Int. J. Production Economics 152 (2014) 131–143

Contents lists available at ScienceDirect

Int. J. Production Economics

journal homepage: www.elsevier.com/locate/ijpe

Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature

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ARTICLE INFO

Article history:
Received 28 December 2012
Accepted 20 December 2013
Available online 27 December 2013

Keywords:
Sustainable Supply Chain Management
Dynamic Capabilities
Food industry
Literature review

ABSTRACT

Sustainable Supply Chain Management (SSCM) and Dynamic Capabilities (DCs) are both relatively young research fields examining dynamically changing corporate environments and industries. The food industry is an example of such a dynamic environment. Customers have high expectations for food safety and a growing demand for sustainably produced food. Companies fulfilling these demands target a customer base with high awareness of all three dimensions of sustainability, i.e., the economical, ecological, and social, circumstances in which food is produced and offered. This paper aims at describing how SSCM practices allow companies to maintain control over their supply chain and achieve a competitive advantage with the implementation of dynamic capabilities. Previously identified practices in SSCM are related to DC theory by identifying them as basic routines that form specific DCs. We conduct a literature review, including content analysis, examining publications (52 articles) on sustainable food supply chains published in English, peer-reviewed journals. We form the link between SSCM and DCs by integrating them into the same conceptual context. Specific DCs in the supply chain of a sustainability-oriented industry are also identified, such as knowledge sharing and re-conceptualizing the supply chain. Thereafter, we scrutinize the food industry according to SSCM and DC criteria and offer insights into the strategies used in that business market. The results show that sustainability practices and DCs in the supply chain are used among others to enhance traceability and tracking and to fulfill customer demands. Further research is needed to extend the operationalization of the existing conceptual frameworks.

1. Introduction

Supply Chain Management (SCM) is a broad topic and has been examined by researchers from different angles in the last years. One prominent research field is sustainability in SCM, namely Sustainable Supply Chain Management (SSCM). Both research and practical implementation have been growing steadily in the last decade in this specific area (Seuring and Müller, 2008a; Carter and Easton, 2011; Ahi and Searcy, 2013). Among others SSCM allows companies to implement corporate responsibility practices and achieve a higher efficiency in logistics performance and resource usage (e.g., Gold et al., 2010; Carter and Easton, 2011) while pursuing the three dimensions of sustainability, i.e., economic, social and environment goals. One driver for such corporate action is constant changes in supply chain configurations, which have raised concerns about how and whether this could contribute to sustainability (Halldorsson et al., 2009) and demanding strategic actions being taken. This offers a link into another young field of management research, i.e., the dynamic capabilities approach. They were first introduced by Teece and Pisano (1994) to explain firm performance in dynamic business environments, focusing on the capabilities that firms employ to reach a competitive advantage. A first conceptual linkage between the two domains of research has been presented in the paper by Beske (2012); however, this remains at the conceptual level and lacks (any) empirical research. Both theories aim to explain the achievement of a competitive advantage in dynamic business environments. For our study we choose the food industry which fulfills the requirements for such a dynamic business environment (van der Vorst and Beulens, 2002). First, it is under constant scrutiny of the public attention (Faerne et al., 2001; Manning et al., 2006). Food safety is a concern of almost every consumer, and governments are closely observing practices and products of companies in the food industry. Secondly, environmental issues like deforestation or social problems, e.g., in the form of fair wages for farmers, are reported frequently by governmental agencies or Non-Governmental

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http://dx.doi.org/10.1016/j.ijpe.2013.12.026

Organizations (NGOs) (e.g., Hassini et al., 2012). This forms another link to SSCM since several companies are trying to counter these problems by adopting sustainable SCM practices (Maloni and Brown, 2006; Wiengarten and Pagell, 2012). Markets that target customers with high awareness of all three dimensions of sustainability like the sustainable food industry are exposed to dynamic changes in customer perceptions and expectations. In such markets, both strategic management theories, SSCM and DCs, can help companies in reaching a high performance.

The objective of the paper is to assess SSCM practices and their interlinks to DCs in the food industry. While this has already been argued for on a theoretical basis (Beske, 2012), we extend the objective and provide an empirical validation based on a systematic assessment of peer-reviewed papers on SSCM in the food industry. We hereby aim to integrate the theories of SSCM and Dynamic Capabilities with the example of the food industry, which has rarely been done for SSCM and to our best knowledge only once for DC theory (Marcus and Anderson, 2006).

The paper is structured as follows: a brief introduction covers the basic terminology of SCM, sustainability, SSCM, and DC theory. In the same section, an overview of food supply chain management and related sustainability issues is given. The next chapter introduces the research method and selected papers for the review. Next, the underlying frameworks for SSCM practices and DCs in SSCM are described. In the results section, insights into actual SSCM practices and DCs in the sustainable food industry are revealed. The discussion highlights the contribution of the paper, while the conclusion summarizes the findings of the paper.

2. Literature review and conceptual framework

2.1. SSCM practices

According to the definition given by Seuring and Müller (2008a), SSCM can be defined as "the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements." Several points stand out in this definition. First of all, it specifically calls for cooperation of the partners in the chain. This is in line with other researchers who put an emphasis on strengthened relationships in SSCM (e.g., Sharfman et al., 2009). Furthermore, the equal consideration of all three dimensions of sustainability is suggested, something that Elkington (1997) has termed as the Triple Bottom Line (TBL) approach (Gimenez et al., 2012). Finally, the definition draws special attention to the stakeholders of a supply chain, which have to be recognized as having legitimate requirements to the supply chains' activities (Müller et al., 2009a). This not only includes the customers, but also NGOs, suppliers or legal authorities (Emmehainz and Adams, 1999; Seuring and Müller, 2008a). In addition to this, we separate the stakeholders into two groups depending on their actual power to harm or support the organization (Madsen and Ulhøi, 2001; Buysse and Verbeke, 2003). Since the resources to engage stakeholders are limited, organizations usually concentrate more on those stakeholders that actually can exert a certain amount of pressure (Polonsky and Scott, 2005). Accordingly, we termed these pressure groups. At the same time, especially for companies following a sustainability strategy, the majority of stakeholders need to be taken into account as well; therefore, we include them in the framework as more generalized stakeholder groups.

This leads to the question of which practices are commonly applied in SSCM, which is a widely discussed topic in related literature (Zhu and Sarkis, 2004). While we introduce overarching categories and the single practices only briefly, we would argue that they form a sound conceptualization against the body of literature enfolded in SSCM (see e.g., the reviews in Seuring and Müller, 2008a; Gold et al., 2010; Carter and Easton, 2011) covering strategic as well as operations aspects. The single categories and practices are discriminant to each other, each describing a different aspect of SSCM. Furthermore, all points taken together outline aspects that can be used for comprehending SSCM, thereby fulfilling the criteria of completeness that such a framework should offer (Wacker, 1998). In the following, the categories in which SSCM practice s can be structured are introduced. We concentrate here on those practices that are relevant for our conceptualization of sustainable supply chain management and focus on practices that e.g., enhance relationships between the partners, the flow of goods and information or issues of sustainability, taken from the aforementioned definitions or SCM and SSCM conceptualizations. Of course, a comprehensive list would have to include aspects of SCM, such as benchmarking or financial performance measurement.

- *Strategic orientation:* The first category encompasses the strategic orientation of a company. Here the company's strategic values are addressed. Companies following a sustainability strategy are usually guided by the Triple Bottom Line (TBL) (Dyllick and Hockerts, 2002; Nikolaou et al., 2011; Gimenez et al., 2012), i.e., placing equal importance on all three dimensions of sustainability for their decision making. Furthermore, including the supply chain, i.e., a SCM orientation, in all decisions, even those not directly affecting the supply chain, is important for successful management of the supply chain (Seuring and Müller, 2008a; Pagell and Wu, 2009). This second part is a strong link to 'conventional' supply chain thinking as it is seen as one of the underpinning aspects of SCM.
- *Continuity:* The second category of the framework is concerned with the structure of the supply network. This concerns the way the SC partners interact on a permanent level. Consequently, practices used to build long-term relationships, the development of SC partners, and the selection of qualified partners are found here (Pagell and Wu, 2009; Gold et al., 2010). These practices are summed up under the category of continuity, the successful long-term competitiveness of the supply chain (Ziggers and Trienekens, 1999; Ashby et al., 2012; Miemczyk et al., 2012).
- *Collaboration:* Collaboration links structural aspects to businesses processes (Vlajic et al., 2012). On the one hand, structural decisions regarding how to technically and logistically integrate the partners in the supply chain and the quality of shared information are made (Vachon and Klassen, 2008). Joint development aims to collaboratively develop new technologies, processes, and products. On the other hand, the more operational organization can be linked to the *processes* level of SSCM. Sustainable supply chains face high risks due to high pressure group demands or a relatively small supplier base and the related disruption risk (Walker et al., 2008; Seuring and Müller, 2008b).
- *Risk management:* This leads companies to the adoption of various practices of risk management to mitigate these risks (Seuring and Müller, 2008a; Holt and Ghobadian, 2009). Individual monitoring of specific suppliers is a practice which can be observed in SSCM. Often own auditors or company employees are sent out to individual partners to identify their needs and progress towards specific goals (Koplin et al., 2007). Standards and certifications are usually more generalized, like the ISO 14001 or EMAS, and target a broad range of companies. At the same time, they can be handled by third-party auditors