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Cost systems, reverse logistics and sustainable management in industrial enterprises

Sistemas de costo, logística inversa y gestión sostenible en empresas industriales

Sistemas de custos, logística inversa e gestão sustentável em empresas industriais

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ABSTRACT

The work addresses current concepts of interest to enterprise practice, such as sustainable management, sustainability, reverse logistics and cost systems, under the perspective of various contemporary authors, especially Rob Gray. The objective was to theoretically analyze the influence of inverse logistics and cost systems in the sustainable management of industrial companies. A wide and updated bibliography was consulted, which served as a basis for a systemic analysis of these concepts and their application in the context of industrial enterprises. The relationships between the concepts studied and the usefulness of reverse logistics for industrial companies to achieve sustainable management, where cost systems play a fundamental role, were determined. Particularly, Rob Gray's contributions to the subject of study were highlighted, starting from a questioning of the epistemology of accounting and finance, which requires the suppression of conventional positions in order to assume the other aspects of the life of man and nature that must be controlled and registered, such as the social and environmental ones.

Keywords: reverse logistics; costs; sustainability; sustainable management; industrial enterprises

RESUMEN

En el trabajo, se abordan conceptos de actualidad e interés para la práctica empresarial, tales como gestión sostenible, sostenibilidad, logística inversa y sistemas de costo, bajo la perspectiva de diversos autores contemporáneos, especialmente Rob Gray. El objetivo planteado fue analizar teóricamente la influencia de la logística inversa y los sistemas de costo en la gestión sostenible de las empresas industriales. Se consultó una amplia y actualizada bibliografía, que sirvió como base para un análisis sistémico sobre dichos conceptos y su aplicación en el contexto de las empresas industriales. Se determinaron las relaciones entre los conceptos estudiados y la utilidad de la logística inversa para que las empresas industriales logren una gestión sostenible, donde los sistemas de costo juegan un papel fundamental. Particularmente se destacaron los aportes de Rob Gray al tema objeto de estudio, a partir de un cuestionamiento a la epistemología de la contabilidad y finanzas, que requiere suprimir posturas convencionales a fin de asumir los otros aspectos de la vida del hombre y la naturaleza que deben ser controlados y registrados, tales como los sociales y ambientales.

Palabras clave: logística inversa; costos; sostenibilidad; gestión sostenible; empresas industriales

RESUMO

O artigo aborda conceitos atuais de interesse para a prática empresarial, tais como gestão sustentável, sustentabilidade, logística inversa e sistemas de custos, da perspectiva de vários autores contemporâneos, especialmente Rob Gray. O objetivo era analisar teoricamente a influência da logística inversa e dos sistemas de custos na gestão sustentável das empresas industriais. Consultou-se uma bibliografia extensa e atualizada, que serviu de base para uma análise sistémica destes conceitos e da sua aplicação no contexto das empresas industriais. As relações entre os conceitos estudados e a utilidade da logística inversa para as empresas industriais para alcançar uma gestão sustentável, onde os sistemas de custos desempenham um papel fundamental, foram identificadas. Os contributos de Rob Gray para o tema em estudo foram particularmente notáveis, baseados num questionamento da epistemologia da contabilidade e das finanças, que requer a supressão de posições convencionais a fim de assumir os outros aspectos da vida humana e da natureza que devem ser controlados e registados, tais como os aspectos sociais e ambientais.

Palavras-chave: logística inversa; custos; sustentabilidade; gestão sustentável; empresas industriais

INTRODUCTION

There are numerous studies that in recent years have focused on the various management practices that allow the enterprise to improve its overall results, considering the impact that its productive activity has on society and the natural environment. Increasingly, these practices are considered a source of competitiveness, which on the one hand shows the harmonious relations with its various stakeholders

and, secondly, puts the enterprise in a position to compete favorably in dynamic markets through differentiation strategies (Ruiz Sánchez et al., 2020) and generate sustainable business opportunities over time.

In this area, reverse logistics is one of the techniques that has been most recognized in the context of productive enterprises, achieving "compatibility with the strategy of social responsibility" (Hurtado García, 2019, p. 338). Considering the focus of reverse logistics, which is aimed at taking advantage of out-of-use products, waste and others for the generation of new values and use values, reducing costs through the optimization of the use of raw materials, time and, therefore, improving the relationship of the enterprise with its stakeholders. According to Antonyová, Antony and Soewito (2016), the strategic factors related to reverse logistics are basically: legislative regulations, environmental aspects, location, customer satisfaction and strategic costs.

This last factor is precisely one of the concepts to which this work is dedicated, since as indicated above, reverse logistics, through the recovery, recycling or reuse of products, not only minimizes environmental impacts but has a direct effect on reducing costs, through value recovery strategies when products are returned to the enterprise within their warranty period or at the end of their useful life, according to Sánchez (2020).

Taking into account the concept and usefulness of reverse logistics, there has been increasing interest in determining its contributions to the development of sustainable enterprise management. It should be considered that sustainability is a complex concept that has evolved over time, incorporating into its approach, in addition to environmental issues, social issues, as part of the activity that companies perform in relation to their stakeholders (Plasencia Soler et al., 2018).

In addition to its concept, sustainability is just as complex to measure in the field of business management. The aforementioned authors state that there are several approaches to measuring the sustainable development of organizations, such as the Four-Pillar Model, the Pressure-State-Response Model, and the Triple Bottom Line Model, among others, which have numerous advantages and disadvantages. Among the latter, according to these authors, the complexity and long period required for their implementation, the difficulty in determining and measuring their evaluation components, which leaves open a line of research towards new models for measuring the sustainable management of organizations that overcome the inconsistencies of the existing ones.

In the relationship between the practice of reverse logistics, associated cost systems and sustainable management, there is still a long theoretical and methodological road to travel, which allows the systematization of the "economic, environmental and social indicators" that the company needs to generate, measure and evaluate (Hurtado García, 2019, p. 338).

The sustainable management of enterprises is aimed precisely at determining the integral relations that it has in the economy, society and the natural environment, thus giving it an integrated character. However, sustainable management has not always been addressed in this way by the literature and enterprise practice, according to Muriel (2018), in many cases prioritizing the environmental aspect of the rest.

Increasingly, in industrial enterprises, the decisions that are made in terms of production, marketing and logistics assume these factors (economic, social and environmental), with influence on both the image, ethical relationship of the organization and income statements through increased sales revenue, as well as the decrease in operating costs, as stated by Garzón and others (2015).

Precisely, one of the most important aspects for the development of the sustainable management of the enterprise is the generation and application of measurement and evaluation instruments of social and environmental indicators, to which the disciplines of social and environmental accounting are dedicated. In this area of study, the author Rob Gray stands out, to whom a considerable space will be dedicated in the work, given his contributions in the development of the theories of social and environmental accounting, with the achievement of interesting ruptures in the traditional approach of accounting and finance, which evidences the true disjunctive between sustainability and the principles of financial capitalism.

Despite the fact that the literature, in recent years, shows an advance in the development of the aforementioned topics, it is still of interest to deepen the integration and systematization of such contents. Therefore, the objective of this work is to theoretically analyze the influence of reverse logistics and cost systems on the sustainable management of industrial enterprises.

MATERIALS AND METHODS

For the fulfillment of the objective previously enunciated, theoretical methods and procedures of investigation were applied, such as: the systemic and historical method, supported by the analysis and synthesis and the integration abstraction. A wide bibliographic documentation on the subjects under study, of high quality, was analyzed, considering that they are part of repositories and databases of high international recognition.

The analysis of the bibliography of the author Rob Gray, who has a vast work in environmental accounting, social responsibility, sustainability, social accounting, green accounting, among others, was of special interest in the work. This work was contrasted with other recognized authors in order to determine key ideas that support the development of reverse logistics as a source of sustainability for industrial companies.

The search and analysis of bibliography allowed the definition of the following topics of interest in the work, which are developed below: reverse logistics and cost systems; contributions of reverse logistics and cost systems to the sustainable management of industrial enterprises and Rob Gray's perspective.

RESULTS AND DISCUSSION

Reverse logistics and cost systems

Nowadays, there are many factors that influence an enterprise to stay in the market, grow and achieve success; among them, it can be mentioned, based on (Garzón Castrillón et al., 2015), strategic direction, good financial management, partnership strategies, communication and information, innovation and knowledge, leadership, social responsibility and environmental management and logistics. Precisely, "logistics is in charge of planning, controlling and evaluating the performance of the operational processes of each area of the organization" (Ruiz Sánchez et al., 2020, p. 143), a concept that has evolved as the world's demands are greater in relation to the use of waste, the impact of productive activity on the natural environment, among other factors.

According to Vega, Marrero and Perez (2017, p. 2) the concept of enterprise logistics has evolved in the last years; it has been acquiring a greater systemic and integrated character, considering it as "the process of management, in an effective way, of the flow of distribution-manufacture-distribution of products, raw materials and materials, as well as the flow of information from the point of origin to consumption". These authors, in relation to inverse logistics, propose that it encompasses all of the above, which is why they recognize three important blocks of factors in its development: those of enterprise logistics (optimal use of resources, management of the flow of production and transport, among others); green logistics (energy consumption, handling and reduction of waste, environmental management) and finally, those of inverse logistics (recovery of values and use values, returns, resales, etc.).

Reverse logistics, according to Gullifa, Jatib, Marcuzzi and Perez (2017, p. 1) generates "the opportunity to transform the internal costs of the enterprises into savings and, to minimize the external costs, both in the economic and productive area, as well as in the reduction of the negative impact on the environment". Thus, its development has generated challenges for traditional cost methods, turning it into an opportunity to make transparent, on the one hand, the social and environmental impact of economic activity which, as indicated by Martínez, Ibarra and Carrera (2020), can be achieved with certain cost systems such as the ABC that make it possible to evidence the costs or damages associated with the environment, making enterprises more responsible for waste, defective products or others and, in this way, "recovering values associated with the production and marketing process" (Hurtado García, 2019, p. 335).

The pressures that the enterprise currently has to develop sustainable management have a direct influence on its cost systems, as it becomes necessary to make its environmental costs visible (Martínez Garcés et al., 2020), involving the various stakeholders in the enterprise and with a necessary strategic character (Valenzuela Inostroza et al., 2019).

On the other hand, Sánchez (2020) proposes that, specifically in the distribution in industrial enterprises, the adoption of inverse logistics programs allows to save costs in sales, especially due to savings associated to transportation, invoicing and management of resource returns. Such is the importance of cost management, which on many occasions becomes the fundamental indicator of the design of reverse logistics networks

in enterprises, that by applying various strategies, techniques and management of variables, they find an optimal solution that allows them to reduce operating costs and increase profits from the sale of waste and other outputs of the production process, as evidenced in their work Valenzuela, Espinoza and Alfaro (2019).

The paper by Castillo, Valdivia and Hernández (2018, p. 9), provides an interesting approach to cost reduction around the value chain; it applies reverse logistics strategies, with stakeholder interaction, considering that "there are opportunities for cost reduction and increased efficiency in the market, if the actors -big and small- of the value chain work together. In general terms, the literature shows the challenges that the implementation of reverse logistics represents for traditional cost methods and, in turn, how the calculation and estimation of costs becomes one of its main instruments, with visible effects on enterprise efficiency.

Contributions of reverse logistics and cost systems to the sustainable management of industrial enterprises

The effects of the productive activity of man and enterprises on nature and the environment in general are undeniable, as well as the concern that, in particular, international organizations, national and local governments and citizens have shown over time to make the activity of the enterprise more consistent with the aspirations of achieving sustainable and sustained development. This is how many management techniques and tools have been developed to ensure that the enterprise acts in harmony with society and the environment. Among them is the reverse logistics, as explained above.

Muriel (2018) proposes the convergence of concepts such as sustainable management, sustainable development and enterprise social responsibility in organizational practice, implying that enterprises must integrate their actions (economic, social, environmental) in their projects and activities, with the aim of improving sustainability performance as part of which logistics networks are very important, according to Valenzuela, Espinoza and Alfaro (2019). Such is the relationship among these concepts, that there are authors who handle the term "sustainable logistics" with impacts on both the competitiveness of the enterprise as the society and the environment through the reduction of environmental damage and lower logistics costs.

Reverse logistics in industrial companies can occur both as part of the production process as well as in the commercialization process, as long as they are carried out through legal, ethical and environmentally friendly practices (Garzón Castrillón et al., 2015).

Industrial enterprises usually handle "high-volume, low-margin" businesses. It is essential to develop and implement new forms of organization that allow for an increase in the productivity of the enterprises' resources" (Vega de la Cruz et al., 2017, p. 2). Therefore, industries need to develop production strategies that allow them to minimize environmental impact as part of their operating processes and as a source of competitive advantage (Gullifa et al., 2017).

Among the main causes of the non-optimal development of reverse logistics at the business level are the lack of control, insufficient motivation and awareness of managers

and entrepreneurs and the lack of government support, according to Dias, Pagán, Braga, Cataneo and da Silva (2017). These authors attach great importance to the existence of legislation and government control as trigger factors for the development of reverse logistics practices in enterprises.

As indicated above, strategic factors related to reverse logistics are, in addition to legislative regulations, others such as location, customer satisfaction, environmental aspects and costs. All of them must be properly handled in the logistics management, in order to be optimized and used effectively.

Equally important is the need for reverse logistics to be properly implemented, otherwise it would be too costly and ineffective (López Vargas & Pérez Rubio, 2017), so it is necessary to implement management models that cover all dimensions of sustainability, from the economic, operational, social and environmental.

In relation to the importance of developing internal processes consistent with the aspirations of sustainable management in the enterprise, it is necessary to implement strategies that tend to consolidate the approach of reverse logistics and sustainability, which in turn consist of indicators that monitor their implementation, thus building what Granada, Álvarez and Afanador (2018, p. 144) called "sustainable industries", which require strong links with society and government.

Precisely, the management of indicators associated with reverse logistics and its continuous improvement over time can be one of the ways for companies to demonstrate and validate their sustainable management.

As explained above, cost systems are one of the factors most closely related to the successful implementation of reverse logistics in industrial enterprises, considering that cost accounting allows planning, classification, accumulation, allocation and control of costs associated with production and provide real and timely information on production, marketing, management and financing of the productive activity of enterprises. Specifically, in industrial enterprises, it is considered key "for a better management and operation of their production processes, senior management needs the information it provides, which allows them to control their costs, plan for the future and make decisions related to the economy of the enterprise" (Mera Morocho, 2018, p. 9) and focuses on costs recognized as recoverable values, given an investment in the production area.

When the reverse logistics approach is integrated into the cost systems in industrial enterprises, it is possible to make costs transparent in both directions of the value chain, with an influence on the total expenses of the production process and with the possibility of creating added value, given its sustainable use.

It is increasingly necessary to integrate the environmental factor to accounting, under the approach of evaluating integrally the costs, expenses and impacts of economic activity on the environment. In the field of environmental accounting, it is feasible to consider all costs, including those that are not usually taken into account and that significantly influence pricing and other enterprise variables.

In this context, reverse logistics has become a fundamental tool for the enterprise to comply with its environmental responsibility in relation to production processes, which evidences the need to develop methodological instruments that allow it, in the field of measurement and evaluation of management indicators, social and environmental accounting, topics in which Rob Gray has contributed significantly, author to which the following section will be dedicated.

Rob Gray's perspective

Rob Gray is an outstanding author in the field of environmental accounting, social accounting, social responsibility and other related topics, who recognizes the need for accounting specialists to break away from traditional work schemes in order to make this scientific discipline transcend into broader areas such as the social and environmental fields (Gray et al., 2014). To this end, according to Gray, it is necessary to break the reductionist approach that has prevailed in science and that has implied divisions in the subdisciplines, limiting the analysis of problems and models, based on the management of pre-established categories only, a phenomenon that occurs especially in the social sciences.

The above ideas have supported Gray's questioning of how far it is right that accounting and finance should devote their efforts only to the predetermined and conventional categories and not naturally extend their spectrum to other phenomena that can be controlled and recorded, such as social and environmental aspects. In the same way, Gray states that this branch of accounting will not achieve its full potential if it remains subordinated to the traditional language that overvalues business. He also states that strategic environmental assessment is a challenge and only with its own strong theoretical and methodological foundations will it succeed in consolidating the path that organizations are taking towards sustainability.

In Gray (2010), a more in-depth analysis by the author can be observed regarding the phenomenon of sustainability and sustainable development, which transcends political, personal and organizational levels and also impacts accounting practice, which must definitely move forward to take on the challenges that these concepts imply, aspiring to manage "totalizing accounts" that mark the distance between the sustainable and the unsustainable. Gray believes that the main source of unsustainability is precisely the use of resources and the production of waste generated by economic activity associated with growth and corporate and financial success.

In another of his works, Gray refers, in relation to the above, that the phenomenon of accounting should be seen in a broader context of social accounting (Gray & Laughlin, 2012), which has only managed to occupy a recognized role in organizational practice as enterprise social responsibility has taken hold, as well as other policy issues related to employees, employment and communities. In this work, the authors present their criteria about the trigger factor for social and environmental management in the enterprise: the shared concern about the survival of current and future generations and of other species, which becomes the underlying and shared values that drive the actions and activities undertaken in this sense.

In Gray (2013), we see the analysis of the historical debts that accounting also has in relation to the professional and intellectual performance of humanity, cataloguing it as a physical and intellectual debt.

After the analysis made in the work, it can be indicated that the inverse logistics requires the operationalization in the enterprise, of a planned and correctly implemented process, where the cost systems, associated, play a fundamental role to make transparent the costs of the productive processes and to become a source of generation of added values.

It was determined, from the study of the bibliography, convergence among concepts studied in the work, such as: inverse logistics, social responsibility, sustainability and sustainable management of the company, as well as the contributions that from the cost systems can be given for their effective development.

The study of Rob Gray's work allowed the identification of an interesting approach on the importance of accounting and finance breaking the traditional and conventional theoretical and methodological schemes, in order to assume the control and registration, not only of economic operations, but also of social and environmental ones.

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The authors have participated in the writing of the paper and the analysis of the documents.