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Reverse logistics and environmental management

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ABSTRACT

Reverse logistics, an essential area of conventional logistics, is recognized as a strategic tool in the market and crucial for corporate environmental management, in line with environmental certification criteria, such as NBR ISO 14001. Environmental certifications, adopted by companies and organizations to improve their environmental performance, ensure compliance with environmental policies and facilitate business relationships with markets that require such certifications. Benefits such as employee motivation, improvement of the company's image and preventive environmental actions are highlighted by Oliveira and Serra (2010) as results of an Environmental Management System based on the ISO 14001 standard. Machado Jr. et al. (2013) identify competitive advantages, such as reuse of inputs, recycling, and efficiency of products and processes. With the perception that efficient management of the environment is necessary for products without correct disposal, organizations promote the development of reverse logistics. This tool plans, coordinates and controls actions from the entry of raw materials to the shipment to the end customer, aiming to meet environmental requirements, standards and policies.

Keywords: Reverse logistics, Environmental certification, ISO 14001, Organizational benefits, Efficient management of the environment.

INTRODUCTION

Reverse logistics is considered one of the areas of conventional logistics, used as a strategic tool for the market and as of fundamental importance for corporate environmental management, supported by the environmental certification criteria through NBR ISO 14001.

Environmental certifications are employed by companies and/or organizations to improve their environmental performance. As a result, they act in accordance with environmental policy (municipal, state or federal) and facilitate commercial relations with other markets that require the certification of products and processes (GAVRONSKI et al., 2008; PEREIRA, 2011).

For Oliveira and Serra (2010), among the main benefits obtained with an Environmental Management System based on the NBR ISO 14001 standard are: the motivation of employees to achieve environmental goals and objectives; the improvement of the company's image; and the development of preventive environmental actions. Machado Jr. et al. (2013) identify as competitive advantages of

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certification: the reuse, recycling or reuse of inputs aimed at preventing pollution and greenhouse gas emissions; and the increase in the efficiency of products and processes, favoring the reduction of the consumption of natural resources, energy and fuels.

The organizations, realizing that some products did not have a correct destination, and that in order to make such a destination, it was necessary to efficiently manage the environment in compliance with environmental rules, standards and policies (SANTIN et al., 2007; OLIVE TREE; PINHEIRO, 2009), provided the necessary environment for the development of reverse logistics. Reverse logistics is part of this process as a tool that aims to plan, coordinate, direct and control the actions of an organization, ranging from the entry of raw materials in the transformation process to the shipment of the material to the final customer (FERREIRA; ALVES, 2005; HERNÁNDEZ et al., 2012).

OBJECTIVES

Show the context of reverse logistics, showing the advances found in the knowledge of the problem and the challenges to move forward;

Discuss reverse logistics and environmental management in order to shed light on some aspects of the two strategies;

Draw an adaptable profile to any segment that intends to associate reverse logistics with the environmental management system.

METHODOLOGY

The growing concern with sustainability and the environmental impact of business activities has led to the search for effective strategies that reconcile economic development with environmental preservation. In this context, reverse logistics and environmental management emerge as two complementary approaches that are essential to achieve such a balance. This article, based on a comprehensive literature review, aims to explore the intersection between these two strategies, elucidating how their integration can contribute significantly to the operational efficiency and sustainability of companies. The proposed discussion seeks not only to clarify concepts and practices related to reverse logistics and environmental management, but also to highlight how the synergy between them can enhance business management efforts aimed at sustainability.

To deepen the understanding of reverse logistics and environmental management, a study methodology was adopted that involved a detailed analysis of different models and practices adopted by leading companies in sustainability, as well as the consultation of relevant legislation that regulates such activities. This methodological approach allowed us to identify the critical steps in the implementation of an effective environmental management system and how reverse logistics can be integrated into these

steps to maximize the reuse of resources and the minimization of waste. In addition, the methodology employed made it possible to identify common challenges faced by companies during the implementation of these strategies, as well as the best practices to overcome them. The analysis also focused on the regulatory measures that companies must comply with, highlighting the importance of a strategic alignment between companies' internal policies and external legal requirements.

Based on the insights generated by the literature review and methodological analysis, the article proposes an implementation profile adaptable to different market segments interested in incorporating reverse logistics into their environmental management systems. This profile outlines the main links necessary for the success of initiatives in reverse logistics and environmental management, highlighting the importance of an integrated approach that considers both the specific operational needs of companies and the environmental expectations and requirements of society and regulatory bodies. The proposed approach emphasizes the need for a continuous commitment to innovation and continuous improvement of processes, aiming not only at regulatory compliance, but also at obtaining sustainable competitive advantages.

DEVELOPMENT

REVERSE LOGISTICS

Reverse Logistics, also known as reverse logistics, is the area of logistics focused on the return of materials already used for the production process, aiming at the reuse or appropriate disposal of materials and environmental preservation.

When a logistics company manages to employ a reverse logistics process in a way that is still profitable, it is achieving the economic and environmental sustainability of its business.

Reverse logistics applied to waste management brings to corporate environmental management a component of process improvement that allows the reduction of waste generation and the aggregation of value to it, since it enables its reinsertion in the market, thus having a logic of economy associated with the product.

When you seek to efficiently plan, program and control the flow and storage of products, logistics is being executed. It is relevant to mention that it goes beyond the services and information sectors, seeking to supply from the origin to the final point of consumption.

Reverse logistics becomes a relevant component of environmental management because it considers the life cycle of a product; Contemplating everything from the extraction of raw materials to the processes that involve the end of its life cycle, when the product becomes obsolete or damaged and must return to its point of origin to be properly discarded, repaired or reused.

NATIONAL SOLID WASTE POLICY AND REVERSE LOGISTICS

Law No. 12,305/10, which institutes the National Solid Waste Policy (PNRS), defines guidelines that must be followed at the national level for the treatment of solid waste. This law also contains an item dedicated to reuse, establishing reverse logistics. This is conceptualized as an "instrument of economic and social development characterized by a set of actions, procedures and means aimed at enabling the collection and return of solid waste to the business sector, for reuse, in its cycle or in other production cycles, or other environmentally appropriate final destination."

The PNRS also intuits that reverse logistics systems will be implemented and operationalized through the following instruments:

- **Regulation issued by the Government:** In this case, reverse logistics may be implemented directly by regulation, conveyed by decree issued by the Executive Branch. Before the regulation is issued, the Steering Committee must evaluate the technical and economic feasibility of reverse logistics. Reverse logistics systems established directly by decree must also be preceded by public consultation.
- **Sectoral Agreements:** Sectoral agreements are acts of a contractual nature, signed between the Government and manufacturers, importers, distributors or traders, aiming at the implementation of shared responsibility for the life cycle of products.

The process of implementing reverse logistics through a sectoral agreement may be initiated by the Government or by manufacturers, importers, distributors or traders of products and packaging.

- Terms of Commitment: The Government may enter into terms of commitment with manufacturers, importers, distributors or traders aiming at the establishment of a reverse logistics system:

I. in cases where there is no sectoral agreement or specific regulation in the same area of coverage, as established in Decree No. 7,404/2010; or

II. for the setting of commitments and targets that are more demanding than those provided for in a sectoral agreement or regulation.

The terms of commitment will be effective from their approval by the competent environmental agency of SISNAMA, according to its territorial coverage.

Currently, the systems already implemented are:

- Batteries;
- Lubricating oil and its packaging;
- Pesticides and their packaging;

- Tires.

The systems under implementation are the following:

- Medicines and their packaging;
- Sodium-mercury vapor fluorescent and mixed-light lamps;
- Packaging in general;
- Electronics and their components.

ENVIRONMENTAL MANAGEMENT SYSTEM

Environmental Management System (EMS) is an organizational structure that allows companies to assess and control the environmental impacts of their activities, products, or services.

All opportunities and improvements in business processes should also be sought from the perspective of the EMS, in order to reduce the impacts of its productive activities in the environment. The ISO 14001 standard, from the Brazilian Association of Technical Standards (ABNT) is responsible for regulating the system, establishing the implementation and operation requirements. It is also important to add that this sustainable management model is based on the following five principles, which must be obeyed by companies:

1. Know what must be done, ensuring commitment to the EMS and defining the environmental policy;
2. To prepare an action plan aimed at meeting the requirements of the environmental policy;
3. Ensure the conditions for the fulfillment of environmental objectives and goals and implement the necessary support tools;
4. Carry out periodic quali-quantitative assessments of the company's environmental compliance;
5. Review and improve the environmental policy, the objectives and goals and the actions implemented to ensure the continuous improvement of the company's environmental performance.

Complying with the aforementioned principles through a practical methodology for the implementation of an EMS is a guarantee of reducing environmental impacts and, at the same time, improving the company's image in the market (ROVERE, et al., 2000).

INITIAL STRUCTURING OF A COMPANY'S REVERSE LOGISTICS SYSTEM

Below will be explained some fundamental points in the process of structuring a reverse logistics system.

- **Incentive to end users:** It is known that the reverse logistics cycle does not impose mandatory participation Therefore, this can be one of the main points of failure in the process. Companies should strive to improve their campaigns, so that waste can be in a single place for optimal collection.
- **Add a pickup route to the delivery route:** The trucks, when they finish their delivery route, must return to the warehouse. A wise alternative would be to implement a return route that includes the collection of waste, in possible situations. By doing so, the manufacturer and its carrier will take better advantage of the delivery routine, also optimizing reverse logistics. However, there are still other ways to give a good final destination to the waste.
- **Creativity:** It is not necessary for 100% of the waste to return to its manufacturer, some types can be sent for another purpose by the end user. Examples of other destinations would be: NGOs, handicrafts, recycling companies, among others. Most likely the cost of collecting and forwarding will be reduced and with this saving, the producer can encourage these NGOs with donations to enable the collection. The company gains a tax incentive with the donation, the NGO with the help of costs and everyone wins with less waste polluting the environment.

INTEGRATION OF THE REVERSE LOGISTICS SYSTEM INTO A COMPANY'S ENVIRONMENTAL MANAGEMENT SYSTEM

Waste from manufacturing, transportation, storage, and the finished product are the responsibilities of the companies involved. By implementing this logistics strategy, the company will be contributing to an alternative economy that generates new products with waste that would otherwise be discarded. Considering the assumptions pointed out by ISO 14001, a company should consider for the application of reverse logistics coupled to the internal environmental management system:

- Implement and maintain documented reverse logistics objectives and goals;
- Perform training associated with reverse logistics and the environmental management system, and must keep the associated records;
- Establish, implement and maintain periodically reviewed procedures associated with reverse logistics, including service providers;
- Regularly monitor and measure the key characteristics of reverse logistics operations;
- Evaluate the performance and relevant operational controls of reverse logistics operations and their compliance with the objectives and goals of the environmental management system; and
- Ensure internal audits of the environmental management system and its association with reverse logistics.

Reverse logistics integrated with environmental management proves to be an association of great opportunities, but it requires an operational infrastructure to achieve the desired success. The actions identified as necessary aim at the execution of actions aimed mainly at the systematization of information, the monitoring and reassessment of continued processes.

FINAL CONSIDERATIONS

Reverse logistics brings many benefits to companies, mainly because it will be complying with the law and benefiting society. This can be used as a marketing argument in the communication strategy. The eco-efficiency of products is already a tiebreaker among consumers.

What is garbage for some individuals and companies can be used by other companies, which will make other products, employing more people and making a new economy turn. In summary, for reverse logistics to be well applied, the manufacturer and the companies responsible for its logistics must have a global view of the supply chain.

The analyses allow us to understand that reverse logistics, in addition to being new and coming from conventional logistics, can be seen as an organizational strategy and at the same time as a support tool for environmental issues that need efficient and effective management, always obeying current legislation.

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