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Note from the field

Understanding the genesis of green supply chain management: lessons from leading Brazilian companies

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ABSTRACT

This work discusses the internal structuring processes of leading companies when adopting green supply chain management (GSCM) practices. A multiple case study approach was adopted as the research methodology, with four large Brazilian companies that are leaders in their market segments. The introduction of green products is a key step towards initiating concern for the environment among suppliers and customers. This study's results show the importance of having green teams, a dedicated functional area, and/or green jobs that support the discussion of environmental management among a business and beyond. The practical results of this study offer new insights into the behavior of companies that are adopting GSCM practices, thereby generating new evidence for the extension of GSCM theory.

1. Introduction and conceptual background

The subject of green supply chain management (GSCM) has been increasingly discussed in recent years (Zhu et al., 2013) and, according to Sarkis (2012), recognized and incorporated by industry.

Generally, the focuses of these debates have been to identify the motivations, pressures, and barriers to the adoption of GSCM practices (e.g., Govindan et al., 2014; Mathiyazhagan et al., 2014, 2013; Hsu et al., 2013a; Diabat and Govindan, 2011); to identify or propose criteria when selecting suppliers in order to build supply chains with an environmental perspective (e.g., Kannan et al., 2014, 2013; Hsu et al., 2013b); to investigate the effects of adopting GSCM practices on organizational performance (e.g., Lee et al., 2013; Laosirihongthong et al., 2013; Lee et al., 2012; Green Jr et al., 2012; Zhu et al., 2012); to determine the importance of collaboration with suppliers to structure GSCM (e.g., Caniëls et al., 2013; Large and Thomsen, 2011; Bai and Sarkis, 2010); and to explore the role of internal environmental management as a prerequisite for supporting the discussion of GSCM within organizations (Jabbour et al., 2014; De Sousa Jabbour et al., 2013a; Arimura et al., 2011; Nawrocka et al., 2009; Darnall et al., 2008).

An important issue in understanding GSCM is how companies internalize this process of structuring (i.e., how the process is initiated) because, in general, empirical studies have pointed out that organizations adopt more intensity in internal GSCM practices than in external practices (de Sousa Jabbour et al., 2013b; Zhu et al., 2007; Zhu and Sarkis, 2004). Several studies highlight governance mechanisms that support GSCM as the collaboration and monitoring/evaluation of suppliers (De Giovanni and Vinzi, 2014; Gimenez and Tachizawa, 2012; Vachon and Klassen, 2006). However, as internal practices are the precursors of GSCM (Green Jr. et al., 2012), it is important to understand the intra-organizational mechanisms for GSCM. In a literature review, Gimenez and Tachizawa (2012) identified internal mechanisms that enable sustainability practices in a focal company, such as the firm's environmental commitment, senior management support, and the availability of resources. However, these authors did not delve into a practical discussion of these mechanisms. In addition, they have highlighted that only three of the surveyed articles had focused primarily on studying enablers; thus, there is still an opportunity to deepen this theme.

How does the process of structuring begin in companies that are adopting GSCM practices? The objective of this research is to discuss the trajectory of GSCM process of structuring in four major Brazilian companies that are leaders in their market segments through a multiple case study. As a practical contribution, this study is expected to discover some landmarks in the trajectory of GSCM

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practices that underpin the internal structuring of other companies seeking to enter sustainable supply chains or to make their supply chains environmentally sustainable.

A case study in operations management can be useful if the research meets the industry's needs (Childe, 2011). According to Pagell and Shevchenko (2014), studying sustainability is akin to studying a process of organizational transformation. Therefore, case studies are useful because they help to explain how a process has occurred. Additionally, Sheu and Talley (2011) indicate that practical studies about GSCM that address issues and solutions require further investigation. Companies from Brazil were chosen for this study because, according to Seuring and Gold (2013), there are few studies about environmental sustainability in developing countries. Furthermore, according to Jabbour and Jabbour (2014), Brazil is one of the most economically important countries of Latin America, a region that is responsible for 7% of the world's GDP. Moreover, according to the New National Policy on Solid Waste, in force since 2010, Brazil has an environment of institutional enabling for organizational actions linked to GSCM because responsibility for the correct management of post-consumer waste is on organizations (de Sousa Jabbour et al., 2014).

The theoretical assumptions underlying this research include the following: First, (a) GSCM refers to the integration of environmental concerns into inter-organizational practices within supply chain management, including environmental collaboration and environmental monitoring actions (Sarkis et al., 2011; Vachon and Klassen, 2006). Second, (b) according to Zhu et al. (2008), GSCM practices can be understood to be internal environmental management, green purchasing, cooperation with customers, eco-design, and investment recovery constructs. Third, (c) GSCM practices can be classified as internal and external, with internal practices including internal environmental management, eco-design, and investment recovery, and with external practices including green purchases and cooperation with customers (Zhu and Sarkis, 2004). Fourth, (d) internal practices are generally adopted more often than external practices, and among the practices, cooperation with customers is the least frequently used practice (De Sousa Jabbour et al., 2013b; Zhu et al., 2007; Zhu and Sarkis, 2004). Fifth, (e) according to Green Jr. et al. (2012), manufacturing companies first adopt internal environmental management practices and subsequently adopt green purchasing, cooperation with customers, eco-design, and investment recovery. Similarly, Zhu et al. (2012) state that, in order to improve environmental performance by adopting external GSCM practices, it is desirable for companies to implement internal GSCM practices. Additionally, Zhu et al. (2013) confirm that internal GSCM practices increase the level of external GSCM practices that are implemented. Lastly, (f) according to Gimenez and Tachizawa (2012), internal mechanisms cover factors within the focal firm that help to achieve sustainable practices. The internal enablers they identified are: the firm's environmental commitment, senior or top management support, the availability of resources, the strategic role of the purchasing function, the development of the supply management capabilities of purchasing personnel, the role of the project leader, and appropriate performance measurement systems.

2. Research procedures

This study was based on a multiple case study with four large companies from Brazil that are leaders in their markets. These companies were selected using the following criteria: (a) their economic importance in their respective industries and (b) their environmental reputation, based on either tradition or the recent launch of environmentally friendly products.

After the second semester of 2013, contacts were initiated with professionals in the sustainability, supply chain, or product development areas of these companies to facilitate the fieldwork. During the first half of 2014, it was possible to collect the data for this study in person at the selected companies.

Table 1
Description of the companies studied and the data sources.

Company	Company characteristics	Interview	Secondary data	Direct observations
A	Chemical sector. In 2010, the company began to produce green plastics from renewable sources, ethylene from sugarcane.	Position: Manager of Sustainability Duration: 1 h 30 min	Manual of Health, Safety, and Environment; Integrated Management System Manual; Sustainability Report; Data from the company's website.	Such observations were not possible because the interview occurred in the company's office rather than in the production unit for green plastic.
B	Aeronautical sector. Production of aircraft for commercial, military, and business segments. The company is starting production of the first aircraft with a design for environmental concerns.	Position: 3 Engineers for Product Development – Design for Environment; 1 Engineer in the area of Sustainability and Industrial Operations; 1 Engineer in the area of Corporate Sustainability. Duration: 3 h 30 min	Sustainability Report; News from Internet portals; Data from the company's website; Video of a talk on design for the environment from the company.	Visit to the company's production line.
C	Cosmetics sector. Production of personal hygiene items. There is already a long tradition in the production of environmentally friendly products. Since the 1980s, the company has worked on the concept of refill packaging.	Position: Manager of Performance and Supplier Relationship; Manager of Science, Ecodesign, and Environmental Impact. Duration: 3 h 30 min	Sustainability Report; News from Internet portals; Data from the company's website; Slides from a presentation; Video of a talk on ecodesign from the company.	Visit to the company's production line.
D	Sector of household cleaning products. In 2010, the company launched the first line of household cleaning products in Brazil with the concept of Reduce, Reuse, Recycle, and Respect Biodiversity (4Rs).	Position: Manager of Research and Product Development; Supervisor of Safety and Environment; Sustainability Analyst. Duration: 3 h	News from Internet portals; Slides from a presentation on the product line studied; Data from the company's website.	Visit to the company's production line.

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