

Environmental sustainability and supply chain management –

A framework of cross-functional integration

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The purpose of this paper is to investigate intra-organizational structures of sustainable supply chain management (SSCM). The paper develops a conceptual framework of cross-functional integration with a focus on knowledge transfer.

SSCM, understood as the integration of supply chain management and environmental, social, and economic issues, has received increasing interest in research and in corporations (Carter & Rogers, 2008; Seuring & Müller, 2008). Analyzing SSCM in more detail uncovers various external and internal challenges a focal company (the company that controls the supply chain; Seuring & Müller, 2008) has to cope with: it seems unlikely that a company can control all processes of production of semi-manufactured parts and the related environmental and working conditions across the whole supply chain (Roberts 2004, 3; Piplani et al., 2008).

Another challenge is that customers and media are increasingly interested in product properties and services as well as in production conditions along the supply chains which can create pressure for companies to deal with SSCM (Carter & Dresner, 2001; Koplin et al., 2007). In turn, however, these topics can also create corporate opportunities. Companies which consider sustainability issues in their procurement or which offer innovative products and services can create business opportunities by fulfilling the demand for socially responsible products and services (Geffen & Rothenberg, 2000; Kassinis & Soteriou, 2003; Carter & Jennings, 2004). To cope with these challenges, the purchasing department is not only involved in an ongoing dialogue with its suppliers; but also – as supply chain processes are also relevant for functional units within the company (Lambert et al., 1998) – in a dialog with company-internal departments such as the environmental department, R&D, or marketing (in order to collect and discuss the – sometimes competing – sustainability-related demands by customers and other external stakeholders). In other words, an external and the internal supply chain can be distinguished. *External supply chains* are characterized by the flow of materials, capital and information between the different partners (suppliers, focal company, retail, consumers, disposal/recycling), whereas *internal supply chains* encompass the interaction between the different functional units in the (focal) company (Lambert et al., 1998; Seuring & Müller, 2008). This raises the following question:

How can the activities of different functional units be aligned in SSCM?

More specifically, this article deals with two detailed questions:

- 1) *From a SSCM perspective, which kind of knowledge has to be managed to improve cross-functional integration?*
- 2) *What are practices and tools to manage SSCM relevant knowledge?*

To answer these questions a conceptual framework is developed. When intra-organizational knowledge transfer (Grant, 1996; Sveiby, 2001) and cross-functional integration (Crittenden,

2011) are analyzed, such an integrated approach can help to respond to the above mentioned SSCM challenges. Building on this, the paper will concentrate on practices and tools which are beneficial for intra-organizational integration and for knowledge transfer between the different functional units to achieve SSCM goals. For instance, such goals are the development environmental friendly products or the reduction of waste across the supply chain.

Up to now, few papers discuss the necessity to address the intra-organizational alignment of departments to effectively manage the supply chain in sustainability terms (e.g. Pagell & Wu, 2009; Peters, 2010). However, they do not aim at building a theoretical framework with a focus on the transfer of knowledge within the organization. Further, various scholars underline the importance of cross-functional integration to manage environmental and sustainability issues, however, not in the context of SCM (e.g. Bannerjee, 2001). Other publications deal with cross-functional integration in conventional SCM, however, neglecting the environmental or sustainability management perspective (Sherman et al., 2000; Pagell 2004). To bring these different perspectives together, this paper focuses on the combination of literature from SSCM, cross-functional integration, and knowledge transfer.

Esper et al. (2010) deal with the internal demand-focused and supply-focused processes. This means, that the knowledge regarding the demand side (customer-oriented) and the knowledge regarding the supply side (supplier-oriented) can be transferred internally, in order to overcome the isolation of both sides (Esper et al., 2010). From a SSCM perspective, therefore, departments such as environmental management, purchasing, marketing, R&D, and production can collaborate through cross-functional mechanisms.

As cross-functional interaction within companies is highly complex (Brettel et al., 2011) information and knowledge flows should be managed purposefully. In this context, knowledge means organized, synthesized, or summarized information (Liebowitz, 2003). The

knowledge-based theory (Grant, 1996) emphasizes the role and high relevance of knowledge for a company to create competitive advantage. In the context of SSCM and intra-organizational integration, knowledge sharing and distribution are crucial. Sveiby (2001) distinguishes between three types of knowledge distribution: knowledge has to be transferred across internal structures, external structures, and individual competences. In this context, one goal of an effective knowledge transfer is to secure a match of information and material flows along the supply chain. Thus, for SSCM, both literature streams can be merged to investigate cross-functional integration. For the development of the proposed approach Sveiby's model will be used and extended conceptually. Finally, practices and tools of intra-organizational SSCM will be analyzed based on the developed conceptual framework.

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