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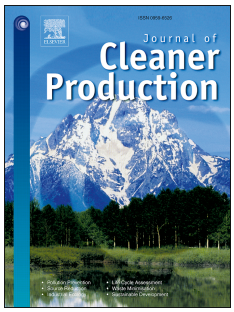

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Proposed model for assessing the contribution of the indicators obtained from the analysis of life-cycle inventory to the generation of industry innovation

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Abstract
The analysis of a product life cycle (through its inventory) can be used to identify opportunities to improve the environmental aspects of the product, which can result in innovations for the organization. Therefore, it is important to assess the relationship between Life Cycle Inventory and innovation. This study proposes a model to assess the contribution of the indicators obtained from Life Cycle Inventory to the generation of industry innovation. To construct the model, indicators of the Life Cycle Inventory of aluminum packaging for soft drinks were used, relating to natural resources, secondary raw materials, air emissions, liquid effluents, solid waste. In addition, innovation indicators related to the categories of innovation, innovative activities and information sources (obtained from the latest edition of Technological Innovation Research of the Instituto Brasileiro de Geografia e Estatística), related to the manufacturing sector of metal packaging were also used. The proposed model used statistical methods to analyze the relationship between these two variables. The following tests were used: normality of the data, Pearson correlation, Spearman correlation, formulation of the regression equation and coefficient of determination. Based on the proposed model, it is possible to identify the points of correlation between the Life Cycle Inventory and innovation. This will enable organizations to guide actions more efficiently and specifically to enhance product innovation.
Keywords: Life cycle inventory; Model; Evaluation; Industry innovation.

1. Introduction

Companies are being urged to continually innovate to seek or maintain their market share, and aspects related to environmental management have emerged as differentiating factors for competitiveness. According to Martín-Rojas et al. (2013), companies are located in a highly competitive environment, characterized by rapid technological change and the increased importance of timing in innovation. In this sense, according to Carvalho and Barbieri (2012) the inclusion of environmental issues in innovative processes is important. Therefore, it is imperative to combine sustainable development with the generation of innovation.

Therefore, in addition to stimulating innovation, managers need to ensure good environmental performance of the organization while complying with quality standards that are relevant to their developed products. To assist in this process, environmental assessment techniques have been developed (Collado-Ruiz and Ostad-Ahmad-Ghorabi, 2010), among which Life Cycle Analysis has been highlighted (LCA) in particular. According to Löfgren et al. (2011), LCA is the most important methodology for use in modern industrial environmental management. LCA involves the entire life cycle of the product (Arvanitoyannis, 2008; Ning et al., 2013) and enables the obtaining of an overview of the product system, providing a better understanding of the interaction between industrial activity and the environment and assisting in decision making and organization strategic planning. Therefore, LCA can be used to identify opportunities to improve the environmental aspects of the products (Khoshnevisan et al., 2013), which can result in innovations for the company.

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