companies, resulting from the sale of their by-products or their recycled materials. On the other hand, environmental costs and expenses are all expenditures involved with environmental management, consumed in the period and incurred in the administrative area (Ibracon, 2016).

## METHODS

### Search Rank

This is a qualitative and quantitative research. It is quantitative to use quantification both in information collection and in its treatment and qualitative by comparing the answers with the theoretical reference present in the literature on cost management practices of green logistics activities as well as with other related practical studies (Richardson, 1999).

The choice of descriptive research method is consistent with what Yin (2009) presents, since multiple sources of evidence are used. The analysis of this study is of the descriptive type, since it is limited to describing and analyzing the results, without exploring and intervening in its causes.

### Sample Survey

The companies surveyed were selected based on the potential contribution to the research for the representativeness of the road freight transportation market, besides the accessibility to them by the researcher. Table 2 presents general data about the companies surveyed, based on data provided by them through an applied research instrument.

<b>Company</b>	<b>Location</b>	<b>Billing Annual in RS</b>	<b>Year of foundation</b>
A	RS	150	1969
B	RS	240	1982
C	SC	780	1988
D	SC	100	1982
E	PR	120	1987
F	PR	100	2004
G	SP	950	1984
H	SP	180	1986

Source: Research Data

In relation to the companies surveyed, those identified as A, C and G have as Transport and Storage activities; the others only carry out the Transport activity. It should also be noted that all of them operate in the domestic market, with the exception of Company B, which also operates internationally.

The research instrument was sent to the operating managers of the selected companies, as they are active in the decision-making process in the companies, specifically in logistics management, in order to obtain information on green logistics practices and their implementation in companies. Table 3 presents the profile of the respondents.

<b>Respondent</b>	<b>Academic training (Superior Course)</b>	<b>Manager position</b>	<b>Time in the position in the company (years)</b>
1	Logistics	Operations Manager	8
2	Business Administration	General Manager	13
3	Logistics	Logistics Manager	7
4	Logistics	Operations Manager	4
5	Logistics	Logistics Manager	5
6	Business Administration	Operations Manager	3
7	Logistics and Business Administration	Logistics Manager	8
8	Logistics	Logistics Manager	5
Source: Research Data			

The data in Table 3 show that most of the respondents are trained in the Logistics area. It is also related that of the total of the respondents, 50% are Managers in this area. Another finding is the high experience of managers and with considerable time in companies, totaling six respondents with more than five years.

### **Data Collection Procedures**

The data were collected through a research tool, in Google Docs format, directed to the eight companies. Prior to this submission, companies were contacted via telephone, explaining the purpose of the survey as well as requesting acceptance and e-mail from the respondent.

The research instrument, divided into four blocks and composed of 27 assertions, related to the green logistics cost management practices adopted by the road haulage companies, was elaborated based on the literature review.

For the assertions, the 5-point Likert scale was used, where 1 corresponds to low significance and 5 to high significance, in order to measure the degree of significance or

insignificance of the subjects who answered the research instrument. The period of sending and receiving of the research instruments occurred during the month of June 2019. Pre-test was performed with a professional in the area and not a participant in the final research. By the pre-test the research instrument can be improved, either in the inclusion of new assertions, exclusion of others with the same meaning and improvement in the statement of some of them.

### Data Analysis Procedures

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## RESULTS AND DISCUSSION

### Analysis and Interpretation

#### Green logistics practices: social impacts

The first block of assertions of the research instrument (Table 4) refers to the managers' perception of the actions taken by companies to reduce the social impacts caused by the use of green logistics.

<b>Description</b>	<b>Avarage</b>
1. Control of the number and causes of traffic accidents with vehicles	4.25
2. Driver's day control	3.75
3. Protection of employees' health and safety	4.38
4. Training and improvement of professional acting techniques	4.25
5. Participation in Community programs aimed at social development	3.63

6. Involvement with the community in social actions promoted by the company	3.63
7. Other actions to reduce unfavorable impacts on the environment and the community	4.25
Average	4.02
Source: Research Data	

It is identified that the companies surveyed, in general, carry out practices aimed at reducing social impacts, demonstrating the importance of these aspects, with a mean degree of significance of 4.02, equivalent to 80% of the maximum determined by the search. For these companies, social responsibility can be understood as a commitment to the actions of the company towards society. Other more specific indicators, meanwhile, were in the average of 3.7, equivalent to 74% of the maximum possible.

Regarding the concern of companies with the reduction of social impacts, a high degree of significance is observed, above 4, with aspects related to the control of vehicle accidents, with the training and improvement of their professionals together with issues related to their health and protection, and other actions not specified in the research, but that aim to reduce the unfavorable impacts caused to the environment and the community by such companies.

These results confirm what Janota et al. (2010) present when they say that with eco-driving, drivers trained in their activities know the vehicles better, contribute to traffic safety and fuel economy, and improve the efficiency of vehicles.

Still in relation to the social impacts, it is important to emphasize that other aspects have a degree of significance below 4, being less significant on the subject. These aspects consist of controlling the journeys of drivers of corporate vehicles, participating in community programs for social development and community involvement in actions promoted by companies.

Tracking systems fitted to vehicles are capable of reporting the analysis of driving behavior - excessive or unnecessary use of vehicles, monitoring of daily drivers' journeys, fuel consumption and speed control (Janota et al., 2010).

### **Green logistics practices: environmental impacts**

The second block of assertions of the research instrument (Table 5) refers to the managers' perception of the actions taken by companies to reduce the environmental impacts caused by the use of green logistics.

<b>Description</b>	<b>Average</b>
8. Reduction of contaminated waste: oils, fuels, tires	4.63
9. Reuse of transport packaging (reverse logistics)	4.50
10. Preventive maintenance of vehicles	4.25
11. Corrective maintenance of vehicles	4.75

12. Control and reduction of gas emissions and their effect on the greenhouse effect	4.63
13. Control of the weight of the loads carried	4.25
14. Environmental System Certification	4.50
15. Compliance with environmental legislation (reduction of environmental fines)	4.50
16. Implementation of procedures additional to those determined by legislation	4.13
Average	4.46
Source: Research Data	

The data show that, with respect to the practices carried out by the companies that aim to reduce environmental impacts, they show a relatively high degree of significance of 4.46. It is observed in these aspects that the main concern of these companies is related to the maintenance of vehicles, the reduction of contaminated waste and the control and reduction of greenhouse gas emissions.

It is noticed by the answers, that the proper maintenance of the vehicles is an important environmental aspect. Keeping vehicles in safe and efficient working conditions improves vehicle performance and extends life, as well as reducing accident rates, reduced fuel consumption and impact of greenhouse gas emissions (Wu, Dunn, 1995).

The high degree of significance in the managers' responses was also for the reuse of transport packaging and reverse logistics, certification in environmental systems, compliance with environmental legislation, to reduce directly related fines when non-compliance and control of weight of the loads carried. These results point to the results pointed out by Lin & Ho (2011) regarding the positive influence of regulation on the adoption of green logistics practices.

The result ratifies that the optimization of routes and the control of weights transported aim to the monitoring of the fleet of vehicles and their efficiency, minimizing the amount of trips and their total time. In their study, Jiange (2008) presents that the environmental impacts of the distribution strategies must be analyzed by the activities of the green logistics.

This optimization of routes and vehicles aligns with reverse logistics, since it fully utilizes the vehicles and reduces the amount of freights with empty returns, contributing to the recycling, remanufacturing and reuse of packaging (Nunes & Bennett, 2010), providing development economic and environmental sustainability.

### **Green logistics practices: economic impacts**

The third block of assertions of the research instrument (Table 6) refers to the managers' perception of the economic impacts, favorable or unfavorable, resulting from the use of green logistics.

<b>Description</b>	<b>Avarage</b>
17. Reduction of costs	3.38
18. Increase in billing	3.25
19. Increase in selling price	3.00
20. Increase in market share (greater competitiveness)	3.88
21. Recovery of investment (sale of vehicles and scrap)	4.38
Average	3.58
Source: Research Data	

In relation to the economic impacts of the companies with the use of green logistics practices, it was found a degree of significance of 3.58. This number is mainly due to the fact that the managers consider that the green logistics practices have little influence on the increase in the selling price practiced in the market, where the degree of significance is 3.0. On the other hand, the recovery of investment by the sale of vehicles, scrap and equipment is high, reaching an average of 4.38.

Similarly, managers consider cost reduction, increased turnover, and market share with a low degree of significance. These results demonstrate that even sustainable development is necessary and irreversible for companies; many believe that the adoption of sustainable practices directly impacts on increasing costs and decreasing profitability and competitiveness of companies, as they believe that customers do not pay for this differentiation.

These results differ from those of other studies. Ubeda et al. (2011) found in their studies that the interest in investing in green logistics is directly related to the increased competitiveness of companies. In the long run it can lead the company to a lasting competitive advantage and greater efficiency. And, improving logistics efficiency can reduce operating costs by reducing costs with waste, packaging, labor and shorter delivery times, enabling greater returns for companies as well as improving their image in the market (Carter & Rogers, 2008).

In addition, reverse logistics, as it is directly related to recycling and reuse of materials and packaging, can contribute to the reduction of the total logistic cost, and contribute to the increase of the company's revenues, through the resale of goods, by-products and scrap (Wu & Dunn, 1995).

### **Green logistics practices: environmental accounting**

The last block of assertions of the research instrument (Table 7) refers to the managers' perception regarding the environmental accounting practices adopted by companies in the management of assets, liabilities and green logistics costs.

Description	Average
22. Specific identification and measurement of green logistics costs	2.00
23. Identification, classification and specific valuation of green logistics assets	1.13
24. Identification, classification and specific valuation of green logistics liabilities	1.13
25. Systematic reporting of assets, liabilities and costs of green logistics	1.38
26. Analysis of specific logistics reports for green logistics	1.38
27. Green logistics specific operational management position	1.13
Average	1.35
Source: Research Data	

Regarding environmental accounting practices, a low degree of significance was found in the answers, of 1.35, slightly above the minimum score. Although companies have skilled managers with a long experience in their logistics functions, the companies surveyed do not yet have a specific operational management position for green logistics.

This leads companies to not identify and classify the accounts in assets and liabilities of green logistics, making it difficult to analyse more specific management aspects. Even with regard to the identification and measurement of costs involved in green logistics companies do not do so, presenting a significance level of only 2.00, regarding this practice. In this way, the issuance of specific reports of these activities is also not present in companies. The preparation of measurement reports and environmental performance may constitute a potential means to enable a greater degree of visibility to the company in relation to its corporate environmental activities.

Thus, the results show that, although companies carry out environmental and social practices to at least reduce the impacts of their activities on the environment, there is little adherence or interest on the part of companies in relation to accounting controls related to sustainability, and greater environmental practices. The lack of implementation of environmental accounting in companies constitutes a restriction to which they may have a more active practice regarding environmental and economic management (Persic, 2011).

Table 8 summarizes the main findings in the research in relation to green logistics. It is observed that the companies have adopted practices that aim at the reduction of social and environmental impacts caused by their activities, nevertheless, they consider that to adopt such practices do not provide satisfactory economic results to them. It is perhaps because of this that the adoption of environmental accounting for the control and measurement of these sustainable practices, with an average of 1.35, is less present in companies. It is observed, therefore, that there is still a long way to go if one considers the prescriptions of the literature that deals with the subject.

<b>Green Logistics Practices</b>	<b>Average</b>
Social impacts	4.02
Environmental impacts	4.46
Economic impacts	3.58
Environmental accountin	1.35
Source: Research Data	

## CONCLUSION

This study aimed to identify green logistics cost management practices adopted by freight transport companies. Therefore, eight transportation companies from different Brazilian states were selected for the application of the research instrument to the operational managers.

The results of the research allow us to affirm that there is, in general, a high level of adoption of green logistics management practices in the activities of road haulage companies, where social and environmental practices are considered by them in the sustainable development of their activities. Thus, there are specific procedures regarding practices that positively influence the environment and meet the needs of society, such as route optimization, reduction of truck idle time, optimization of vehicles and fleet renewal, eco- direction, efficient use of vehicles and more efficient vehicles, use of more efficient facilities, reverse logistics and fuel efficiency.

However, the study showed unfavourable managers' perception of profit maximization, cost reduction and competitive advantage as motivating factors for the introduction of these green practices in companies. In a similar way, the research found a flagrant low utilization and lack of development of environmental accounting in the companies surveyed, as well as mechanisms of investigation and economic managerial analysis, which can hinder control processes in companies. That said, although companies carry out green logistics practices, they do not use accounting reports that evidence their spending on environmental control.

Thus, it is possible to conclude that in the scope of the searched road hauliers there is a search for adaptation to the new needs in relation to sustainability, with initiatives that aim to reduce the environmental and social impact of its activities. Many people believe that investing in green logistics practices increases their costs, however, that such an investment may not directly contribute to their efficiency and competitiveness in relation to customer recognition compared to competitors.

In this way, the answers indicate that it is precisely in the aspect of the management and control of environmental accounting and the costs involved that there is a lack of the companies. The potential for future studies in this area and the increase in the number of companies and segments surveyed is shown here, in order to compare similarities and differences between regions, segments, types of companies (family and professional management and control, multinationals, etc.).

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