

Strengths and Weaknesses of Sustainable Supply Chain Management Literature

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Abstract

This paper takes stock of the sustainable supply chain management literature through two lenses: reviews and definitions. Recently, various review studies were published that should enable a more systematic and structured overview of knowledge in the area. Specific attention is thereby paid to definitional and conceptual problems. This paper summarizes these studies and tries to draw general conclusions on the strengths and weaknesses of the literature.

[1] Introduction

The academic attention for sustainable supply chain management is growing. Recently, various review studies were published that enable a more systematic and structured overview of knowledge in the area. This paper first outlines differences and similarities of these reviews related to methodology and results. Further investigation of the literature shows a variety of definitions used to describe the inclusion of sustainability in supply chain relations. Therefore this paper provides an overview of the different definitions and approaches to sustainable supply chain management and its synonyms. The paper ends with the identification of strengths and weaknesses of sustainable supply chain literature and suggestions for future research.

[2] Reviewing the review literature

Over the past decade a number of literature reviews have been published focusing on sustainable supply chain management. Most articles used the existing literature to build a general understanding of the topic and contribute to the field through theory development (i.e. Carter & Rogers 2008; Pagell & Wu 2009) or to develop models and metrics to support and implement sustainable supply chain management (Seuring 2013; Gupta et al 2013; Searcy 2014; Kaur 2014). Between 2008 and 2014, nine systematic literature reviews on sustainable supply chain management were published that provide detailed insight into the state of the literature and its strengths and weaknesses. Eight of them in academic journals and one for the Network for Business Sustainability. These literature reviews show many similarities on the state of research in the area of sustainable supply chain management, although the methodologies used by the different authors differs. These differences and similarities are described below.

| Author | Year | Title | Publication |
|---|-------------|--|---|
| Seuring, S. and Muller, M. | 2008 | From a literature review to a conceptual framework for sustainable supply chain management | Journal of Cleaner Production |
| Carter C.R. and Easton P.L. | 2011 | Sustainable supply chain management: Evolution and future directions | International Journal of Physical Distribution and Logistics Management |
| Brammer, Stephen, Stefan Hoejmose and Andrew Millington | 2011 | Managing Sustainable Global Supply Chains – a systematic review of the body of knowledge | Network for Business Sustainability 2011 |
| Hassini, Surti & Searcy | 2012 | A literature review and a case study of sustainable supply chains with a focus on metrics | International Journal of Production Economics |
| Miemiczyk, Johnsen & Macquet | 2012 | Sustainable purchasing and supply management: a structured literature review of definitions and measures at the dyad, chain and network levels | Supply chain management: an international journal |
| Winter, M., | 2013 | Exploring the integration of | International |

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|---|------|--|---|
| and Knemeyer, A. M. | | sustainability and supply chain management: Current state and opportunities for future inquiry | Journal of Physical Distribution and Logistics Management |
| Ahi & Searcy | 2013 | A comparative literature analysis of definitions for green and sustainable supply chain management | Journal of Cleaner Production |
| Beske, Land & Seuring | 2014 | Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature | International Journal of Production Economics |
| Brandenburg, Govindan, Sarkis & Seuring | 2014 | Quantitative models for sustainable supply chain management: Developments and directions | European Journal of Operational Research |

Differences

Although the literature reviews portray a similar state of the literature in the area of sustainable supply chain management, there are also some differences between the articles. The main differences concern the methodology, such as the search method, the review methodology, the sample size and the article base. Each review took a different approach in searching and selecting articles, partly due to a specific focus of the research question. Carter & Easton (2011) specified keywords and journals beforehand, while Winter & Knemeyer (2013) only specified journals and then scanned all journals to find relevant sources. Seuring & Muller (2008) and Beske et al (2014) used specific keywords in a variety of databases and did not specify any journals, as did Brammer et al (2011), although the latter had a much wider scope, both in terms of keywords as well as sources. Hassini et al (2012) and Ahi & Searcy (2013) used specific keywords in the Scopus database but with different time periods, after 1999 (until 2011) and 2002 – January 2012 respectively. Miemczyk et al (2012) had a similar approach, but used the Emerald and Ebsco databases to search for articles. Lastly, Brandenburg et al (2014) had a different approach. They first selected articles from two earlier reviews, then did a journal specific search with keywords in all fields, further cross referencing the article base with three other articles and finally the authors used *HistCite* for bibliometric citation analysis.

These different approaches lead to differences in sample size, ranging from 52 articles (Beske et al 2014) to 456 (Winter & Knemeyer 2013). Comparing the articles included in the review shows that there is limited overlap. The reviews combined take 1447 articles into account. 242 of these articles overlap. Accounting for this overlap, the literature reviews together consider 991 unique articles related to sustainable supply chain management. Seven articles include their literature sources in the bibliography. For two articles we had to contact the authors to get insight in their article base. In addition, the articles stated a certain number of articles included in the review. However, this number did not always coincide with the number of articles included in the bibliography. In comparing the articles used we included the articles present in the bibliography.

None of the articles was included in all nine reviews, reflecting the emerging character of the SSCM literature. There are two articles that appear in six journals.

Zhu and Sarkis describe in these articles the relationship between operational practices and performance of green supply chain management practices. (Zhu & Sarkis 2004; Zhu et al 2005) The graph (figure 1) below outlines the number of overlapping articles in the number of reviews and the spider graph (figure 2) gives insight in the percentages of overlapping articles for each review. 71% of the articles used by Seuring and Muller (2008) are also included by Winter & Knemeyer (2013), this is the largest overlap between the different reviews.

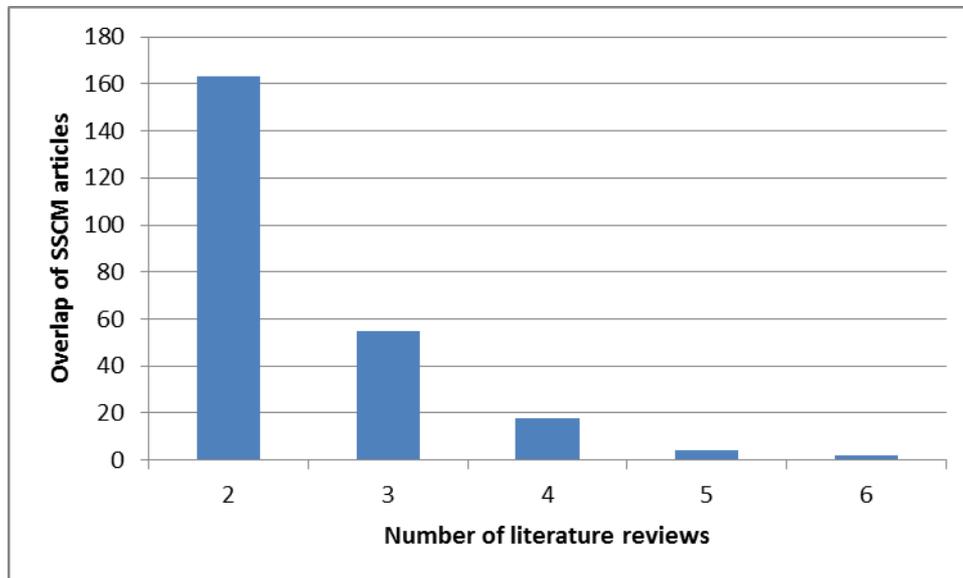


Figure 1

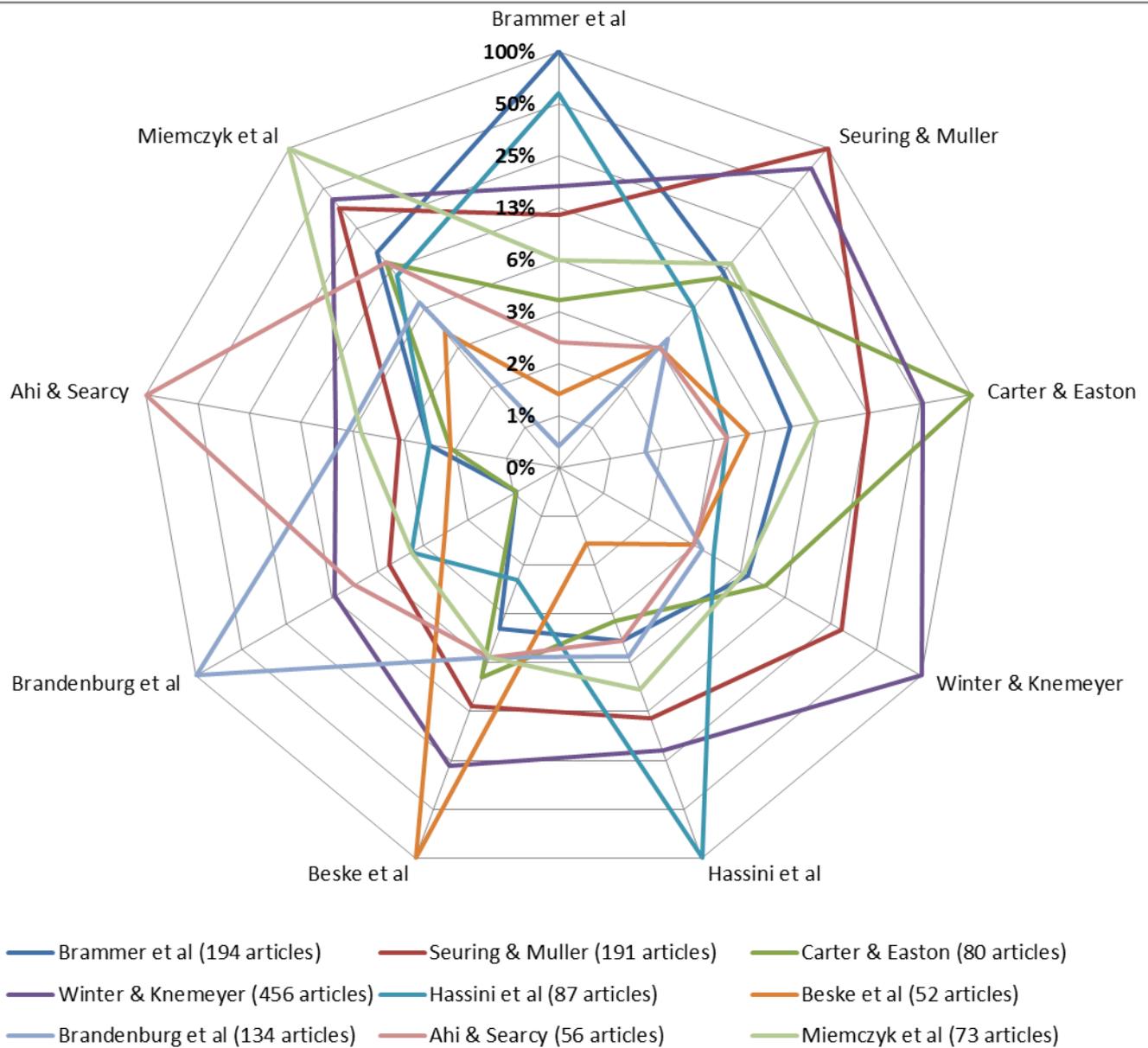


Figure 2

Similarities

Although the aim and scope of the review articles differs there are several similarities in results, both in methodology and outcomes. The similarities in methodologies are related to definitions, period under review and databases used. The reviews all use the term sustainable supply chain management and define it in a similar manner as ‘the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains.’ (Carter & Rogers 2008:368). In addition, the reviews use a broad definition of sustainability, focusing on the interaction between people, planet and profit. The articles included in the reviews were all published between 1993 and 2012, which show the early stage of this literature strand. The outcomes of the reviews overlap on what they find concerning methodologies used in SSCM research, focus and suggestions for future research. The reviews find that most articles use case studies and that the most common unit of

analysis is the firm, specifically the manufacturer firm. Another overlap in the results of the reviews is the strong focus on environmental issues in the SCM and purchasing literature, revealing a clear deficit on social issues as well as on the combination of all three dimensions of sustainability. All reviews identify this as a main opportunity for further research.

[3] Reviewing definitions and synonyms

The literature reviews described above all use the term sustainable supply chain management. However, a further investigation of the literature shows the issue of conceptualization in the field of SSCM and provides a variety of synonyms for sustainably supply chain management. Several authors have described the wider concept of incorporating sustainability or CSR aspects in supply chain management or purchasing. Each article starts with listing the possible alternative terms that address different aspects of sustainable supply chain management, such as green supply chain (Bowen et al 2001), life-cycle assessment (Seuring 2004), reverse logistics (Stock, 1998), supply chain sustainability (Dyllick and Hockerts, 2002). (e.g. Andersen and Skjoett-Larsen, 2009; Pagell et al 2010; Seuring 2011) Reviewing the different terms used shows that some authors take the supply chain management approach, while others take a narrower purchasing or procurement approach. The former acknowledges the fact that the focal or lead firm is part of a chain of actors interacting to deliver a product or service. The latter refers to the mere action of the lead firm buying goods and services from suppliers. : In this paragraph the main terms and definitions are described to show the definitional issue in SSCM literature that is addressed in the different reviews. The appendix contains a detailed table with the different terms and their definitions used to describe incorporating sustainability into supply chain management or purchasing.

Sustainable supply chain management

Sustainable supply chain management (SSCM) gained ground with academics in the beginning of the twenty-first century. Ahi & Searcy (2013) focused in their review on definitions of SSCM and they identified twelve different definitions. Since then different authors have developed different approaches in relation to the topic, ranging from sec 'add-on' approach where SSCM is supply chain management made sustainable, to a more holistic approach with a focus on stakeholder or chain relations. Other authors are more goal-oriented and stress the results of implementing SSCM. All three approaches are briefly highlighted below.

Several authors take the standard sustainability definition based on Elkington's triple bottom line (people, planet and profit) and apply it to general supply chain management. For example, Pagell & Wu (2008) state that 'a sustainable supply chain is then one that performs well on both traditional measures of profit and loss as well as on an expanded conceptualization of performance that includes social and natural dimensions' (Pagell & Wu 2009: 38). Ciliberti et al (2008) describe sustainable supply chain management (SSCM) as the management of the supply chain where all the three dimensions of sustainability, namely the economic, environmental, and social ones, are taken into account. Font et al (2008) agree by stating that SSCM adds sustainability to existing supply chain management processes by considering environmental, social and economic impacts of business activities. In addition, Svensson (2007) suggests that, as a minimum, sustainable supply chain management

(SSCM) requires a detailed consideration of the economic, ecological and social aspects of business practice.

The more holistic approach towards sustainability in the supply chain looks beyond the management of supply from the core company to the entire supply chain, the flow of goods and services and the role of supply chain and stakeholder relations. For example, Seuring & Muller (2008) define SSCM as ‘the management of material and information 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’ (2008:1700). This article and hence the definition, is cited most. Font et al (2008) use the definition of Ho et al (2002) stressing that SSCM ‘involves the management and integration of a set of selected key business processes from end user through original suppliers, that provides products, services and information that add value for customers and other stakeholders through the collaborative efforts of supply chain members’ (Ho et al. 2002:4422 in Font et al 2008:260-261). Courville (2003) focuses specifically on the information on sustainability issues that need to flow between supply chain actors, from producer to end-consumer, to move towards sustainable supply chain management. Bowen et al. (2001) go further and stress that ‘external pressures on a firm only lead to sustainable supply and production if both the individual firms and the supply chain as a total entity possess or develop the necessary relevant internal resources as prerequisites for implementing sustainable supply chain management (SSCM) practices (Bowen et al., 2001).

The third group of definitions combine two aspects of sustainable supply chain management (e.g. Carter & Rogers (2008). They focus on the inter-organizational relations within the supply chain and add a goal-oriented approach to their definition. As such, they define SSCM as ‘the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains’ (Carter & Rogers 2008:368). As sustainable supply chain management supports organisations in reaching goals some authors make these explicit, either minimising negative or optimising positive external impact. In addition, several authors stress the long term focus of sustainability in general and in sustainable supply chain management specifically. For example, Pagell et al (2010) state that ‘to be truly sustainable a supply chain would at worst do no net harm to natural or social systems while still producing a profit over an extended period of time; a truly sustainable supply chain could, customers willing, continue to do business forever’. Vurro et al (2009) take it a step further and stress that sustainable supply chain management is targeted to improve cross-boundary social and environmental performance.

(Socially) responsible supply chain management

With socially responsible supply chain management, or responsible supply chain management the focus lies on the chain relations, specifically the labour relations. Park-Poaps and Rees (2010) define this concept as ‘a proactive labour management concept that encompasses normative and behavioural cores of organizational culture and buyer–seller working partnership toward collaborative labour management throughout the entire supply chain.’ (Park-Poaps & Rees 2010:307)

(Supply) chain responsibility

Some authors refer to supply chain responsibility or responsibilities as the tasks CPOs have in relation to supply chain management. In the light of this overview the focus lies on responsibilities beyond the boundaries of the firm, which is also addressed by different authors, this coincides with the more holistic view on SSCM. In defining (supply) chain responsibility there is a similar divide in definitions, where some authors take it as integrating sustainability practices into supply chain management, while others specifically refer to the effect and involvement of stakeholders. For example Spence & Bourlakis define supply chain responsibility as ‘the chain-wide consideration of, and response to, issues beyond the narrow economic, technical and legal requirements of the supply chain to accomplish social (and environmental) benefits along with the traditional economic gains which every member in that supply chain seeks’ (2009:291-292). Cramer (2008) takes chain responsibility as the integration of the corporate social responsibility policies and activities into the supply chain management. She focuses on creating international sustainable supply chains. Van Tulder et al (2009) address chain responsibility in relation to corporate codes to influence sustainability aspects in the supply chain. The definition of chain responsibility expands beyond the boundaries of the firm and includes stakeholder involvement. Van Tulder et al pose chain responsibility as the counter part of chain liability, a more restricted form of supply chain management focusing on limiting and managing (supply chain) risks. Amaeshi et al (2008) take a rather different approach. They take the concept of responsibility and discuss it in relation to corporate social responsibility and supply chain responsibility. In essence their analysis centres on the legal responsibilities of the firm. They expand that notion by including the distinction between circle of control and circle of influence. ‘The circle of control relates to things we have complete control over, while circle of influence relates to things we can seek to influence, but do not have total control over’ (Covey 1992 in Amaeshi et al 2008:230). They continue to specify chain responsibility as ‘firms can only act within their circle of influence while dealing with their suppliers’ (ibid).

Sustainable procurement

Sustainable procurement is often introduced in relation to sustainability within governmental or non-profit organisations. Most articles in the literature search were based on research in the United Kingdom. This is most likely related to the fact that the UK government launched ‘The Sustainable Procurement Taskforce’ in 2005, aiming to be the performance-leader in 2009 (DEFRA 2011), Meehan & Bride (2011) address sustainable procurement practices of the UK Housing Association. They define sustainable procurement as ‘the process used to secure the acquisition of goods and services in a way that ensures that there is the least impact on society and the environment throughout the full life cycle of the product’ (Meehan & Bride 2011:97).

Socially responsible/ethical purchasing

Socially responsible purchasing is an umbrella definition, including all kinds of social sustainability issues such as human rights, safety and diversity in chain relations with suppliers. Leire & Mont (2010) use the ICLEI definition that socially responsible purchasing ‘refers to the utilization of the purchasing power of public and private organizations to purchase products, works and services that have a positive social impact’ (ICLEI, 2007 in Leire & Mont 2010:29). They develop the concept further by explaining the role for organizations - embed the concept in purchasing policies - and for practitioners – use the proposed model. ‘Supplier diversity’ (SD), is a form of

socially responsible purchasing (Carter and Jennings, 2000) (...) SD is defined here as being concerned with initiatives that specifically aim to increase the number of ethnic minority-owned businesses that supply goods and services to public, private and/or voluntary sector organisations, either directly or as part of a wider emphasis on small enterprises (Ram and Smallbone, 2003). Such initiatives are also sometimes referred to as minority purchasing and/or supplier development programmes. (Worthington 2009:47)

Wild and Zhou (2011) incorporate the concept of due diligence into the definition of ethical procurement resulting in a definition that addresses the internal ethical performance through procurement operations to build stronger external relationships with all stakeholder groups.

[4] Strength and weaknesses

By analysing the review literature several strengths and weaknesses of the sustainable supply chain management literature could be identified.

The main weaknesses of the literature are (1) the fact that the lead firm is the unit of analysis in most articles, (2) that there is no clear notion of what sustainability is within the supply chain context and (3) that authors take the ‘why’ of sustainable supply chain management as a given. Methodological weaknesses are (4) the (single) case based character of the majority of the studies and the lack of large sample studies that cover a longer term period / longitudinal research. In addition, (5) literature does not provide insight into transitions into sustainable supply chain management or the development of different stages of sustainable supply chain management.

Although supply chain management literature, more than operations or purchasing literature, acknowledges the network structure of supply chains and the fact that different actors interact in order to realise the final product, the lead firm remains the main unit of analysis. Interactions with supply chain partners are analysed from this perspective, providing a partial view. Studies would provide a more balanced approach to the analysis of the supply chain as a whole by including other supply chain actor perspectives.

This paper focuses on sustainable supply chain management. However, many authors do not clearly define sustainability beyond the Brundtland definition or Elkingtons triple bottom line. When using sustainability authors do not clearly relate the concept to the supply chain management context. As such sustainability remains an add-on principle more than it is incorporated into supply chain management theory and practice.

Some articles touch upon the why/motivational aspect of implementing sustainable supply chain management activities before moving on to explaining how sustainable supply chain management works. These reasons vary from managing risks such as resource scarcity (Seuring 2004), reputation risks (Foerstl et al 2010) and supply chain risks (ibid) to seizing opportunities, such as innovation, supply chain integration (Seuring 2004) and upgrading (Gereffi et al 2005). However, very few articles go into more depth on the why of sustainable development, i.e. the linkages to societal issues and the development of business cases. There appears to be a general understanding

of why companies would implement sustainable supply chain management, but without being made explicit.

Related to the research approach, a current weakness in the literature is the fact that most articles are based on descriptive case studies. Large sample studies, showing changes and implementation processes over time are missing. This can be due to the fact that sustainable supply chain management is a relatively new field and large databases are not yet available. The fact that longitudinal studies are mostly absent from the literature means that it remains unclear how companies progress from supply chain management to sustainable supply chain management. The literature is inconclusive as to whether there are different stages of sustainable supply chain management and if companies can improve from one stage to another.

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