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Integrating Sustainable Practices Within Supply Chain Management: A Systems Perspective



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Abstract

Systems thinking is deeply connected to the concepts of supply chain and sustainability and yet, the study of sustainable supply chain management (SSCM) practices has been fragmented, with most studies investigating practices in isolation. This paper proposes a conceptual framework that integrates SSCM practices. We start by conducting a systematic literature review (SLR) of existing research on SSCM practices. Keyword searches of academic articles published in English up to January 2016 were conducted in four major databases. Only studies designed around one or more SSCM practice were included in the final sample, which comprised 96 articles. The SLR identified six categories of SSCM practices: organizational and strategic management; sustainability and corporate social responsibility standards; specific social and environmental practices; sustainable procurement; relationships with suppliers; and strategic partnerships. We drew from systems theory to propose an integrative framework of SSCM practices based on findings of the SLR. Integration of practices can decrease the need for trade-offs when implementing sustainability in supply chains and may improve supply chain effectiveness. In addition, this study suggests potential avenues for developing SSCM research and practice in a way that better addresses major sustainability challenges.

Keywords: Sustainable supply chain management (SSCM), sustainable practices, systems theory, integration, systematic literature review (SLR)

1. Introduction

“The time has come for bold and scalable solutions, not just from a few leading companies, but from companies across all sectors who need to transition from making commitments to taking concrete actions. It is time to invest in systems change, reinvent the role of the corporation and fundamentally redefine business as usual.”

—Mindy Lubber, CEO and President of Ceres¹

The above quote from Mindy Lubber from Ceres, a non-governmental organization (NGO) dedicated to building private sector leadership for sustainability, reinforces a

message that many sustainability scholars and practitioners have been emphasizing for some time: society and business are not changing fast enough to address the most pressing sustainability challenges. Some researchers go as far as arguing that contemporary management scholarship does not fully account for the impact that business has on society and the natural environment (Bansal & Song, 2017). Part of the problem, they say, is an excessive focus on a single level of analysis, instead of focusing on the entire system and the interactions among different levels of analysis (Bansal & Song, 2017; Shrivastava, 1995; Starik & Rands, 1995). In addition, a focus on the triple bottom line approach to sustainable business management does not necessarily contribute to sustainability, as it tends to “separate the firm from its environment, as opposed to treating the firm as a system nested in other systems” (Bansal & Song, 2017, p. 125). As Isaksson, Johansson, and Fischer (2010) argue, the current discussion suggests a lack of systems understanding necessary for change toward sustainability.

¹ Lubber, M. (2018). It is time to scale up. *Forbes*, April 25, 2018. Available at <https://www.forbes.com/sites/mindylubber/2018/04/25/it-is-time-to-scale-up/#3def42e047ce> (accessed on May 7, 2018)

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Supply chains provide a particularly interesting context for applying a systems approach to business sustainability, especially given that the concept of supply chain management (SCM) was developed largely through the influence of systems theory (Holt & Ghobadian, 2009; New, 1997; Peck, 2005). From a sustainability perspective, the majority of the social and environmental impact of firms originates across their supply chains (Hanifan, Sharma, & Mehta, 2012), yet most global firms identify supply chains as their biggest challenge in improving their sustainable performance (Hanifan et al., 2012; United Nations Global Compact, 2016). Improving sustainability performance requires firms to simultaneously coordinate or direct a diverse set of sustainability practices across their supply chains (Winter & Knemeyer, 2013). Supply chains are invariably complex and require firms to find efficient ways of addressing multiple sustainability issues across various levels of upstream and downstream channels in a manner that accounts for the individual characteristics and needs of each firm, while simultaneously driving improvements in the overall sustainability performance of their entire supply chain. Clearly, this is not an easy task (Carter & Rogers, 2008).

Given the importance of understanding the interactions among different supply chain actors necessary for sustainable supply chain management (SSCM), it is surprising that systems theory has received little attention in the SSCM literature. The relatively few SSCM studies that have touched on systems theory have merely used it to frame an aspect of SSCM in a different light. Overall, systems theory has been used to explain supply chain innovation for sustainable development (Isaksson et al., 2010), decision-making in unstructured contexts found in SSCM (Alexander, Walker, & Naim, 2014), cross-tier sustainability issues in SCM (Koh, Gunasekaran, & Tseng, 2012; Tachizawa & Wong, 2014), and SSCM drivers and their relationships (Dubey et al., 2016). However, to the best of our knowledge, existing research does not explore integration of SSCM practices from a systems perspective.

Prior studies have tended to emphasize practices in an isolated, fragmented and firm-centric way (Carter & Easton, 2011; Pagell & Wu, 2009; Toubolic & Walker, 2014; Winter & Knemeyer, 2013). Examples of studies that focus on one or a few practices include Welford and Frost's (2006) examination of codes of conduct in Asian supply chains, Rosen, Beckman and Berkovitz's (2003) exploration of two types of environmental standards for the computer industry supply chain, and Lee & Kim's (2009)

investigation of corporate social responsibility (CSR) and sustainability standards in Korean supply chains. While this approach contributes insights to the theory and practice of SSCM, sustainability is, by definition, a multifaceted concept that requires simultaneous and combined efforts in different functions of organizations and their supply chains (Bansal & Song, 2017). Thus, we contend that to create truly sustainable supply chains, researchers need to move toward better understanding of how sustainable supply chain practices can be integrated. This issue is where our paper is primarily focused.

In setting out to redress the need for an integrative approach, this paper reports on a structured, systematic review of the literature relating to SSCM practices. Based on this review of the literature, we identified six major categories of SSCM practices. We then draw from systems theory to propose an integrative framework that connects the practices identified in the systematic literature review.

This article contributes to the conversation about SSCM by addressing sustainability goals more effectively and holistically. We identify major categories of SSCM practices in the literature by providing a bird's eye view of this field of study, highlighting areas of overlap among SSCM practices and suggesting ways of integrating these practices. Furthermore, our proposed framework for integrating SSCM practices suggests potential avenues for developing SSCM research and practice in a way that better addresses major sustainability challenges.

2. Theoretical Background

2.1 Supply Chain Management and Sustainability

The study of SCM has been approached as both an integrating management philosophy and, at an operational level, as the study of a set of management processes (Croom, Romano, & Giannakis, 2000). SCM is generally defined as involving the coordination of traditional business functions within an organization and across its extended chain of suppliers, customers and logistics service providers, "for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole" (Mentzer et al., 2001, p. 18). SSCM broadens this definition by including sustainability considerations in the management of supply chains (Beske & Seuring, 2014). There are many contrasting definitions of SSCM in the literature

(e.g., Seuring & Muller, 2008, Hassini, Surti, & Searcy, 2012), but we adopt Carter & Rogers' (2008) definition of SSCM as "the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key interorganizational business processes for improving the long-term economic performance of the individual company and its supply chain" (p. 368). The study of SSCM is thus both a branch of the supply chain field, as well as a theoretical broadening of the field (Beske & Seuring, 2014; Svensson, 2007).

A natural alignment exists between SCM and the concept of sustainability. Linton, Klassen and Jayaraman (2007, p. 1078) suggest that a focus on supply chains brings firms a step closer to sustainability, because "the supply chain considers the product from initial processing of raw materials to delivery to the customer." Further, extending to a cradle-to-cradle approach supports the argument that firms need to integrate issues that go beyond traditional SCM activities to incorporate areas such as product design, manufacturing by-products, by-products produced during product use, product life extension, product end of life, and recovery processes at end of life (Linton et al., 2007). Expanding the definition of SCM to include sustainability implies that these activities or practices also need to be integrated with socially and environmentally oriented practices and strategic managerial decisions.

2.2 SSCM Practices

We define SSCM practices as those practices that address one or more sustainability issues in supply chains. Most studies in SSCM examine one or a few practices in SSCM at a time and usually in a standalone fashion (Carter & Jennings 2002; Carter & Rogers 2008; Pagell & Wu, 2009). However, some studies have investigated different SSCM practices in a more systemic way (Brammer, Hoejmoose, & Millington, 2011; Pagell & Wu, 2009). Based on multiple case studies, Paggell and Wu (2009) propose a model of SSCM practices that lead to more sustainable supply chains. Their model includes practices that promote the integration of sustainability within focal firms (e.g., alignment of sustainability goals throughout the supply chains; proactive behavior and commitment to sustainability), practices that lead to new behaviors in the supply chain (e.g., reconceptualizing the supply chain to include NGOs, competitors and trade groups; focus on supply based continuity through transparency, traceability and

supplier certification), and practices that provide incentives and rewards to sustainable suppliers (e.g., intrinsic and extrinsic rewards). While these authors investigated the differences between traditional SCM and SSCM, we examined existing research to map knowledge related to SSCM practices and identified interconnections to one another through a systems theory perspective.

In their review of the literature on global SSCM, Brammer et al. (2011) proposed a best practice model of SSCM. Their circular model suggested that the best approach to SSCM involves setting expectations, confirming supplier agreements to those expectations, measuring supplier performance, and evaluating and improving performance based on results. This review expands Brammer et al.'s analysis by looking into a broader array of SSCM practices and proposing an alternative way of looking at the interconnections among these practices.

A number of other review articles related to SSCM have been conducted, with one or more of the following objectives: theory building (Gold, Seuring, & Beske, 2008); identification and classification of major areas of research (Kleindorfer, Singhal, & Van Wassenhove, 2005; Seuring & Muller, 2008; Srivastava, 2007); concentration on a specific management discipline (Hassini et al., 2012; Quarshie, Salmi, & Leuschner, 2016) or a particular practice in SSCM (Gimenez & Tachizawa, 2012; Hoejmoose & Adrien-Kirby, 2012; Igarashi, de Boer, & Fet, 2013; Srivastava, 2007); or published definitions of green SCM and SSCM (Ahi & Searcy, 2013). Although many of these review articles mention SSCM practices, none of them specifically focus on the *integration* of practices in SSCM or the research questions addressed in this study.

2.3 Systems Thinking and SSCM

The concept of sustainability was developed from a systems theory perspective (Bansal & Song, 2017). The Brundtland Report, the document that popularized the term sustainable development, took a systems perspective to social and economic development arguing that the world is a complex system comprised of six intertwined challenges: population, food security, ecosystems, energy, industry, and urban issues (Bansal & Song, 2017). All physical resources are drawn from the natural systems, thus the collapse of the natural system would eventually lead to the failure of social and economic systems (Bansal & Song, 2017).

Systems are sets of interconnected elements organized in a coherent way to achieve a specific goal

(Meadows, 2008). They are self-organizing entities that contain hierarchical, differentiated sub-systems that act interdependently (Kassel, 2013). Therefore, a systems mentality shifts our focus from the characteristics of a system's elements to the dynamics of how such characteristics connect to one another (Kauffman, 1993). As Table 1 illustrates, by adopting a systems mentality, we shift our focus to relationships between parts and the whole, from structure (i.e., how parts are organized) to processes that connect the necessary parts of a system in order to achieve change, and from linear movement to multidirectional movement (Kassel, 2013). A systemic orientation promotes focus on interrelations among different parts and emphasizes that reality is not linear, but circular (Senge, 2006).

Systems are normally composed of three parts: elements, interconnections, and purpose (Meadows, 2008). In a system, tangible and/or intangible elements are interconnected to achieve a certain purpose and the interconnections of elements produce a distinct pattern of system behavior over time that is different from the individual behavior of each element or the sum of their behaviors (Meadows, 2008; Senge, 2006).

The focus of this study is on the interconnections among SSCM practices. Interconnections comprise the relationships that hold the elements of a system together and typically operate through flows of information (Meadows, 2008). Interconnections also serve as feedback mechanisms that counterbalance each other, helping to regulate system behavior and the achievement of the goals of the system (Meadows, 2008; Senge, 2006). Therefore, the identification of interconnections causing a problem can lead to new insights (Senge, 2006). Feedback in systems refers to "reciprocal flows of influence" that goes both ways—i.e., "every influence is both *cause* and *effect*" (Senge, 2006, p. 74). Many feedback processes contain delays, which are interruptions between actions and their consequences (Meadows, 2008; Senge, 2006). Given the long-term orientation of systems thinking, feedbacks and delays are especially important; while they can often be ignored in the short term, they are surely felt in the long term (Senge, 2006).

The application of systems theory to management studies has not only considered the firm as a complex system, but has also looked beyond individual firms to study the relationship between organizational systems and other macrosystems (Bansal & Song, 2017). A central

Table 1: Traditional vs. system thinking approach to SSCM.

Traditional View	Systems Thinking
Firm centric	Relationships between the parts and the whole
Structure (i.e., how parts are organized)	Processes connecting parts of the system
Linear movement	Multidirectional movement

Source: Adapted from Kassel (2013)

assumption when applying systems theory to management is that business is a vital part of the larger social and natural systems (Bansal & Song, 2017). Humans depend on the outcomes of business activities that transform natural resources into products and services. Resource scarcity resulting from increased consumption impacts firms' ability to access resources leading to changes in prices and resource availability (Clayton & Radcliffe, 1996). In this article, we consider sustainable supply chains as complex systems (Holt & Ghobadian, 2009; New, 1997; Peck, 2005) and we take a higher level of analysis that integrates natural, social and economic systems within the activities of supply chains. Based on this perspective, we propose a framework that integrates different SSCM practices identified in the systematic literature review as follows.

3. Methodology

This study was based on a systematic literature review (SLR) of research publications to identify commonly used practices in SSCM. Systematic literature reviews are a replicable, scientific and transparent process that aim to minimize bias through exhaustive literature searches and by providing an audit trail of the reviewer decisions, procedures and conclusions (Cook, Mulrow, & Haynes, 1997). In summary, systematic reviews map and assess the existing intellectual territory (Tranfield, Denyer, & Smart, 2003). The research methodology for this study was conducted in five steps (Briner & Denyer, 2012), which are discussed next.

3.1 Definition of Review Question and Objective

The core question of our SLR was: *What are the most commonly studied SSCM practices?* Thus, this study is a retrospective analysis of prior literature, which serves to inform future research and focus analysis on key variables and mediators in the process of sustainability implementation.

3.2 Definition of Search Parameters

In our systematic review, defining parameters to be used involved identifying variations of keywords revolving around the terms “responsible and sustainable supply chain(s)” and “sustainable and responsible supply chain(s) practices” (see Table 2). Given that the definition of sustainability and CSR used by scholars and practitioners is converging (Bansal & Song, 2017; Montiel, 2008), these keywords provided inclusive, but reasonable boundaries for our search. The literature on SSCM is relatively new, with publications beginning in the early 1990s. Although we suspected that we would not find any publications prior to 1980, we searched all years up to January 2016 in peer-reviewed journals in four major databases (ABI-Inform, Google Scholar, Google, and Web of Science). These databases provide a wide coverage of journals in different areas, which allowed us to cast a wide net for data collection. Although Google is not an academic database, we used it to ensure that articles were not missed by searches in the other three databases.

The first step consisted of conducting keyword searches within the four selected databases. Only academic papers published in English studying one or more SSCM practices were considered for this study. This search was conducted in December 2015 and January 2016 and yielded 206 publications.

3.3 Inclusion/Exclusion Criteria

Given that most studies to date have not focused on groups of SSCM practices, we kept our inclusion and exclusion criteria broad. Studies designed around one or more SSCM practice were included in our sample; conceptual articles were considered when there was extensive discussion of at least one SSCM practice. Two researchers evaluated the articles by reading their titles and abstract and scanning the full content of the article,

when necessary. Disagreements among researchers on including or excluding articles were resolved through discussion. Having two researchers reviewing the articles served to ensure reliability. The use of clear guidelines for selecting studies ensured the validity of this research. Our final selection included 96 articles. Given that article selection was based on the title and abstract of each article during the keyword search, we found that many of the 206 publications collected through the keyword search were not designed around one or more SSCM best practice, but simply mentioned these types of practices without any deeper analysis or discussion. Therefore, 110 articles from the keyword search were eliminated after applying the inclusion/exclusion criteria.

3.4 Data Collection and Analysis

This step consisted of one author reading and extracting relevant information from the final selection of papers. Data extraction for this review concentrated on descriptive information about articles (i.e., authors, title, citation, publication date, journal), as well as on the SSCM practices reported in each article reviewed. These data were entered into a Microsoft Excel spreadsheet, with practices initially extracted and entered in a single column.

After data were extracted, we inductively coded the data on practices arriving at six categories of SSCM practices (Table 1). The coding process consisted of categorizing similar or related practices into groups. In doing so, we considered the studies by Pagell and Wu (2009), Brammer et al. (2012) and Centinkaya et al. (2011) as existing frames for classifying our data into categories. Descriptive information about articles was collected for organizational purposes and, thus, was not analyzed. The first author conducted the initial coding of these data, which was substantiated by the second author. The inter-rater reliability rate was 89.8% and discrepan-

Table 2: Keywords used in the systematic literature review.

responsib* supply chain*	(supply chain*) AND (sustainab* best practice*)
sustainab* supply chain*	(supply chain*) AND (responsib* best practice*)
responsib* supply chain* management	(supply chain* management) AND (sustainab* practice*)
sustainab* supply chain* management	(supply chain* management) AND (responsib* practice*)
(sustainab* supply chain*) AND (best practice*)	(supply chain* management) AND (sustainab* best practice*)
(responsib* supply chain*) AND (best practice*)	(supply chain* management) AND (responsib* best practice*)
(sustainab* supply chain*) AND (practice*)	
(responsib* supply chain*) AND (practice*)	
(supply chain*) AND (sustainab* practice*)	
(supply chain*) AND (responsib* practice*)	

cies were resolved based on discussion. We report the synthesis of the review data in the next section following Briner and Denyer's (2012) suggestion that synthesizing the findings of a systematic review involves combining studies in a way that creates knowledge not previously discernible in each individual study. Therefore, the first part of our synthesis provides a narrative of the main categories of SSCM practices identified in the literature. The second part of our synthesis identifies relationships among different practices (Briner & Denyer, 2012).

4. Results

SSCM practices are those practices that address one or more aspects of sustainability in SCM. Our review involved coding commonly studied practices and developing a synthesis of existing literature into six categories of practices, which are presented in Table 3. Each of the six categories we identified as the main building blocks for SSCM execution are briefly described below.

4.1 Organizational and Strategic Management

Arguably, the first step in the implementation of SSCM practices involves setting up the necessary internal infrastructure and practices within the focal firm. Focal firms occupy a central space in the supply chain and govern relationships with suppliers and end consumers (Harland, Lamming, Zheng, & Johnsen, 2001; Holt and Ghobadian, 2009). They are usually the key drivers of product design and branding in the supply chain, exerting dominant power by requiring suppliers and partners to implement different sustainability practices (Frostenson & Prenekert, 2015). For example, IKEA, the Swedish home furnishing retail chain, requires that its suppliers follow its code of conduct and implement environmental certifications, such as ISO 14001 and FSC certification (Andersen & Skjoett-Larsen, 2009). These firms normally have the greatest bargaining power over different actors in the supply chain (Cox, 2014). Many focal firms change or create organizational processes that develop internal capabilities necessary to implement SSCM practices, such as new organizational structures (Alvarez, Pilbeam, & Wilding, 2010) or organizational processes that help develop and maintain SSCM practices (Ciliberti, Pontrandolfo, & Scozzi, 2008; Rao, 2002).

Leadership support is also, naturally, essential to the successful implementation of SSCM practices (Faisal,

2010; Goebel, Reuter, Pibernik, & Sichtmann, 2012). It enables SSCM initiatives (Giunipero, Hooker, & Denslow, 2012; Walker & Jones, 2012) and guides employee engagement and training in SSCM practices (Andersen & Skjoett-Larsen, 2009; Cantor, Morrow, & Montabon, 2012; Goebel et al., 2012). Employee engagement on SSCM issues may be encouraged through participation in ad hoc committees (Cantor et al., 2012) and reward systems that guide behavior toward sustainability goals (Pagell & Wu, 2009).

4.2 Sustainability and Corporate Social Responsibility (CSR) Standards

These standards include codes of conduct, social sustainability standards, environmental sustainability standards and/or environmental management systems (EMS), and industry-level sustainability standards. Codes of conduct are generally the first step focal firms implement when moving toward SSCM and usually serve as gatekeepers (Foerstl, Reuter, Hartmann, & Blome, 2010). They help firms select suppliers that meet certain sustainability requirements (Ageron, Gunasekaran, & Spalanzani, 2012; Andersen & Skjoett-Larsen, 2009; Goebel et al., 2012), while setting up minimum requirements for other SSCM practices, such as life cycle analysis (LCA) (Balkau & Sonnemann, 2010). However, codes of conduct alone are not sufficient for achieving long-term success in SSCM (Hoejmose & Adrien-Kirby, 2012) and firms need to monitor supplier compliance with the code (Svensson, 2009). In general, suppliers' commitment to codes of conduct tends to improve when focal companies invest in long-term, constructive relationships with suppliers (Jiang, 2009).

Not surprisingly, social standards are much less adopted as a mainstream SSCM practice than environmental standards (Beske, Koplun, & Seuring, 2008) and, oftentimes, are not effective in addressing a broad range of social issues in SSCM (Blowfield, 2005). This can be explained, in part, by the context specificity of social issues (Lee & Kim, 2009). Therefore, the applicability or appropriateness of social standards may vary, for example, by industry sector (Graafland, 2002) and company size (Ciliberti et al., 2008). Social sustainability standards most commonly address working conditions and labor issues (Andersen & Skjoett-Larsen, 2009), such as child labor, forced labor, adequate remuneration, and fair-trade issues (Beske et al., 2008; Caniato, Caridi, Crippa, & Moretto, 2012).

Table 3: Overview of SSCM practices identified in the systematic literature review.

	SSCM Practices					
	Organizational & strategic management	Sustainability & CSR standards	Social & environmental practices	Sustainable procurement	Relationship with suppliers	Strategic Partnerships
Description of practice	Implementation of sustainability best practices in focal firm	Internal policies and third-party standards that help verify suppliers' levels of sustainability performance	Practices that address specific sustainability issues	Use of sustainability criteria to select suppliers	Practices that facilitate collaborations in the supply chain through communication, evaluation of suppliers, and supplier development activities	Knowledge exchange, complementation of focal firms' sustainability skills, and capacity building of SME suppliers
Examples	Sustainability policies, employee training, leadership support, embedding sustainability in strategic planning	Codes of conduct, ISO 14001, SA 8000, forest certification	Recycling, energy efficiency, labor standards, human rights	Past and current sustainability performance of suppliers, social and/or product certification	Training of suppliers, key performance indicators, mentoring of suppliers on sustainability issues	Partnerships with other firms, partnerships with NGOs, partnerships with government
Number of papers	50	49	41	33	76	16
Main journals	Business Strategy and the Environment; International Journal of Production Economics; Journal of Purchasing & Supply Management; Supply Chain Management: An International Journal	Business Strategy and the Environment; International Journal of Production Economics; Journal of Business Ethics; Supply Chain Management: An International Journal	Business Strategy and the Environment; Corporate Social Responsibility and Environmental Management International Journal of Production Economics; Journal of Cleaner Production	Business Strategy and the Environment; International Journal of Production Economics; Journal of Purchasing & Supply Management	Business Strategy and the Environment; International Journal of Production Economics; Journal of Business Ethics; Supply Chain Management: An International Journal	Corporate Governance; Journal of Supply Chain Management; Supply Chain Management: An International Journal
Main works (most cited)	Pagell and Wu (2009); Rao (2002); Walker et al. (2008)	Darnall et al. (2008); Pagell and Wu (2009); Walker et al. (2008)	Pagell and Wu (2009); Walton et al. (1998); Zhu et al. (2008)	Andersen and Skjoett-Larsen (2009); Pagell & Wu (2009); Walker et al. (2008)	Vachon and Klassen (2006); Vachon and Klassen (2008); Walton et al. (1998);	Lee (2008); Pagell and Wu (2009); Walker et al. (2008)

The use of environmental sustainability standards is more widespread. Focal firms may require the use of environmental sustainability standards as part of their supplier selection process (Ageron et al., 2012; Andersen & Skjoett-Larsen, 2009) to advance relationships with suppliers (Beske et al., 2008). Therefore, these standards are used for the evaluation and assessment of suppliers' environmental performance (Darnall, Jolley, & Handfield, 2008) and, in many cases, may be used in lieu of other supplier evaluation methods, such as audits (Kovacs, 2008). In other cases, environmental standards may be used to help further develop suppliers' environmentally sustainable practices (Rosen, Bercovitz, & Beckman, 2001).

Little research has been done on industry-specific standards within the context of SSCM practices. However, some studies have explored organic and fair-trade certification of cotton (Caniato et al., 2012), forest certification of wood-based products (Andersen & Skjoett-Larsen, 2009), the development of computing standards (Rosen

et al., 2001), tourism (Font, Tapper, Schwartz, & Kornilaki, 2008), metals and mining (Balkau & Sonnemann, 2010), and automotive (Beske et al., 2008) industry sectors.

4.3 Specific Social and Environmental Practices

Among the specific environmental practices identified in the literature, the most common are design for environment (DfE) of products or manufacturing equipment, waste management, recycling (of product and/or packaging), substitution or optimization of material use for more environmentally friendly alternatives, reducing, tracking and offsetting carbon emissions, energy efficiency, and green transportation (Caniato et al., 2012; Flint & Golicic, 2009; Handfield, Sroufe, & Walton, 2005; Rosen et al., 2003; Roy & Whelan, 1992; Walton, Handfield, & Melnyk, 1998; Zhu, Sarkis, & Lai, 2008). Many environmental practices seem focused on one main goal: minimizing resource use. This might explain the increasing number of studies that investigate

more encompassing practices, such as LCA, closing the loop, and reverse logistics (Ageron et al., 2012; Pagell & Wu, 2009).

The few studies that touched on social SSCM practices primarily discussed labor related issues in a peripheral way. Child and forced labor, compliance with labor standards, health protection, equal rights, freedom of association, and human rights have been the social SSCM practices discussed in the literature so far (Font et al., 2008; Welford & Frost, 2006).

4.4 Sustainable Procurement

Again, research on sustainable procurement has focused primarily on environmental sustainability. Reinforcing our earlier statement relating to internal (focal) firm change, the implementation of internal sustainability practices and standards, such as EMSs, seems to be the first step toward sustainable procurement practices (Green Jr., Zelbst, Meacham, & Bhadauria, 2012). Although sustainable procurement programs are similar in many ways to traditional procurement programs (Pagell & Wu, 2009), these programs must consider product and supplier characteristics that are in line with sustainability principles (Ciliberti et al., 2008). Most firms achieve those goals by defining a set of supplier selection criteria, such as management style, attitude, and financial performance of suppliers; quality performance; ability to support the focal firm in product development; past and current environmental and social performance; and environmental, social and/or product certification (Andersen & Skjoett-Larsen, 2009; Caniato et al., 2012; Handfield et al., 2005). CSR and sustainability standards and criteria act as order qualifiers in supplier selection processes and, as suppliers improve their sustainability performance in accordance with such criteria, they develop closer, more collaborative relationships with focal firms (Andersen & Skjoett-Larsen, 2009; Chiarini, 2013).

4.5 Relationships with Suppliers

Firms develop relationships with suppliers for a number of reasons but mostly to improve supply chain coordination and performance. Collaboration involves the development of long-term relationships with suppliers (Ageron et al., 2012), which often requires trust among the different parties in the relationship (Sharfman, Shaft, & Anex Jr., 2009). Consequently, firms tend to establish collaboration with major suppliers—i.e., those suppliers that are critical for the focal firm (Alvarez et al., 2010).

Successful collaborations for SSCM require three main components: (a) information sharing and dialogue (Faisal, 2010; Jiang, 2009); (b) evaluation and assessment of suppliers (Gimenez & Sierra, 2013; Jiang, 2009; Walton et al., 1998); and (c) supplier development activities (Klassen & Vereecke, 2012). Focal firms may share information about a number of topics, including general and updated information about sustainability-related requirements and the benefits of adopting its code of conduct and other sustainability criteria (Andersen & Skjoett-Larsen, 2009; Holt, 2004). This information may be shared through training (formal or informal), workshops, annual meetings, or written documents (e.g., newsletters, manuals) (Alvarez et al., 2010; Andersen & Skjoett-Larsen, 2009).

Although supplier evaluation and assessment can be implemented independently from collaborative efforts in the supply chain, assessment acts as an enabler of collaboration (Gimenez & Sierra, 2013). Firms can implement different methods of supplier evaluation and assessment with the most common ones being audits, supplier self-assessment surveys or questionnaires, certification or EMS, and key performance indicators (Chiarini, 2013; Klassen & Vereecke, 2012; Reuter, Foerstl, Hartmann, & Blome, 2010; Varnas, Balfors, & Faith-Ell, 2009; Walker, Sistob, & McBain, 2008; Walton et al., 1998; Wu, Dunn, & Forman, 2012). Firms may implement one or more of these methods, with many firms now focusing on combining some of these methods for continuous improvement of supplier sustainability performance (Foerstl et al., 2010; Reuter et al., 2010).

Supplier development programs are especially relevant for sustainability strategies because they help ensure supplier continuity—i.e., they help all members of the chain succeed and grow (Flint & Golobic, 2009; Pagell & Wu, 2009; Vachon & Klassen, 2008). Most supplier development programs focus on capacity building and continuous improvement of suppliers' sustainability and overall performance (Andersen & Skjoett-Larsen, 2009; Walton et al., 1998).

4.6 Strategic Partnerships

Strategic partnerships are becoming increasingly important best practices in SSCM. Three main types of partnerships may be used to improve the sustainability of supply chains: (a) industry and cross-industry partnerships; (b) partnerships with NGOs; and (c) partnerships with government agencies. Industry and cross-industry partnerships are collaborations established among firms

of the same or different industry sectors. For example, Roy and Whelan (1992) found that European companies formed a technical group with its senior representatives to address end of life recycling of electronics. In general, these partnerships are often developed when other SSCM practices require supply chain coordination, such as tracking carbon footprint, LCA, and end-of-life recycling (Balkau & Sonnemann, 2010; Flint & Golobic, 2009; Roy & Whelan, 1992).

Partnerships with NGOs often serve to complement focal firms’ skills and knowledge on sustainability and are established to promote and build capacity of suppliers on sustainability issues, provide technical assistance for suppliers, and develop sustainability standards for the chain (Alvarez et al., 2010; Bitzer, Francken, & Glasbergen, 2008). For example, Nespresso developed a partnership with an NGO, Technoserve, which provided technical assistance to suppliers implementing sustainability practices (Alvarez et al., 2010). Partnerships with government agencies relate to the adoption of specific programs or regulations for the promotion and improvement of sustainability practices and capacity building of SME suppliers (Lee, 2008; Roy & Whelan, 1992; Walker et al., 2008). For example, Lee (2008) found that the South Korean government aided suppliers implementing sustainability practices required by focal firms.

5. Discussion

Current research in SSCM indicates, sometimes in subtle ways, how many of these categories of SSCM practices are interrelated. In Table 4, we identify how different

practices relate to one another based on the findings of the SLR. Based on these findings, we propose a model for integrating SSCM practices (Figure 1).

Sustainability originated from systems thinking (Bansal & Song, 2017) and we argue that SSCM has a greater potential for effectively addressing sustainability challenges if scholars and managers approach best practices systemically. Systems theory proposes a shift of focus from the characteristics of a system’s elements to the relationships among these elements (Kauffman, 1993). Given that relationships in a system operate through flows of information and serve as feedback mechanisms (Meadows, 2008; Senge, 2006), we looked for aspects of SSCM practices identified in the systematic literature review that functioned as channels for dissemination of information and feedback loops. We found that *relationships* are the vehicles through which information flows to and from different parts of the supply chain system, connecting different SSCM practices and actors. Therefore, the model represented in Figure 1 depicts *relationships* as an undercurrent transmitting and gathering information to different actors in the supply chain.

As identified by the reviews by both Fabbe-Costes and Jahre (2008) and Van der Vaart and van Donk (2008), interconnections and relationships between actors in supply chains are central to both the coordination and performance of the supply chain system. Furthermore, it has been noted that building relationships is of ultimate importance in connecting sustainability practices and participants in the supply chain (Brammer et al., 2011;



Figure 1: Proposed integration of SSCM practices.

Table 4: Interconnections between and among different categories of SSCM practices.

	Organizational & Strategic Management	Sustainable Procurement	CSR / Sustainability Standards	Social & Environmental Practices	Relationships with Suppliers	Strategic Partnerships
Organizational & Strategic Management						
Sustainable Procurement	Focal firms' strategies determine needs and boundaries of sustainable procurement programs (Andersen & Skjoett-Larsen, 2009; Blome & Paulraj, 2013)					
CSR / Sustainability Standards	Focal firms' strategies determine if and which standards suppliers need to implement (Alvarez et al., 2010; Ansett, 2007)	Sustainable procurement programs may require suppliers to implement CSR / sustainability standards (Shang et al., 2010)				
Social & Environmental Practices	Focal firms' strategies determine if and what type of specific practices suppliers need to implement (Ciliberti et al., 2008)	Sustainable procurement programs may require suppliers to implement specific social and/or environmental practices (Andersen & Skjoett-Larsen, 2009)	CSR / sustainability standards may require the implementation of specific social and/or environmental practices (Liu et al., 2012)			
Relationships with Suppliers	Focal firms' strategies determine the types of relationships it needs with suppliers (Ciliberti et al., 2008; Ehrgott et al., 2013)	Different types of relationships with suppliers may be established as a result of sustainable procurement programs depending of suppliers' strategic importance (Andersen & Skjoett-Larsen, 2009)	CSR / sustainability standards are used to assess and evaluate suppliers' sustainability performance (Ciliberti et al., 2008; Hojmosse & Adrien-Kirby, 2012)	Specific social and/or environmental practices are used to assess and evaluate suppliers' sustainability performance (Font et al. 2008; Klassen & Vereecke, 2012)		
Strategic Partnerships	Focal firms' strategies determine if and with whom strategic partnerships are needed (Alvarez et al., 2010; Andersen & Skjoett-Larsen, 2009)	Strategic partnerships may be needed to assist suppliers in implementing requirements of a sustainable procurement program (Bitzer et al., 2008)	Strategic partnerships may be needed to assist suppliers in implementing CSR / sustainability standards (Bitzer et al., 2008; Walker et al., 2008)	Strategic partnerships may be needed to assist suppliers in implementing specific social and/or environmental practices (Kannabiran, 2009; Roy & Whelan, 1992)	Strategic partnerships normally require established relationships with suppliers (Fayet & Vermeulen, 2014; Walker et al., 2008)	

Cousins, Handfield, Lawson, & Petersen, 2006; Power, 2005). We take a different approach and explore the centrality of relationships in promoting and supporting different SSCM practices from a systems perspective, which emphasizes that practices promoting information flow and feedback mechanisms are crucial for supporting the interconnections of different system elements (Meadows, 2008).

Organizational and strategic management takes part solely within the focal firm and is responsible for setting everything else in motion. It determines the system's purpose, starts the flow of information, and influences all other practices. *Sustainable procurement* communicates to suppliers the sustainability requirements for participating in the supply chain and serves as an initial step in building *relationships with suppliers*. Supplier selection programs serve to verify suppliers' compliance with a number of selection criteria (Andersen & Skjoett-Larsen, 2009; Caniato et al., 2012; Handfield et al., 2005), which may require suppliers to implement *sustainability and CSR standards* and/or different *social and environmental practices*. Suppliers' adoption of *social and environmental practices* and *sustainability and CSR standards* often requires collaboration (Rosen et al., 2003; Roy & Whelan, 1992), which promotes information flow but also provides feedback about suppliers' sustainability performance. Successful *sustainable procurement* programs also connect focal firms through feed-forward and feedback loops to their supply chain, monitoring suppliers' progress to assist with the development of appropriate capabilities for sustainability (Ciliberti et al., 2008).

By involving external stakeholders in SSCM, *strategic partnerships* promote information flow along the supply chain and contribute to supplier development activities (Pagell & Wu, 2009). Partnerships also require clear goals and feedback mechanisms, which help participating parties assess the outcomes of their collaboration (Cousins et al., 2006). In turn, the information flow and feedback mechanisms from partnerships support interconnections with supply chain actors.

Firms may certainly implement SSCM practices individually, but there is increasing evidence that, together, these practices have stronger positive impacts on sustainability goals and on the competitiveness of all parties involved when implemented in concert with other actors across supply chain systems (Becker, Carbo

ll, & Langella, 2010; Faisal, 2010; Brammer et al., 2011; Touboulis & Walker, 2015). Croom et al. (2018), for example, highlight the significant benefit from a strategic approach to adoption and implementation of SSCM practices, particularly in driving improved business and operational performance.

6. Implications and Recommendations For Future Research

If implementation of SSCM practices usually requires trade-offs (Wu & Pagell, 2011), a focus on the integration of practices may increase efficiency and decrease costs of implementing these practices. When practices support and enhance one another, improvements made to one sustainable practice are likely to improve other existing practices, leading to more efficient SSCM. If managers understand how one SSCM practice supports others, they can make more informed decisions on the appropriate "bundle" of sustainable practices that best fits their needs. Although the importance of relationships in building effective supply chains is not new (Fabbe-Costes & Jahre, 2008; Van der Vaart & van Donk, 2008), we emphasize that they are central to advance sustainability in supply chains. Integration of SSCM practices requires managers to see supply chains as interorganizational systems with interconnected parts (Croom et al., 2000). Given that systems require effective information flows and feedback mechanisms to work properly (Meadows, 2008; Senge, 2006), managers should focus their efforts on developing supply chain relationships that promote learning and information exchange about SSCM practices.

Conceptually, this study proposes new ways of studying SSCM practices from a systems theory perspective. Future studies should focus on the interconnections between and among SSCM practices, the overlaps between them, as well as the possible impacts they might have on one another. This could be achieved by examining multiple variables or factors, the significance of mediating and moderating variables on outputs, how much these variables account for the underlying mechanisms at play in SSCM, and the constraints or limits that may exist between and among such interactions.

With an emphasis on relationships, future research could examine how SSCM practices promote relationships among supply chain participants and could provide information that serves as feedback mechanisms to different parties in the supply chain. The study of emerging practices that are more encompassing in nature and

require a more integrative approach, such as LCA, closing the loop, and reverse logistics, might advance a systemic approach to the study of SSCM. Finally, firms may choose different sets of practices when implementing SSCM and a better understanding of how strategic decision making, individual firm characteristics, and contextual factors shape (i.e., correlate, mediate or moderate) the combination of SSCM practices selected can provide stronger evidence for outcomes and their effect sizes.

The numbers of papers found in each category of SSCM best practices (Table 1) provides indications of other potential areas for future research. The lower number of studies found in *sustainable procurement* and *strategic partnerships* points to a potential underrepresentation of these areas within the SSCM cannon.

7. Conclusion

In this article, we undertook a systematic literature review focused on exploring SSCM practices and their key interconnections. By applying systems thinking to the categories of SSCM practices identified in the literature review, we identified interorganizational and intraorganizational relationships as a central pillar of SSCM practice adoption. Relationships promote information flows among different elements of the supply chain system and are connected to all of the SSCM practices identified in the literature review.

Wu and Pagell (2011) contended that implementing SSCM best practices can be costly and requires trade-offs between operational performance objectives and resource allocation. From our study, by understanding how SSCM practices may help or hinder the implementation of other practices and by further exploring the mediating power of relationship management, researchers may provide direction for practitioners to reduce costs and ameliorate trade-offs between long- and short-term benefits. Ideally, studying these interconnections will provide greater insight into organizational and supply chain processes connected to SSCM. From a systems theory approach, managers must realize that their suppliers' problems are also their problems because their firm's success is influenced by the actions of all other firms in their supply chains (Senge, 2006). Therefore, a focus on the interconnections of SSCM practices is likely to promote greater supply chain resilience by shifting the focus to long-term behavior and structure (Meadows, 2008).

8. References

- Ageron, B., Gunasekaran, A., & Spalanzani, A. (2012). Sustainable supply management: An empirical study. *International Journal of Production Economics*, 140, 168-182.
- Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions for green and sustainable supply chain management. *Journal of Cleaner Production*, 52, 329-341.
- Alexander, A., Walker, H., & Naim, M. (2014). Decision theory in sustainable supply chain management: A literature review. *Supply Chain Management: An International Journal*, 19, 504-522.
- Alvarez, G., Pilbeam, C., & Wilding, R. (2010). Nestlé Nespresso AAA sustainable quality program: An investigation into the governance dynamics in a multi-stakeholder supply chain network. *Supply Chain Management: An International Journal*, 15, 165-182.
- Andersen, M., & Skjoett-Larsen, T. (2009). Corporate social responsibility in global supply chains. *Supply Chain Management: An International Journal*, 14(2), 75-86.
- Ansett, S. (2007). Mind the Gap: A journey to sustainable supply chains. *Employee Responsibility and Rights Journal*, 19, 295-303.
- Balkau, F., & Sonnemann, G. (2010). Managing sustainability performance through the value-chain. *Corporate Governance*, 10(1), 46-58.
- Bansal, P., & Song, H. (2017). Similar but not the same: Differentiating corporate sustainability from corporate responsibility. *Academy of Management Annals*, 11(1), 105-149.
- Becker, W. S., Carbo II, J. A., & Langella, I. S. (2010). Beyond self-interest: Integrating social responsibility and supply chain management with human resource development. *Human Resources Management Review*, 9(2), 144-168.
- Beske, P., Koplin, J., & Seuring, S. (2008). The use of environmental and social standards by German first-tier suppliers of the Volkswagen AG. *Corporate Social Responsibility and Environmental Management*, 15, 63-75.
- Beske, P., & Seuring, S. (2014). Putting sustainability into supply chain management. *Supply Chain Management: An International Journal*, 19(3), 322-331.
- Bitzer, V., Francken, M., & Glasbergen, P. (2008). Intersectoral partnerships for a sustainable coffee chain: Really addressing sustainability or just picking (coffee) cherries? *Global Environmental Change*, 18, 271-284.
- Blome, C., & Paulraj, A. (2013). Ethical climate and purchasing social responsibility: A benevolence focus. *Journal of Business Ethics*, 116, 567-585.
- Blowfield, M. E. (2005). Going global: How to identify and manage societal expectations in supply chains (and the consequences of failure). *Corporate Governance*, 5(3), 119-128.
- Brammer, S., Hojmoser, S., & Millington, A. (2011). *Managing Sustainable Global Supply Chains: A Systematic Review of the Body of Knowledge*. Network for Business Sustainability, London, ON.
- Briner, R., & Denyer, D. (2012). Systematic review and evidence synthesis as a practice and scholarship tool. In Rousseau, D. (Eds.), *Oxford Handbook of Evidence-Based Management* (pp. 112-129). Oxford: Oxford University Press.
- Caniato, F., Caridi, M., Crippa, L., & Moretto, A. (2012). Environmental sustainability in fashion supply chains: An exploratory case based research. *International Journal of Production Economics*, 135, 659-670.
- Cantor, D. E., Morrow, P. C., & Montabon, F. (2012). Engagement in environmental behaviors among supply chain management

- employees: An organizational support theoretical perspective. *Journal of Supply Chain Management*, 48(3), 33-51.
- Carter, C. R., & Easton, P. L. (2011). Sustainable supply chain management: Evolution and future directions. *International Journal of Physical Distribution & Logistics Management*, 41(1), 46-62.
- Carter, C. R., & Jennings, M. M. (2002). Logistics social responsibility: An integrative framework. *Journal of Business Logistics*, 23(1), 145-80.
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Centinkaya, B., Cuthbertson, R., Ewer, G., Klaas-Wissing, T., Piotrowicz, W., & Tyssen, C. (2011). *Sustainable Supply Chain Management: Practical Ideas for Moving Towards Best Practice*. Berlin: Springer-Verlag.
- Ciliberti, F., Pontrandolfo, P., & Scozzi, B. (2008). Logistics social responsibility: Standard adoption and practices in Italian companies. *International Journal of Production Economics*, 113, 88-106.
- Chiarini, A. (2013). Designing an environmental sustainable supply chain through ISO 14001 standard. *Management of Environmental Quality: An International Journal*, 24(1), 16-33.
- Clayton, A. M. H., & Radcliffe, N. J. (1996). *Sustainability: A Systems Approach*. New York: Earthscan.
- Cook, D. J., Mulrow, C. D., & Haynes R. B. (1997). Systematic reviews: Synthesis of best evidence for clinical decisions. *Annals of Internal Medicine*, 126(5), 376-380.
- Cox, A. (2014). *Sourcing Portfolio Analysis: Power Positioning Tools for Category Management & Strategic Sourcing*. Stratford-upon-Avon, England: Earlsgate Press.
- Cousins, P. D., Handfield, R. B., Lawson, B., & Petersen, K. J. (2006). Creating supply chain relational capital: The impact of formal and informal socialization processes. *Journal of Operations Management*, 4(6), 851-863.
- Croom, S., Romano, P., & Giannakis, M. (2000). Supply chain management: An analytical framework for critical literature review. *European Journal of Purchasing & Supply Management*, 6, 67-83.
- Croom, S., Vidal, N., Spetic, W., Marshall, D., & McCarthy, L. (2018). Impact of social sustainability orientation and supply chain practices on operational performance. *International Journal of Operations & Production Management*. DOI 10.1108/IJOPM-03-2017-0180
- Darnall, N., Jolley, G. J., & Handfield, R. (2008). Environmental management systems and green supply chain management: Complements for sustainability? *Business Strategy and the Environment*, 18, 30-45.
- Dubey, R., Gunasekaran, A., Papadopoulos, T., Childe, S. J., Shihin, K. T., & Wamba, S. F. (2016). Sustainable supply chain management: Framework and further research directions. *Journal of Cleaner Production*, 142, 1119-1130.
- Ehrgott, M., Reimann, F., Kaufmann, L., & Carter, C. R. (2013). Environmental development of emerging economy suppliers: Antecedents and outcomes. *Journal of Business Logistics*, 34(2), 131-147.
- Fabbe-Costes, N., & Jahre, M. (2008). Supply chain integration and performance: A review of the evidence. *The International Journal of Logistics Management*, 19(2), 130-154.
- Faisal, M. N. (2010). Sustainable supply chains: A study of interaction among the enablers. *Business Process Management Journal*, 16(3), 508-529.
- Fayet, L., & Vermeulen, W. J. V. (2014). Supporting smallholders to access sustainable supply chains: Lessons from the Indian cotton supply chain. *Sustainable Development*, 22(5), 289-310.
- Flint, D. J., & Golobic, S. L. (2009). Searching for competitive advantage through sustainability a qualitative study in the New Zealand wine industry. *International Journal of Physical Distribution & Logistics Management*, 39(10), 841-860.
- Foerstl, K., Reuter, C., Hartmann, E., & Blome, C. (2010). Managing supplier sustainability risks in a dynamically changing environment—Sustainable supplier management in the chemical industry. *Journal of Purchasing & Supply Management*, 16, 118-130.
- Font, X., Tapper, R., Schwartz, K., & Kornilaki, M. (2008). Sustainable supply chain management in tourism. *Business Strategy and the Environment*, 17, 260-271.
- Frostenson, M., & Prenekert, F. (2015). Sustainable supply chain management when focal firms are complex: A network perspective. *Journal of Cleaner Production*, 107, 85-94.
- Gimenez, C., & Sierra, V. (2013). Sustainable supply chains: Governance mechanisms to greening suppliers. *Journal of Business Ethics*, 116, 189-203.
- Gimenez, C., & Tachizawa, L. M. (2012). Extending sustainability to suppliers: A systematic literature review. *Supply Chain Management: An International Journal*, 17(5), 531-543.
- Giunipero, L. C., Hooker, R. E., & Denslow, D. (2012). Purchasing and supply management sustainability: Drivers and barriers. *Journal of Purchasing & Supply Management*, 18, 258-269.
- Goebel, P., Reuter, C., Pibernik, R., & Sichtmann, C. (2012). The influence of ethical culture on supplier selection in the context of sustainable sourcing. *International Journal of Production Economics*, 140, 7-17.
- Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: A literature review. *Corporate Social Responsibility and Environmental Management*, 17, 230-245.
- Graafland, J. J. (2002). Sourcing ethics in the textile sector: The case of C&A. *Business Ethics: A European Review*, 11(3), 282-294.
- Green Jr., K. W., Zelbst, P. J., Meacham, J., & Bhadauria, V. S. (2012). Green supply chain management practices: Impact on performance. *Supply Chain Management: An International Journal*, 17(3), 290-305.
- Handfield, R., Sroufe, R., & Walton, S. (2005). Integrating environmental management and supply chain strategies. *Business Strategy and the Environment*, 14, 1-19.
- Hanifan, G. G. L., Sharma, A. E., & Mehta, P. (2012). *Why sustainable supply chain management is good business*. Dublin: Accenture.
- Harland, C. M., Lamming, R. C., Zheng, J., & Johnsen, T. E. (2001). A taxonomy of supply networks. *Journal of Supply Chain Management*, 37(3), 21-27.
- Hassini, E., Surti, C., & Searcy, C. (2012). A literature review and a case study of sustainable supply chains with a focus on metrics. *International Journal of Production Economics*, 140, 69-82.
- Hoejmose, S. U., & Adrien-Kirby, A. J. (2012). Socially and environmentally responsible procurement: A literature review and future research agenda of a managerial issue in the 21st century. *Journal of Purchasing & Supply Management*, 18, 232-242.
- Holt, D. (2004). Managing the interface between suppliers and organizations for environmental responsibility: An exploration of current practices in the UK. *Corporate Social Responsibility and Environmental Management*, 11, 71-84.
- Holt, D., & Ghobadian, A. (2009). An empirical study of green

- supply chain management practices amongst UK manufacturers. *Journal of Manufacturing Technology Management*, 20(7), 933-956.
- Igarashi, M., de Boer, L., & Fet, A. M. (2013). What is required for greener supplier selection? A literature review and conceptual model development. *Journal of Purchasing & Supply Management*, 19, 247-263.
- Isaksson, R., Johansson, P., & Fischer, K. (2010). Detecting supply chain innovation potential for sustainable development. *Journal of Business Ethics*, 97(3), 425-442.
- Jiang, B. (2009). Implementing supplier codes of conduct in global supply chains: Process explanations from theoretic and empirical perspectives. *Journal of Business Ethics*, 85, 77-92.
- Kannabiran, G. (2009). Sustainable stakeholder engagement through innovative supply chain strategy: An exploratory study of an Indian organization. *Asian Business & Management*, 8(2), 205-223.
- Kassel, K. (2013). *The Thinking Executive's Guide to Sustainability*. New York, Business Expert Press.
- Kauffman, S. A. (1993). *The origins of order: Self-organization and selection in evolution*. Oxford, UK: Oxford University Press.
- Klassen, R. D., & Vereecke, A. (2012). Social issues in supply chains: capabilities link responsibility, risk (opportunity), and performance. *International Journal of Production Economics*, 140, 103-115.
- Kleindorfer, P. R., Singhal, K., & Van Wassenhove, L. N. (2005). Sustainable operations management. *Production and Operations Management*, 14(4), 482-492.
- Koh, S. C. L., Gunasekaran, A., & Tseng, C. S. (2012). Cross-tier ripple and indirect effects of directives WEEE and RoHS on greening a supply chain. *International Journal of Production Economics*, 140, 305-317.
- Kovacs, G. (2008). Corporate environmental responsibility in the supply chain. *Journal of Cleaner Production*, 16, 1571-1578.
- Lee, S. Y. (2008). Drivers for the participation of small and medium-sized suppliers in green supply chain initiatives. *Supply Chain Management: An International Journal*, 13(3), 185-198.
- Lee, K. H., & Kim, W. K. (2009). Current status of CSR in the realm of supply management: The case of the Korean electronics industry. *Supply Chain Management: An International Journal*, 14(2), 138-148.
- Linton, J. D., Klassen, R. D., & Jayaraman, V. (2007). Sustainable supply chains: An introduction. *Journal of Operations Management*, 25, 1075-1082.
- Liu, X., Yang, J. Qu, S., & Wang L. (2012). Sustainable production: Practices and determinant factors of green supply chain management of Chinese companies. *Business Strategy & the Environment*, 21, 1-16.
- Meadows, D. H. (2008). *Thinking in Systems: A Primer*. White River Junction, VT: Green Publishing Co.
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, 22, 1-25.
- Montiel, I. (2008). Corporate social responsibility and corporate sustainability: Separate pasts, common futures. *Organization & Environment*, 21(3), 245-269.
- New, S. J. (1997). The scope of supply chain management. *Supply Chain Management: An International Journal*, 2(1), 15-22.
- Pagell, M., & Wu, Z. (2009). Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars. *Journal of Supply Chain Management*, 45(2), 37-56.
- Peck, H. (2005). Drivers of supply chain vulnerability: An integrated framework. *International Journal of Physical Distribution & Logistics Management*, 35(4), 210-232.
- Power, D. (2005). Supply chain management integration and implementation: A literature review. *Supply Chain Management: An International Journal*, 10(4), 252-263.
- Quarshie, A. M., Salmi, A., & Leuschner, R. (2016). Sustainability and corporate social responsibility in supply chains: The state of research in supply chain management and business ethics journals. *Journal of Purchasing & Supply Management*, 22, 82-97.
- Rao, P. (2002). Greening the supply chain: A new initiative in South East Asia. *International Journal of Operations & Production Management*, 22, 632-655.
- Reuter, C., Foerstl, K., Hartmann, E., & Blome, C. (2010). Sustainable global supplier management: The role of dynamic capabilities in achieving competitive advantage. *Journal of Supply Chain Management*, 46(2), 45-60.
- Rosen, C. M., Bercovitz, J., & Beckman, S. (2001). Environmental supply-chain management in the computer industry: A transaction cost economics perspective. *Journal of Industrial Ecology*, 4(4), 83-103.
- Rosen, C. M., Beckman, S. L., & Bercovitz, J. (2003). The role of voluntary industry standards in environmental supply-chain management: An institutional economics perspective. *Journal of Industrial Ecology*, 6(3-4), 103-123.
- Roy, R., & Whelan, R. C. (1992). Successful recycling through value-chain collaboration. *Long Range Planning*, 25(4), 62-71.
- Senge, P. M. (2006). *The Fifth Discipline: The Art & Practice of the Learning Organization*, New York: Doubleday.
- Seuring, S., & Muller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16, 1699-1710.
- Shang, K.-C., Lu, C.-S., & Li, S. (2010). A taxonomy of green supply chain management capability among electronics-related manufacturing firms in Taiwan. *Journal of Environmental Management*, 91, 1218-1226.
- Sharfman, M. P., Shaft, T. M., & Anex Jr., R. P. (2009). The road to cooperative supply-chain environmental management: Trust and uncertainty among pro-active firms. *Business Strategy and the Environment*, 18, 1-13.
- Shrivastava, P. (1995). Ecocentric management for a risk society. *Academy of Management Review*, 20, 118-137.
- Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*, 9(1), 53-80.
- Starik, M., & Rands, G. P. (1995). Weaving an integrated web: Multi-level and multisystem perspectives of ecologically sustainable organizations. *Academy of Management Review*, 20, 908-935.
- Svensson, G. (2007). Aspects of sustainable supply chain management (SSCM): Conceptual framework and empirical example. *Supply Chain Management: An International Journal*, 12(4), 262-266.
- Svensson, G. (2009). The transparency of SCM ethics: Conceptual framework and empirical illustrations. *Supply Chain Management: An International Journal*, 14(4), 259-269.
- Tachizawa, E., & Wong, C. Y. (2014). Towards a theory of multi-tier sustainable supply chains: A systematic literature review. *Supply Chain Management: An International Journal*, 19(5/6), 643-663.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge

- by means of systematic review. *British Journal of Management*, 14(3), 208.
- Touboulis, A., & Walker, H. (2015). Love me, love me not: A nuanced view on collaboration in sustainable supply chains. *Journal of Purchasing & Supply Management*, 21, 178-191.
- United Nations Global Compact (2016). *Supply Chain Sustainability*. Available at: <https://www.unglobalcompact.org/what-is-gc/our-work/supply-chain> (accessed 5 September 2016).
- Vachon, S., & Klassen, R. D. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. *International Journal of Production Economics*, 111, 299-315.
- Van der Vaart, T., & van Donk, D. P. (2008). A critical review of survey-based research in supply chain integration. *International Journal of Production Economics*, 111(1), 42-55.
- Varnas, A., Balfors, B., & Faith-Ell, C. (2009). Environmental consideration in procurement of construction contracts: Current practice, problems and opportunities in green procurement in the Swedish construction industry. *Journal of Cleaner Production*, 17, 1214-1222.
- Walker, H., & Jones, N. (2012). Sustainable supply chain management across the UK private sector. *Supply Chain Management: An International Journal*, 17(1), 15-28.
- Walker, H., Sistob, L., & McBain, D. (2008). Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors. *Journal of Purchasing & Supply Management*, 14, 69-85.
- Walton, S. V., Handfield, R. B., & Melnyk, S. A. (1998). The green supply chain: Integrating suppliers into environmental management processes. *Journal of Supply Chain Management*, 34(1), 2-11.
- Welford, R., & Frost, S. (2006). Corporate social responsibility in Asian supply chains. *Corporate Social Responsibility and Environmental Management*, 13, 166-176.
- Winter, M., & Knemeyer, A. M. (2013). Exploring the integration of sustainability and supply chain management: Current state and opportunities for future inquiry. *International Journal of Physical Distribution & Logistics Management*, 43(1), 18-38.
- Wu, Z., & Pagell, M. (2011). Balancing priorities: Decision-making in sustainable supply chain management. *Journal of Operations Management*, 29, 777-590.
- Wu, J., Dunn, S., & Forman, H. (2012). A study on green supply chain management practices among large global corporations. *Journal of Supply Chain and Operations Management*, 10(1), 182-194.
- Zhu, Q., Sarkis, J., & Lai, K. (2008). Green supply chain management implications for "closing the loop." *Transportation Research Part E*, 44, 1-18.