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"Green" supply chain management: The role of trust and top management in B2B and B2C markets

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A B S T R A C T

"Green" supply chain management (GSCM) has often been associated with highly visible companies (Bowen, 2000) and firms within consumer-focused industries (Buysse & Verbeke, 2003; Hall, 2000; Roht-Arriaza, 1996). As such, GSCM has partly been led by development of consumer awareness of environmental issues (Beamon, 1999; Zhu et al., 2005). This suggest that firms operating in business-to-consumer (B2C) markets have strong incentives to implement GSCM, due to both institutional and stakeholder pressure. However, this leaves the role of GSCM in business-to-business (B2B) sectors relatively unexplored and to-date little is known about: 1) the relative engagement with GSCM among firms in business-to-consumer and business-to-business sectors; 2) the conditions that are necessary for successful implementation of "green" practices in B2B supply chains. This study addresses these issues within the context of 340 buyer–supplier relationships in the United Kingdom, using an innovative research methodology that captures firms' engagement with GSCM practices and minimizes social desirability and common source biases. Our results show that GSCM is relatively limited among firms in B2B markets compared to firms in B2C markets. At the same time, we show that developing trust with supply chain partners, while also having top management support, is a crucial driver of engagement with GSCM among firms in B2B sector but less important among firms in B2C sector. These findings provide considerable insights to managers and marketers of B2B supply chains that seek to respond to a growing interest of environmental performance of supply chain.

1. Introduction

The nature of supply chain relationships varies significantly across business-to-business (B2B) and business-to-consumer (B2C) sectors. For example, personal relationships and trust have been suggested to play an important role in B2B settings (Andersen & Kumar, 2006; Arnott, 2007), and the different characteristics of B2B and B2C supply relationships can have significant implications for the implementation of "green" supply chain management (GSCM) (Cruz, 2008; Vachon & Klassen, 2007). Firms in B2B markets often have few incentives to engage in GSCM and hence their practices are relatively reactive compared to firms in the B2C sector (González Benito & González Benito, 2006). There is, however, increasing pressure for marketing and supply chain practitioners in B2B settings to improve their environmental practices. Not only to respond to external pressure, but also because it is generally accepted that GSCM can improve firm performance and its competitive position (Sharma, Iyer, Mehrotra, & Krishnan, 2010).

"Green" supply chain management has been defined as "integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life" (Srivastava, 2007, p. 54). Existing research within the field has focused on a number of aspects that often encompass the entire supply chain (see Srivastava, 2007), including total quality management (Klassen & McLaughlin, 1993; Porter & van der Linde, 1995), lean supply chain management (Kleindorfer, Singhal, & Wassenhove, 2005; Rothenberg, Pil, & Maxwell, 2001; Simpson & Power, 2005), reverse logistics (Chan, 2007; Guide & Van Wassenhove, 2002; Wu & Dunn, 1995), life cycle assessment (Beamon, 1999; Hagelaar, van der Vorst, & Marcelis, 2004; Stewart, Collins, Anderson, & Murphy, 1999), and product stewardship (Michaelis, 1995; Verghese & Lewis, 2007). Although such approaches have highlighted the dynamics and complexities of implementing GSCM, they tell us little about implementing GSCM within individual buyer–supplier relationships. At the first-tier supply chain level, research has shown that the implementation of GSCM is often driven by regulation (Walker, Di Sisto, & McBain, 2008), customers (Lamming & Hampson, 1996), and requires the support of top management (Lee, 2008) and employees (Drumwright, 1994). Nonetheless, little is known about the comparative engagement with GSCM among firms in B2B and B2C sectors, but it is generally

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anticipated that firms in B2C sectors are more involved with GSCM because of greater consumer pressure, media scrutiny and their more immediate visibility to stakeholders (Bowen, 2000; Hall, 2000).

In this study we use a novel data collection approach to capture buyer engagement with GSCM activities within the context of 340 buyer–supplier relationships. Our first aim is to understand and compare the extent of GSCM across firms in B2B and B2C sectors. In addition, we seek to examine the conditions under which firms in the B2B sector implement environmental processes into their individual buyer–supplier relationships. We focus in particular on two drivers: The buyer's perceived trust in its supplier, which has been shown to be a significant predictor of supply chain outcomes in B2B settings (del Bosque Rodriguez, Agudo, & San Martin Gutierrez, 2006; King & Burgess, 2008); and top management support which has consistently been found to be a major driver of GSCM (Drumwright, 1994; Lee, 2008; Walker et al., 2008; Zhu & Sarkis, 2006).

Given the nature of this study, we make three contributions: First, we provide one of the most comprehensive analyses of “green” supply chain management in the U.K. and we explicitly relate and compare GSCM across firms in B2B and B2C sectors. As such, this study extends our understanding of the degree to which GSCM is context dependent. Second, our study furthers existing research in the field of GSCM, which suggests that trust is an important factor for its successful implementation (e.g. Boyd et al., 2007; Cheng, Yeh, & Tu, 2008). We therefore contribute to an emerging literature, which suggests that the implementation of GSCM is sensitive to the characteristics of buyer–supplier relationships. Third, we distinguish between industrial, i.e. B2B, and final consumer-oriented, i.e. B2C, supply chains, and compare the extent to which trust, combined with top management support, plays a role in shaping GSCM in both settings.

In the following section we briefly review the literature on GSCM and its relationship with both trust and top management support. We then develop a set of testable hypotheses, which encompass trust, top management support and a set of moderating effects. Subsequently, we outline our methodology before presenting a set of results which incorporate descriptive statistics on the relative engagement with GSCM among firms in B2B and B2C sectors, and a set of hierarchical ordinary least square regressions, which explains the role of trust and top management in shaping GSCM. Finally, we discuss the managerial and research implications of our study.

2. “Green” supply chain management and trust

“Green” supply chain management is an increasingly important issue for business (Sarkis, Zhu, & Lai, 2011; Vachon & Klassen, 2008). Such practices are expected by employees (Carter & Jennings, 2004; Salam, 2009) and governments (Lee, 2008; Walker et al., 2008), and firms are realizing the benefits of GSCM, including cost reduction (Carter & Dresner, 2001; Zhu & Sarkis, 2006), improved product and process quality (Lamming & Hampson, 1996), risk reduction (Welford & Frost, 2006) and improved financial performance (Rao & Holt, 2005). GSCM therefore has the potential to make a significant contribution to the firm's competitive position and improve both financial and non-financial performance (Carter, Kale, & Grimm, 2000; Lamming & Hampson, 1996; Walker et al., 2008). Nonetheless, GSCM is also driven by a number of external factors, including legislation (Green, Morton, & New, 1996; Hall, 2000) and customer expectations and demands (Lee, 2008; Min & Galle, 2001). The current empirical work has therefore contributed towards our understanding of the driving factors behind GSCM, but few studies have considered the nature of the relationships between buyers and supplier that may facilitate GSCM. Some research has suggested that the power advantage of the buyer can aid the implementation of GSCM (Carter & Carter, 1998; Hall, 2000), and that power has the potential to create a multiplier effect (Preuss, 2001). Other research has found that GSCM is contingent on supplier coordination (Carter & Carter, 1998), supplier capabilities (Zhu & Sarkis, 2006), and it has also been noted that trust between buyers and suppliers is a positive influence on the extent to which a firm is able to “green” the supply chain (Vachon & Klassen, 2006a).

Earlier work has also suggested that trust is an important element of successful buyer–supplier relationships, particularly in B2B sectors, as supply chain management has moved away from the traditional transactional, and arms-length, view to one where close and reliable supply chain partnerships are seen as a critical element in the firm's success (Cater & Cater, 2010; Finch, Wagner, & Hynes, 2010). For example, Leenders and Fearon (2008) and Lummus and Vokurka (1999) note how supply chain practices used to be fairly standardized and that costs were the main differentiator. However, these practices have changed over time in order to respond to demands for greater flexibility and more complex supply chains. As such, there has been a development in strategic supply chain relationships (Bechtel & Jayaram, 1997; Hult, Ketchen, & Arrfelt, 2007), and it has been suggested that trust is a crucial element of strategic supply relationships (Ireland & Webb, 2007). Empirical evidence has also indicated that trust is essential for successful supply chain relationships as it can make the supply chain more agile and responsive (Handfield & Bechtel, 2002), improve commitment and the collaborative nature of the relationship (Kwon & Suh, 2005), which in turn improves performance (Johnston et al., 2004).

In addition to being fundamental in developing strategic supply chain relationships, trust has several other facilitating roles in inter-organizational relationships. First, from a transaction cost perspective, trust between buyers and suppliers can limit opportunistic behavior, resulting in greater adaptability and reduced governance costs (Williamson, 1979, 1993). Second, trust has been directly linked to social capital theory (Bowles & Gintis, 2002; Putnam, 2001), where it has offered a relatively complex framework, compared to transaction cost theory, for understanding supply chain relationships. Social capital in supply chains is important because it may allow supply chain partners to benefit from “assessing [one's and another's] present and future resources” (Batt, 2008, p. 488), and in the context of B2B supply chains, evidence suggests that social capital will influence cost, quality, delivery and flexibility (Krause, Handfield, & Tyler, 2007). Given these two perspectives on trust, it can be anticipated that the role of trust in “green” supply chains is of particular importance, because it can reduce the monitoring costs of implementing “green” practices in the supply chain, and because it can improve the dynamic and shared value of GSCM in relationships.

Much of the supply chain literature suggests that trust is multifaceted and a particular focus has been placed on two distinctive features: credibility and benevolence (e.g. Hawes, 1994; Skarmeas & Katsikeas, 2001). Although these features may not be easily translated into other cultures (see Wang, 2007), they have consistently been considered as vital components of successful B2B supply chains. Ganesan (1994, p. 3) argues that the issue of trust, in terms of credibility, has a significant influence on long-term orientation and “is based on the extent to which the retailer believes that the vendor has the required expertise to perform the job effectively and reliably”. As such Ganesan's (1994 , p. 3) definition of credibility “…encompasses […] consistency, stability and control”. In contrast, benevolence is concerned with genuine interest in one's welfare (Andersen & Kumar, 2006, p. 523; Doney and Cannon, 1997, p. 36). Benevolence “is based on the extent to which the retailer believes that the vendor has intentions and motives beneficial to the retailer when new conditions arise, condition for which a commitment was not made” (Ganesan, 1994; p. 3). Furthermore, Ganesan (1994) notes that benevolence is not focused on trust in the overall supplier, but rather with the individual supplier representative. Therefore, from a conceptual perspective, credibility is closer to the term reliance than benevolence, because benevolence captures trust at a personal level, rather than at an organizational level (Blois, 1999).

3. Conceptual framework and hypotheses

This study is concerned with the phenomena of “green” supply chain management (GSCM). We view GSCM as being concerned