



## Full length article

# Green supply chain management and firms' performance: Understanding potential relationships and the role of green sourcing and some other green practices



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## ABSTRACT

This study examines how the adoption of green supply chain management (GSCM) practices, including green sources, affects environmental and operational performance indicators. A multiple-case study was conducted using large Brazilian firms that have achieved particular success in their sectors and that occupy high positions in important rankings of corporate sustainability. The results of the study indicate that the GSCM practice of “internal environmental management” has the greatest positive effect on environmental performance indicators, and that the GSCM practice of “cooperation with customers” has the greatest positive effect on operational performance indicators. Thus, if a company aims to improve environmental performance (EP), it may create procedures and programs based on the environmental management system and adopt cleaner production initiatives. If a company intends to improve its operational performance (OP), it may respond to audits, improve information exchange between companies and clients and build research and development (R&D) areas to promote environmental innovation.

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## 1. Introduction

Sustainability is important for businesses and supply chains, as stakeholders are increasingly concerned about society, the environment and economic development (Golicic and Smith, 2013). In this context, green supply chain management (Diabat and Govindan, 2011), also known as environmental supply chain management (Govindan and Cheng, 2011), gains importance.

Green supply chain management (GSCM) practices are geared toward improving environmental performance (Mirhedayatian et al., 2014), and, therefore, the assessment of GSCM is important for any company, given that GSCM creates opportunities to reduce the emission of greenhouse gases and solid waste (Côté et al., 2008).

A more sustainable supply chain performance is indicated by a company's capacity to reduce the use of materials, energy or water and to find solutions that are more eco-efficient by improving the management of their supply chains (Ortas et al., 2014).

However, the lack of a clear relationship between GSCM adoption and improved performance, be it environmental, economic or operational, has become a barrier for companies seeking to justify the implementation of GSCM (Zhu et al., 2012a).

The relationship between GSCM practices and company performance has been the subject of many studies, but the results have been inconclusive (Eltayeb et al., 2011). According to Zhu et al. (2012b), a more detailed study should analyze the relationship between individual GSCM practices and individual factors in performance, in order to help managers identify the GSCM practices that most reinforce their individual areas of activity requiring improvement. In addition, according to Azevedo et al. (2011), the literature has not considered the effects of each individual practice or the connections between individual practices and performance metrics.

Considering that it is pertinent to study the relationship between the adoption of GSCM practices and the performance of companies, and that the way in which this relationship is assessed requires a more individualized perspective between each GSCM practice and performance indicators being studied, the objective of this study is to understand how the adoption of GSCM practices, including green sources, influences environmental and operational performance indicators. A multiple-case study was conducted with

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**Table 1**  
Main studies of the relationship between GSCM and performance..

Authors	Relationship observed	Results indicated	Suggested research opportunity related to this article's topic
Yang et al. (2013)	Internal and External GSCM Practices with EP and Competitiveness	Internal and external GSCM practices have a positive effect on EP External practices have a greater influence on EP than internal practices	Longitudinal studies to test the proposed relationship
Zhu et al. (2013)	Institutional theory, GSCM practices with environmental, economic and operational indicators	Internal environmental management and cooperation with customers are positively related to EP and OP	None given
Diabat et al. (2013)	GSCM practices with EP, economic performance, intangible aspects and OP	Ecodesign, cooperation with customers and reverse logistics practices most affect performance. GSCM practices affect EP the most	No comments
Laosirihongthong et al. (2013)	Proactive and reactive GSCM practices with economic indicators, intangible aspects and EP	Only green purchasing is related to EP	There is a need to understand the missing links between certain GSCM practices and certain dimensions of performance
Zailani et al. (2012)	Green purchasing and sustainable packaging with sustainability and operational indicators	Green purchasing relates positively to social, economic and operational indicators. The relationship with operational indicators is the most significant	Understanding why companies adopt supply chain sustainability practices in the first place
Lee et al. (2012)	GSCM practices and organizational performance	GSCM practices positively affect OP	Companies should investigate how to leverage GSCM practices to facilitate operational efficiency
Perotti et al. (2012)	GSCM practices with economic, environmental and operational performance	GSCM practices have a low impact on OP and varied impact on EP	None given
De Giovanni and Vinzi (2012) and De Giovanni (2012)	GSCM practices and sustainability indicators	Internal and external GSCM practices positively affect EP Internal practices have more influence on EP than external practices	None given
Green Jr et al. (2012)	GSCM practices with economic, organizational, environmental and operational performance	Green purchasing is not significantly related to EP. Cooperation with customers, ecodesign and investment recovery are significantly related to EP	None given
Zhu et al. (2012a)	Mediation relationships between internal and external GSCM practices with economic, environmental and operational performance	It is desirable that companies implement internal practices to improve EP through external practices. Ecodesign has the potential to improve OP if green purchases are well structured	Longitudinal study
Azevedo et al. (2011)	Green practices and supply chain performance	Reverse logistics reduces costs. Cooperation with customers increases quality	None given
Eltayeb et al. (2011)	GSCM practices with economic, intangible aspects, environmental and operational performance	Only ecodesign affects EP positively. Ecodesign and reverse logistics positively affect cost reduction. Green purchasing has no significant relationship to EP and OP	Study the relationship between GSCM and indicators of quality, flexibility and delivery
Zhu et al. (2010)	GSCM and economic, environmental and operational performance with barriers and motivations	Internal EM affects EP, particularly reduction of atmospheric emissions. GSCM affects OP in the indicators of product quality, improved capacity and reduced scrap rate	None given
Zhu et al. (2007a)	GSCM practices with economic, environmental and operational performance	Internal EM has a positive effect on EP but not on OP. Green purchasing has a negative effect on EP, and cooperation with customers has a positive impact on EP. These do not have a significant relationship to OP	None given
Zhu et al. (2007b)	GSCM practices with economic, environmental and operational performance in different industry sectors	The level with which GSCM practices are implemented is positively associated with the level of performance improvement. The strength of this association may be subject to how long and how well the respective industry sectors have implemented GSCM practices	Study different regions
Chien and Shih (2007)	GSCM with financial and environmental performance	GSCM practices positively affect EP	None given
Zhu et al. (2005)	GSCM practices with economic, environmental and operational performance	GSCM practices affect quality, larger product line and EP	None given
Zhu and Sarkis (2004)	GSCM practices with economical and environmental performance	GSCM practices positively affect EP	The study of environmental and operational practices and performance is a vast field for research and practice

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