Theories in sustainable supply chain management: A structured literature review

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ABSTRACT

Purpose

This paper investigates theoretical perspectives in sustainable supply chain management (SSCM) and contributes to understanding the current state of research in the field and its future development.

Approach

This paper conducts a structured literature review and aims at mapping the use of theories in the field. We assess the current state of research, looking in more details at popular theories, and propose possible future avenues for the field to develop.

Findings

Theory-building efforts in SSCM remain scarce, with the predominance of a few popular imported macro theories (RBV, stakeholder theory and institutional theory) having implications on the conceptualisation of SSCM and the topics researched to date. More theoretical contributions can potentially emerge from the adoption of original methodologies, the investigation of under-explored aspects of SSCM and the testing of recently developed frameworks.

Research implications

Drawing on the analysis we propose an overarching map of popular theories in SSCM and define potential avenues towards the maturation of the discipline. A number of propositions are offered to guide future research. This study constitutes a first step towards understanding how theories in SSCM are developing and how SSCM has been conceptualised.

Originality / value

The originality of this paper lies in its analytical focus on theories in SSCM, which have not been mapped to date.

Keywords: Sustainability, supply chain management, theories, structured literature review

Article classification: Literature review

INTRODUCTION

Sustainable supply chain management (SSCM) has emanated from the recognition of the strategic importance of purchasing and supply activities both in achieving the firm's long-term performance, and in addressing sustainability issues within business capabilities (Burgess, Singh, & Koroglu, 2006; Jeremy Hall & Matos, 2010). SSCM has been growing in the last decade, as shown by the amount of literature published on the subject (see Figure 1). A number of literature reviews have been published in recent years, offering analysis of the state of research in SSCM and showing that the field is gaining maturity (for e.g. Craig R. Carter & Easton, 2011; Craig R. Carter & Rogers, 2008; Stefan Seuring & Müller, 2008; 3 papers on SSCM in systematic reviews SCMIJ 17(5)).

A number of these authors have deplored the theoretical dearth characterising the field of SSCM and called for the application of a wider range of theories (Craig R. Carter & Easton, 2011; Sarkis, Zhu, & Lai, 2011). SSCM authors vary in their use of theoretical perspectives to demonstrate their understanding of the field. While many papers are a-theoretical, others adopt one or several theoretical perspectives to conceptualise SSCM. It has been argued that theories represent the keystone of knowledge production (Handfield & Melnyk, 1998) and therefore attention needs to be paid to their application and development when attempting to evaluate any academic field. Hence, the primary motivation for this paper was to better understand and map the use of theories in SSCM in order to identify fruitful avenues for research to develop. This paper therefore proposes to address the following research questions:

1. What are the dominant theories currently used in the field of SSCM?
2. How have they influenced the conceptualisation of SSCM?
3. What are the promising avenues for the future development of SSCM?

Conducting a systematic literature review constitutes a comprehensive approach to map out the theoretical perspectives as well as the theoretical practices (i.e. building, testing, absence)

prevailing in the field. Theoretical mapping can also help assess and advance the level of maturity of a discipline by scoping its domain and core issues (Storey, Emberson, Godsell, & Harrison, 2006). Previous reviews in the field have primarily concentrated on examining the triggers of SSCM, its relation to performance and risk management as well as on dimensions of sustainability (Craig R. Carter & Rogers, 2008; Stefan Seuring & Müller, 2008). Theoretical perspectives have not been the primary focus of past reviews but rather considered briefly in a subsection in findings, for e.g. in Carter and Easton's paper (2011). The originality of this literature review lies in its analytical focus on theories in SSCM and its attempt to offer a consolidated view of theoretical practices in the field.

Overall, this paper makes three contributions. First, it links broader debates on knowledge creation to the field of SSCM, and therefore enriches the discussion about its status as an academic field. Second, it provides an evaluation of theoretical perspectives in the field of SSCM based on a state-of-the-art review. As far as we are aware, no previous authors have taken stock of theories in SSCM, and we make a novel contribution by doing so. Finally, it proposes an overarching map of popular theories in SSCM, which captures the state of research in the field, and informs future research through the development of propositions.

The paper is structured as follows. First we discuss the definition of SSCM, and then introduce broader concerns over the question of theoretical contributions. The following section provides details about the methodological approach adopted to conduct the literature review. Finally, following the presentation of key findings, the paper discusses the role of theories in the conceptualisation of SSCM, and it addresses the potential avenues to support the process of knowledge creation in SSCM.

WHAT IS SUSTAINABLE SCM?

Authors have provided a variety of definitions of SSCM. Table 1 presents some of the key definitions chronologically from articles reviewed in this study. Although the earliest definition found in the sample dates from 1996, the articles published prior 2000 do not explicitly define SSCM (or Green SCM) as an integrated concept but rather provide a definition of SCM (or related aspects) and a description of the environment or environmental impacts as a separate variable. From 2001, definitions start to become more precise and multifaceted. We note that authors have taken different perspectives to define SSCM and we can distinguish between those adopting a procurement/purchasing perspective versus a SC perspective. More recent definitions incorporate the concept of sustainable development, with specific references to the three dimensions of the triple bottom line (3BL), rather than just focusing on a single aspect of sustainability such as 'green' or 'social'. This may be a sign that approaches to SSCM are becoming more integrated and include a broader range of issues (Craig R. Carter & Rogers, 2008; Stefan Seuring & Müller, 2008). Other interesting aspects in these definitions are the inclusion of the notion of pressures from external stakeholders, and the idea that SSCM goes beyond the traditional conception of business while still being concerned with economic performance. From an operational perspective, SSCM is viewed as underlying both internal and external business processes, with an emphasis on the role of collaboration between SC partners.

Table 1. Some definitions of sustainable SCM

Definition	Author
Green supply refers to the way in which innovations in supply chain management and industrial purchasing may be considered in the context of the environment. (p.188)	(Green, Morton, & New, 1996)
Environmental Supply Chain Dynamics (ESCD) are a phenomenon where environmental innovations diffuse from a customer firm to a supplier firm, with environmental innovation defined as being either a product, process, technology or technique developed to reduce environmental impacts. (p.456)	(J. Hall, 2000)
Therefore, green purchasing – the integration of environmental considerations into purchasing policies, programmes and actions – is critical for enterprises because it leads to eco-efficiency, cost-saving and improved public perception. (p.28)	(Q. Zhu & Geng, 2001)
Sustainable chain management (…) involves issues of sustainable development insofar as companies can be held responsible for the social and environmental impacts arising along the supply chain. It demands that companies integrate ecological and social aspects into their	(Wolters, 2003)

decisions and actions, not only internally but also along those supply chains that determine the economic value of their business. (p.8)	
[Purchasing Social Responsibility consists] of five unique dimensions: the environment, diversity, human rights, philanthropy, and safety (p.183)	(C. Carter, 2005)
GrSCM is defined as 'integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life'. (p.54)	(Srivastava, 2007)
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 chains. (p. 368)	(Craig R. Carter & Rogers, 2008)
The management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account, which are derived from customer and stakeholder requirements. (p. 1700)	(Stefan Seuring & Müller, 2008)
We define supply management ethical responsibility (SMER) as managing the optimal flow of high-quality, value-for-money materials, components or services from a suitable set of innovative suppliers in a fair, consistent, and reasonable manner that meets or exceeds societal norms, even though not legally required. (p.101)	(Eltantawy, Fox, & Giunipero, 2009)
Procurement that is consistent with the principles of sustainable development, such as ensuring a strong, healthy and just society, living within environmental limits, and promoting good governance. (p.128)	(Helen. Walker & Stephen. Brammer, 2009)
The chain-wide consideration of 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. (p.291)	(Laura. Spence & Michael. Bourlakis, 2009)
Firms are increasingly under pressure from stakeholders to incorporate the triple-bottom line of social, environmental and economic responsibility considerations into operations and supply chain management strategies. (p. 19)	(Tate, Ellram, & Kirchoff, 2010)

There is absence of consensus on the definition of SSCM (Krause, Vachon, & Klassen, 2009) and the literature emphasizes the complex nature of SCs and the difficulty in providing cross-industry frameworks due to the variation of issues between different sectors (Pullman, Maloni, & Carter, 2009). This suggests an explanation for the reason why authors have favoured empirical approaches as a way to capture the uniqueness of specific SSCM problems.

This snapshot of definitions found in the SSCM literature reveals the variety of constructs and angles adopted by authors in the field. It is fair to expect some conceptual diversity in a relatively young field such as SSCM. The main challenge lies in integrating two contentious concepts:

sustainability and SCM (Ahi & Searcy, 2013; S. Seuring, Sarkis, Muller, & Rao, 2008). This lack of conceptual clarity supports our attempt to provide a complete overview of theoretical practices in the field, show how they have influenced the conceptualisation of SSCM and finally examine future research avenues.

For the purposes of this paper, we adopt the definition of Carter and Rogers (2008), which integrates all dimensions of the triple bottom line. In the next section, we discuss the importance of theories in the development of academic fields and link current debates to SSCM.

THE IMPORTANCE OF THEORETICAL CONTRIBUTIONS FOR SSCM

The purpose of this section is to highlight the importance of theoretical contributions and make a case for the present study in light of the challenges existing in the extant SSCM literature.

How does theory contributes to the development of a field?

Theoretical contribution is a key criterion for publication in top management journals (C. R. Carter, 2011; Colquitt & Zapata-Phelan, 2007; Hambrick, 2007). The development of management knowledge is contentious. The question of theory building has fomented debates amongst academics, with on the one hand advocates of consensus and unity (Pfeffer, 1993, 1995); and on the other, those favouring a plurality of inquiries for theory building and encouraging multiple theories to compete (Van de Ven, 1989; Van Maanen, 1995).

Theory testing and theory building are closely interrelated in the process of knowledge creation within a discipline (Colquitt & Zapata-Phelan, 2007). It is necessary to find a fine balance between theory building, which allows for original ideas to be introduced, and theory testing, which might just be missing out crucial aspects of a new phenomenon by applying lenses of old paradigms (Schmenner, Wassenhove, Ketokivi, Heyl, & Lusch, 2009). The development of a ‘reliable

conceptual base' (Chen & Paulraj, 2004: 120) can help clarify the scope and purposes of SSCM as an academic and practice-based discipline.

Several scholars (Alvesson & Kärreman, 2007; Colquitt & Zapata-Phelan, 2007; Hambrick, 2007; Van Maanen, Sorensen, & Mitchell, 2007) have acknowledged the relationship between the validity and power of a theory and its relation to empirical reality. It is widely recognised that the empirical nourishes the conceptual as data is used as evidence to support a theory, and the engagement with practical problems opens up avenues for good theory to emerge (Van Maanen et al., 2007). Theoretical lenses also shape approaches to the empirical reality, and while theories represent 'a way of seeing', they are also a way of 'not seeing' since each specific theory is limited by its own scope (Astley & Van de Ven, 1983; Poole & Van de Ven, 1989).

SSCM researchers need to be aware of the danger that the lack of a coherent conceptual base represents for the field to grow as a legitimate management discipline (C. R. Carter, 2011).

Relevance of theoretical mapping in SSCM

In describing the importance of theory in management and SSCM research more specifically, we have demonstrated the need to review and analyse theoretical practices in the field in order to inform future efforts.

The concept of corporate sustainability is ambiguous and this is largely due the fact that it has been developed and evolved in a context dominated by an economistic view of the firm (Angus-Leppan, Benn, & Young, 2010). Ambiguities arise when attempting to understand how the economic, human and ecological dimensions inter-relate and the relative importance of these elements. It is challenging to translate the concept of sustainability into tangible actions and embed these practices within and between organisations (van der Heijden, Cramer, & Driessen, 2012). There are inherent

inter-disciplinary and transformative aspects to SSCM research. In this sense, understanding where opportunities exist to produce research that embraces these aspects and leads practice is critical.

The publication of several literature reviews in SSCM is an indication that the field is becoming more prominent and established. However, findings from these reviews indicate that there is still an alarming lack of theoretically grounded research (Craig R. Carter & Easton, 2011; Craig R. Carter & Rogers, 2008). In particular, the literature review of SSCM by Carter and Easton published in IJPDLM in 2011 pointed out that authors tend to employ a few popular theories while other lenses could provide new insights into the field (2011: 55). Other authors found that there is a relative lack of theoretically grounded research in SSCM despite the growing number of empirical papers being published in the field (Mollenkopf, Stolze, Tate, & Ueltschy, 2010). Hoejmose and Adrien-Kirby (2012) point out that the overly descriptive nature of current research is useful in accumulating knowledge about facts but fails to make a strong theoretical contribution. Hence the field can be viewed as conceptually immature and underdeveloped (2012: 235).

Winter and Knemeyer (2013) analysed the intersection of "sustainability" and "SCM" with a particular focus on analysing how sustainability and SCM dimensions had been approached in the literature. They found that authors have primarily researched individual dimensions of sustainability, in particular environmental, and that there is a striking lack of integrated approaches. They briefly mention that in current literature "only a few theoretical constructs have been developed and tested to date" (Winter & Knemeyer, 2013: 33) but they do not specifically identify the theories that have been applied. Reviewing theoretical practices in SSCM constitutes a way to explore the potential conceptual reasons that have favoured the predominance of a narrow environmental sustainability focus. As pointed out by Sarkis et al. (2011: 2) "there is a void of literature that has sought to review and integrate theory with the GSCM research". There is therefore an opportunity to provide a comprehensive evaluation of theories for researchers in SSCM looking to advance theory building and application.

Furthermore, Pagell and Shevchenko (2014) point out that current research in the field has failed to fully capture all SC's impacts, i.e. economic, social and environmental, mainly because of a theoretical distortion in favour of profit maximisation and economically beneficial practices. Arguably, in order for research to offer more comprehensive, innovative and theoretically grounded insights, it is important to have an overview of what theories have been applied to date and how authors have used them to conceptualise SSCM.

In light of these existing gaps and challenges, in this paper we attempt to provide a comprehensive review of theories in the field and offer an integrative theoretical map that can guide future research efforts.

METHODOLOGY

This paper is based upon a systematic review of 308 articles identified in relevant journals across the fields of supply, purchasing and operations, and business ethics/sustainability. A structured literature review differs from a more narrative review because of its methodical approach, implying a detailed description of the steps taken to select, scan and analyse the literature, aiming at reducing biases and increasing transparency (Craig R. Carter & Easton, 2011; Tranfield, Denyer, & Smart, 2003). Hence performing a structured literature review increases replicability and provides an appropriate means of synthesising a rapidly growing field of knowledge (Miemczyk, Johnsen, & Macquet, 2012). Systematic literature reviews enable "integrating a number of different works on the same topic, summarizing the common elements, contrasting the differences, and extending the work in some fashion" (Meredith, 1993: 8). It is therefore a valuable methodology to develop propositions and discuss future research implications (Craig R. Carter & Rogers, 2008).

This literature review provides a snapshot of the diversity of theoretical practices present in SSCM literature. It does not pretend to cover the entirety of the literature but rather offer an informative

and focused evaluation of purposefully selected literature in SSCM, which will serve to answer previously outlined research questions.

In order to define the scope of the review, the authors agreed upon the time period to be covered, the themes as well as the journals to be included. We searched for articles from 1995 up to 2013. Despite the fact that some papers have raised concerns regarding sustainability in the SC prior to 1995, our decision is justified and supported by other literature reviews in the field noticing the emergence of a larger body of literature post-1994 (Stefan Seuring & Müller, 2008). In terms of thematic scope, themes were drawn from both the SCM and the CSR/Sustainability paradigms. Hence we used a combination of terms related to both areas (e.g. supply AND ethical – see Table 2), which helped identify articles that may not be appearing when simply searching for the main term of 'SSCM'.

Table 2. Key words used in the literature search

"Supply chain management"		**"Sustainable"**
SUPPLY CHAIN SUPPLY PURCHASING PROCUREMENT	*AND*	SUSTAINABLE SUSTAINABILITY ETHICAL SOCIAL GREEN ENVIRONMENT

The review has been limited to peer-reviewed publications as a way to guarantee a certain level of quality (Burgess et al., 2006), and to ensure consistency between the themes and sources by carefully selecting journals, which covered areas from both the SCM and CSR/Sustainability paradigms. Eight major journals in the field of operations and supply and seven journals in the field of business ethics/sustainability were selected (see Table 3). The fifteen journals cover different quality standards as identified by the Association of Business Schools journal ranking 2010 (Harvey, Kelly, Morris, & Rowlinson, 2010) but also include some journals that have a specific

focus on sustainability in an operational sense but are not ranked in ABS 2010 (Harvey et al., 2010). These publications offer the possibility of scoping a large range of research in SSCM and reflect the diversity of approaches in the field. Only articles from the selected journals have been included in this review. Searches were conducted on both the journals' websites as well as the databases Business Source Premier and ABI/Inform Global to ensure that all relevant articles would be included.

The decision to focus on these fifteen particular journals stemmed from their primary focus on empirical and conceptual works rather than analytical modelling approaches. Although we appreciate that there are significant research studies in this area, and specifically in operations research, the focus of this paper has led us to primarily consider how researchers apply theories and conceptualise sustainability in SCs through quantitative, qualitative or conceptual approaches rather than make sense of sustainability in SCs mathematically. Hence we have excluded journals that have a modelling or operations research focus. We have also excluded general management journals in order to fit the focus of this research at the intersection of operations/SCM and sustainability. While we have attempted to provide a broad coverage of the SSCM literature, we have not covered all peer-reviewed publications and there is a possibility that some relevant papers on SSCM have been missed.

Search results were checked to avoid duplication. A closer analysis of the abstracts allowed distinguishing between relevant and irrelevant articles. The following types of articles were excluded:

- Book reviews and letters
- Call for papers
- Articles focusing on technical aspects such as Life Cycle Analysis (LCA), product recovery, reverse logistics, closed-loop SCs and remanufacturing
- Articles in which 'sustainability' and/or 'SC' was only a secondary focus.

Table 3. List of selected journals

Operations and Supply	Ethics and sustainability
• International Journal of Physical Distribution and Logistics Management • International Journal of Operations and Production Management • International Journal of Production Economics • Journal of Purchasing and Supply Management • Journal of Operations Management • Journal of Supply Chain Management • Production and Operations Management • Supply Chain Management: an International Journal	• Business Strategy and the Environment • Corporate Governance • Corporate Social Responsibility and Environmental Management • Environment and Planning A • Greener Management International • Journal of Business Ethics • Journal of Cleaner Production

All selected articles for this study have been saved in the reference management software Endnote, in order to facilitate data management. The full list of articles is provided in an Appendix, which can be obtained from the authors upon request. The coding strategy adopted in this paper is very similar to the principles of content analysis, where both a coding schedule (form to record the coded data) and a coding manual (specific instructions to support the coding) are used (Abbasi & Nilsson, 2012; Bryman & Bell, 2007). This approach to data analysis allows gathering both quantitative and qualitative aspects using pre-determined criteria (Table 4 and 5). In addition to basic bibliographic information recorded in Endnote (e.g. year, author, journal…), we specifically focussed on two aspects: identifying the sustainability focus of the articles and the use or absence of theoretical perspective. These aspects are highlighted in Table 4. The journal articles have been analysed using a data extraction table, following the model of Table 5. This table allowed selecting and classifying

the information from the articles according to a set of criteria that would be relevant to our study. Both authors agreed on limiting the list of coding categories (Table 4) to those that would specifically help respond to our research questions on theories and conceptualisation. While some parts of the analysis are clearly deductive (e.g. categorising according to the social and/or environmental sustainability dimensions), others are more inductive. For instance, we decided not to use a pre-determined list of theories but let them emerge inductively from the sample.

We have taken several steps in order to ensure the reliability and quality of this study. We have made efforts to make transparent the sampling process as well as the coding rules that have been applied in the analysis (Bryman & Bell, 2007). The classification criteria used in this study is grounded in or partly guided by previous research in the field, and in particular the definition of SSCM by Carter and Rogers (2008) and the coding scheme used by Carter and Easton (2011), which addresses validity. The analysis was performed in several rounds by the authors, both independently and jointly, in order to reduce bias and increase reliability. Although it was easier to check for agreement regarding the quantitative aspects, discussions between the authors and with other researchers aimed at reaching 100% inter-coder agreement and increase the validity of the results (Stefan Seuring & Müller, 2008).

Table 4. Coding categories

Coding category	Description
Article type	One of the following categories: research/empirical, conceptual, literature review
Method	Primary methodology used to collect the study's data: for e.g. literature review, survey, case study, interviews.
Theme	Focus of the article and key issues investigated (e.g. social issues in fashion SCs)
Definition of SSCM	Assess whether or not the authors provide a definition of SSCM (or related area such purchasing ethics or green SC) with p. number.
Theory	Identify the theoretical lenses adopted in the article if any.

SSCM dimension	Classification of the issues discussed in the article according to dimensions of the triple bottom line (3BL) – environmental, social and economic. Distinction made between standalone issues (one dimension), those combining two dimensions or fully integrated.

Table 5. Data extraction table

Pub.	Author	Year	Type	Method	Theme	Def. SSCM	Theory	SSCM dimension	Main Findings
IJPE	CF CM CL MA	2012	Emp.	Case study	Greening fashion SC	N/A	N/A	Environmental	Approaches to greening, comparison large firm/small companies
IJPDLM	CC DR	2008	Concep.	Lit. rev.	Comp. SSCM framework	p.368	PE, RDT, TCT, RBV	3BL	Theoretical framework

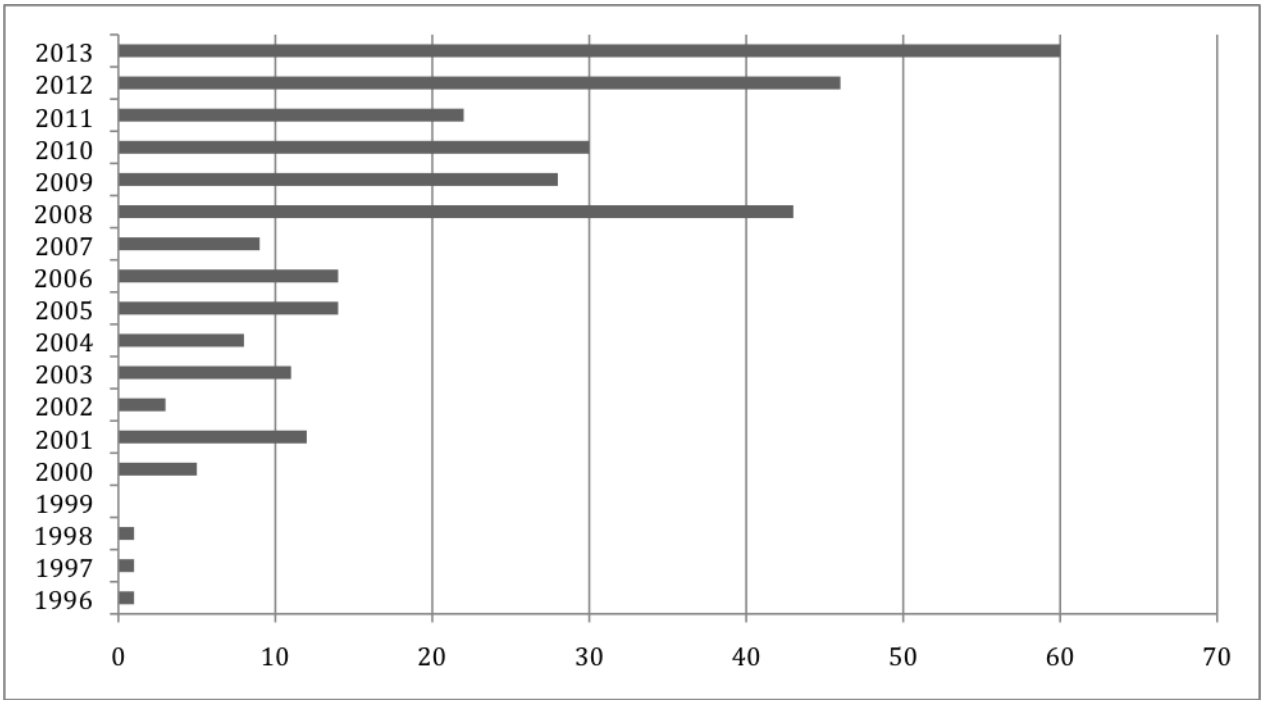
FINDINGS & DISCUSSION

This section starts by presenting the general descriptive statistics from the literature, and then three sections address the research questions identified in the introduction. In reporting the analysis of our data, where appropriate we have included the reference numbers of specific papers as listed in the Appendix.

General trends in the literature

Figure 1 shows a clear emergence of a larger body of literature on SSCM since 2000, with a steep increase since 2008. The surge of articles since 2008 suggests a lag in SSCM, as research on sustainability, CSR and ethical business practices can be traced back to much earlier dates, with for instance influential articles on corporate social performance (Carroll, 1979) and stakeholder theory (Freeman, 1984).

Figure 1. Number of articles by year



74.4% of the articles were published between 2008 and 2013 (229 papers), and 69% of these (158 papers) in the period 2010-2013. There was a particular surge in 2013, with 60 articles published. This confirms that the interest in the subject has really grown in the last few years. The articles are almost equally distributed between supply/operations (51.3%) and business ethics/sustainability (48.7%) publications as shown in Figure 2. The full classification of publications is shown in Figure 3.

Figure 2. Proportion of articles by publication type

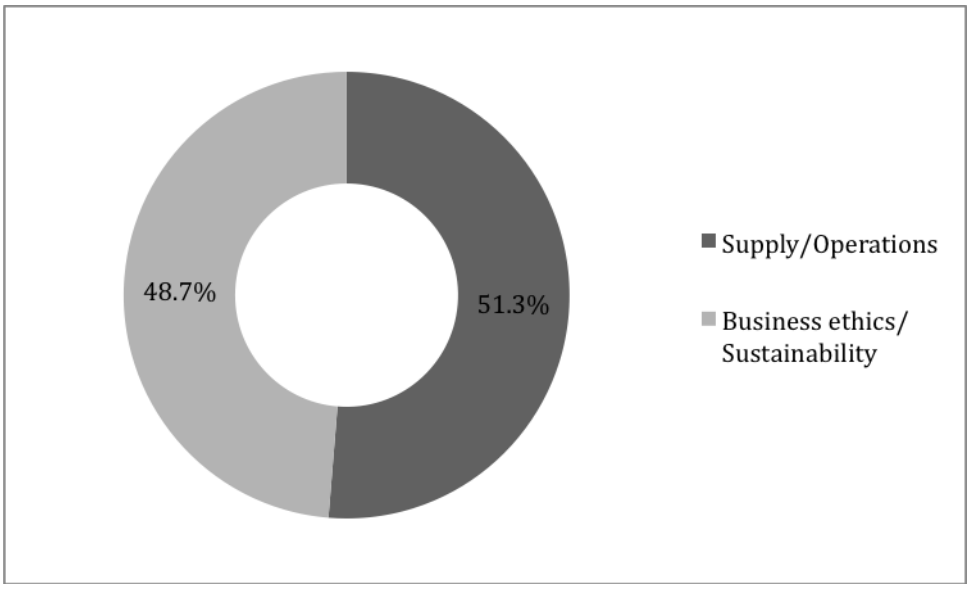
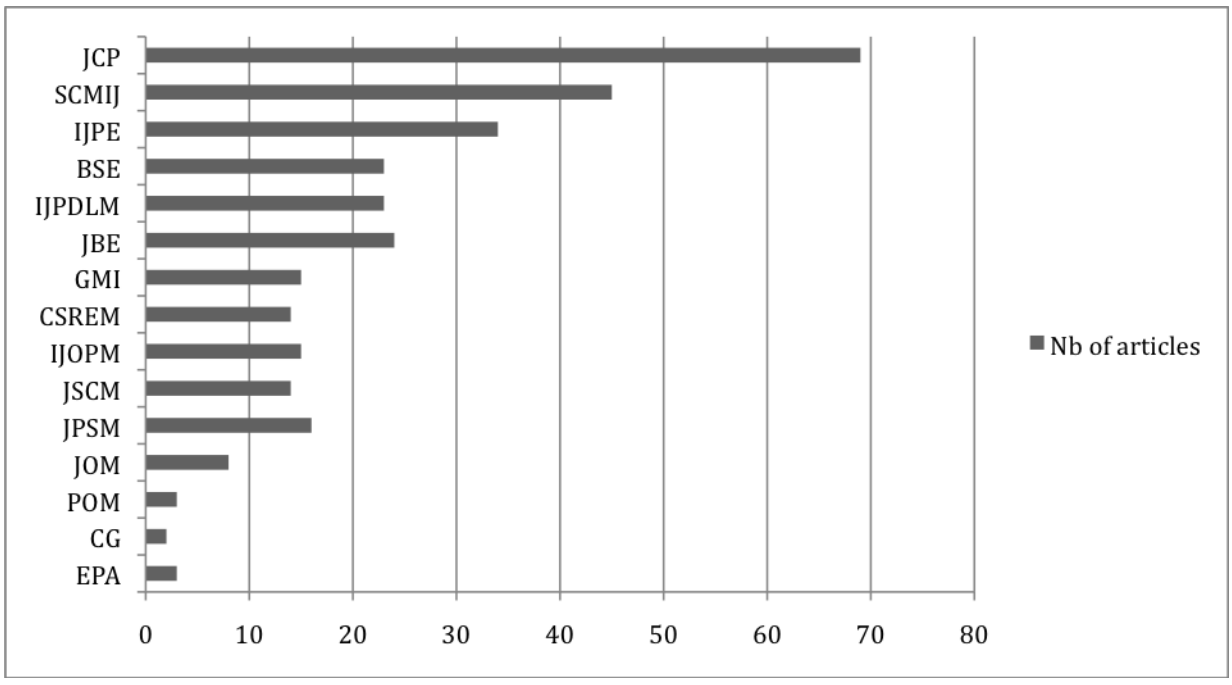


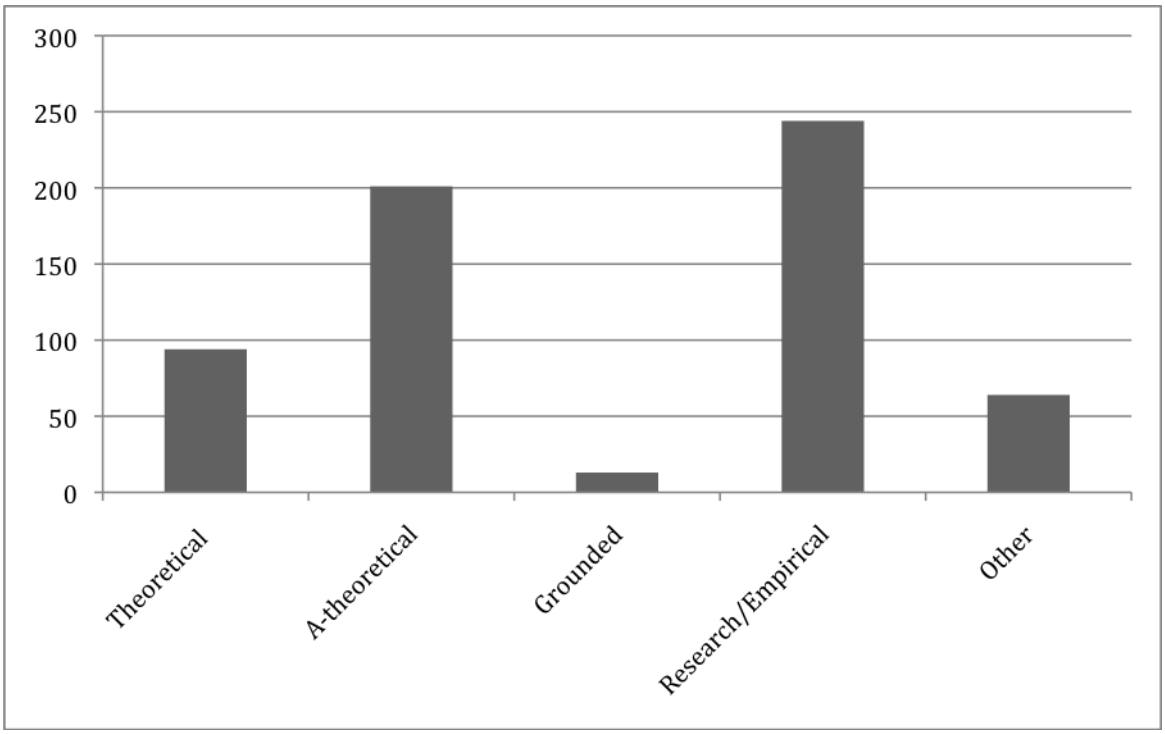
Figure 3. Number of articles per publication (out of 308)



Another interesting feature emerging from the analysis is that the vast majority of papers (79%) can be classified in the category 'research/empirical'. This category encompasses papers, which present

results and findings of observations and studies of practice in SSCM (e.g. surveys, case studies, etc.). Over 65% of the articles analysed are a-theoretical, which leaves little room for theory testing and theory building. A very small number of papers in the sample use a grounded theory approach as shown in Figure 4.

Figure 4. Types of articles

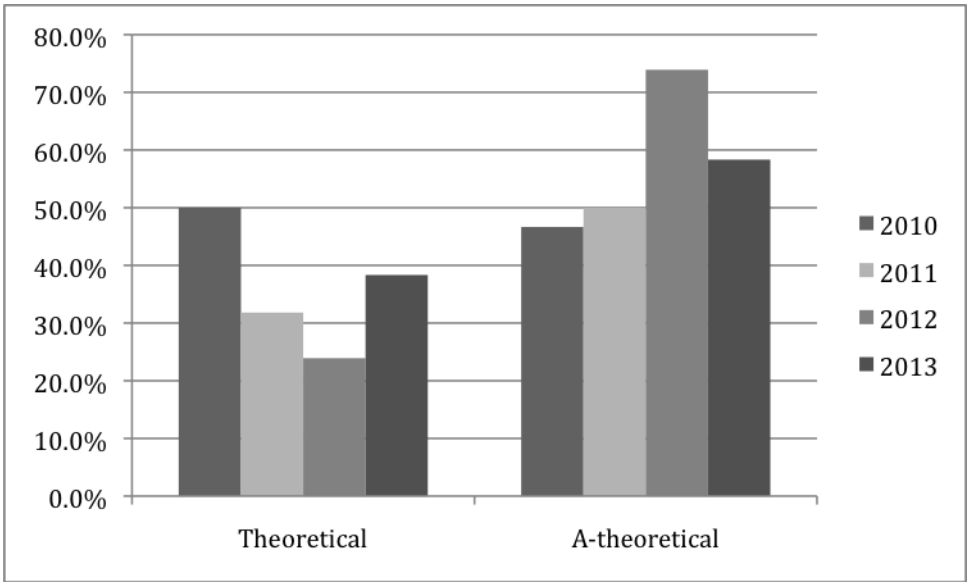


RQ1 - What are the dominant theories currently used in the field of SSCM?

Most popular theories in SSCM

Carter and Easton (2011) noted an encouraging trend towards integrating more theory in SSCM between 2001-2010. This finding led to analysing the evolution of the proportion of theoretical and a-theoretical articles in the period 2010-2013, which has not been covered in their review. Figure 5 reveals that the proportion of a-theoretical papers remains higher than papers adopting a theoretical perspective, except in 2010. We can note that the gap between the number theoretical and a-theoretical studies has narrowed in 2013.

Figure 5. Evolution of use of theories 2010-2013

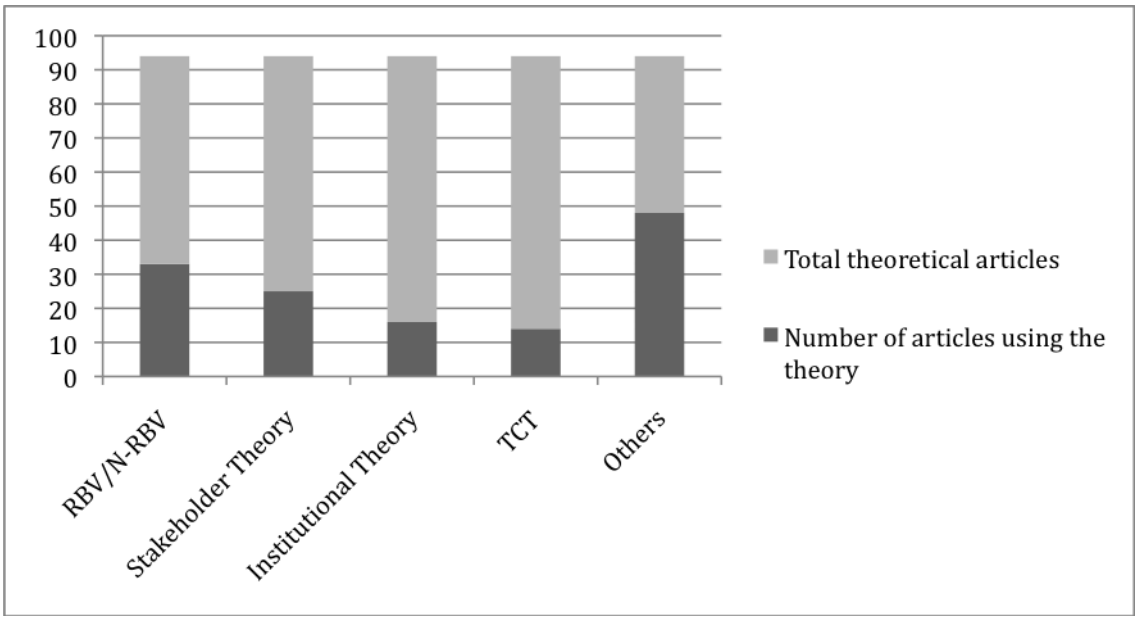


The papers that can be classified as theoretical reveal a tendency for SSCM researchers to import theories from other fields rather than develop their own. These main 'alien theoretical perspectives' (Amundson, 1998: 354) are the spectacles through which researchers view, describe and analyse problems in SSCM. Efforts to build upon the existing theories to develop new perspectives are scarce in the literature. Rather, in the case studies and survey articles, authors present their empirical conclusions and results with no or little attempt to explore concepts, relationships and make further predictions for theory building purposes.

Many authors borrow macro theories traditionally associated to other academic fields such as economics and political science (Colquitt & Zapata-Phelan, 2007). It is important to mention that although these theories have been encountered more than once in the articles, authors vary in the way they utilise them, with some theoretical lenses being more popular than others. In particular, the resource-based view (RBV), including the NRBV, stakeholder theory, institutional theory and transaction cost theory (TCT) are the most referred to. Figure 6 shows that these three theories are proportionally more cited and used in the literature. Some articles combine more than one theory

and therefore the figures do not add up to the total number of theoretical articles. The 'Others' column represents the 21 additional theories identified, and are fully presented in Table 6, with corresponding occurrence in the sample.

Figure 6. Most popular theories in SSCM literature*



*Some papers combine more than one theory

Table 6. Other theories found in the literature

Theory	Number of articles
Resource dependence theory	8
Dynamic capabilities	7
Relational theory	5
Network theory	4
Agency theory	3
Global value chain	3
Systems theory	3
Contingency theory	2
Actor Network Theory	1
Complexity theory	1
Ecological modernisation theory	1
Ethical climate theory	1
Ethical theory	1
Exchange theory	1

Industrial network theory	1
Legitimacy theory	1
Organisational learning theory	1
Population ecology	1
Resource advantage theory	1
Social network theory	1
Structuration theory	1

Table 7 shows the number of articles using each of the most popular theories and Table 8 describes the key tenets of these theories as well as the typical SSCM challenges that relate to them.

Table 7. The use of theories in SSCM theoretical articles

Theory	Number of articles	Reference numbers
RBV including N-RBV	33	265, 261, 168, 92, 57, 100, 291, 69, 63, 41, 178, 110, 208, 308, 90, 192, 203, 31, 24, 179, 140, 234, 137, 37, 93, 45, 264, 154, 26, 275, 189, 86, 195
Stakeholder theory	25	102, 44, 9, 70, 143, 144, 191, 134, 223, 85, 164, 258, 170, 272, 39, 163, 154, 26, 275, 274, 125, 103, 93, 140, 179
Institutional theory	16	140, 46, 232, 255, 172, 38, 2, 118, 301, 307, 240, 254, 234, 179, 69, 93, 163
TCT	14	16, 101, 91, 237, 245, 266, 236, 214, 297, 189, 86, 195, 103, 45
Others	48	11, 53, 146, 179, 277, 290, 78, 190, 28, 160, 207, 167, 211, 240, 254, 137, 196, 267, 181, 253, 208, 90, 192, 31, 24, 7, 114, 37, 93, 45, 257, 264, 170, 271, 39, 26, 275, 274, 125, 195, 202, 18, 139, 16

Table 8. Key theories in SSCM literature

Theory	Description	Unit of analysis	Typical SSCM challenges	Reference	Example articles from the review
Resource-based view (RBV)	A firm's sustainable competitive advantage emanates from its valuable, rare, inimitable, non-substitutable resources and the unique way they are utilised through core capabilities.	The firm as a bundle of resources and its internal processes to manage these resources.	Identification and development of key resources contributing to ensure achievement of environmental, social and economic performance in the supply chain. Inter-organisational resources as important as intra-organisational resources to stimulate supplier engagement with SSCM practice.	(Barney, 1991)	(Gold, Seuring, & Beske, 2010)
Natural RBV	Harnessing environmental and social challenges within business capabilities is a source of competitive advantage. The imperatives of sustainable development create opportunities for differentiation and increased market power.			(Hart, 1995)	(Foerstl, Reuter, Hartmann, & Blome, 2010)
Stakeholder Theory	The activities of companies affect both internal and external parties. Corporate social responsibility can be understood as the responsibility for a business to meet the expectations of its various stakeholders. Firms can ensure their long-term survival and preserve their license to operate by taking into account the broad network of actors into their strategy.	The firm as embedded in a network of stakeholders. Firm activities and decisions as shaped by external stakeholders' pressures.	Extent of inclusion of SC stakeholders (suppliers, customers, etc.) in organisational environmental and social practices. Identification and role of specific stakeholder influences on SSCM practices.	(Freeman, 1984)	(Park-Poaps & Rees, 2010)
Institutional Theory	External social pressures (coercive, mimetic and normative) influence organisations in adopting socially responsible behaviours and transform their practices to gain social legitimacy. By responding to regulations and imitating their competitors, firms ensure the alignment of their corporate practices with society's expectations.	Individual or collective (industry, national) organisational practices are adopted or diffused as responses to institutional drivers.	Motives and circumstance of adoption and diffusion of environmental and social standards. Role of government regulation in driving SSCM practice. Imitation between organisations as driver of adoption of SSCM practices.	(DiMaggio & Powell, 1983)	(Gonzalez, Sarkis, & Adenso-Diaz, 2008)
Transaction Cost Theory	Two organisations involved in an exchange or activity incur costs and efforts. In order to sustain the exchange the parties must find appropriate modes of governance and safeguards (i.e. in contractual arrangements).	Transaction or exchange between buyer and supplier(s) and the governance of this exchange.	Modes of governance and organisational action in buyer-supplier relationships to implement social and green practices. The impact of transaction costs on the adoption and diffusion of sustainability practices across a SC.	(Williamson, 1981)	(Stephan Vachon & Klassen, 2006)

Despite the convenience of importing and using existing theories in trying to understand SSCM phenomena, it is necessary to warn of the challenges and limitations of such a practice. While it is being justified as an attempt to avoid 'reinventing the wheel', authors must carefully assess the compatibility of the theory before deciding to import it. Specifically, the relation between the theory and the issue studied must be determined, with particular attention to be paid to the relevance of its concepts and explanatory power (Amundson, 1998). Moreover, all theoretical frameworks reflect deep ontological commitments, which in turn affect the appreciation of and approach to a specific question or problem. Imported theories carry with them the baggage of their mother discipline. This implies that the use of a specific theoretical lens to research SSCM will shed light on certain dimensions, concepts and relationships at the expense of others.

Theoretical levels in SSCM

Most of the theories used in SSCM can be described as macro theories as they take a more organisational and strategic rather than individual and behavioural perspective. The macro theories utilised in SSCM have favoured the prevalence of a large buyer firm perspective as the unit of analysis (see Table 5). Indeed, their scope and concepts tend to be more applicable to research about the activities of large companies, and in many cases have not questioned but rather validated a top-down approach to SSCM (e.g. codes of conduct compliance). However, in practice there is certainly a role for SMEs in the management of sustainability in the SC – i.e. small suppliers/large buyers. There is also a need to acknowledge the importance of individuals in the development of SSCM.

The divide between macro and micro perspectives is not a new phenomenon in organisational analysis, and the difficulty for authors to capture the interplay between both levels has been acknowledged by a number of authors (Astley & Van de Ven, 1983; Klein, Tosi, & Canella, 1999). The lack of focus on micro level issues in SSCM might simply be due to the fact the field is

growing and cannot be yet considered mature. Another possible explanation might be the close relation between SCM and SSCM. Many articles in SSCM have emerged from a more operational/SCM tradition, which is also characterised by the predominance of macro approaches. Nonetheless, the interest for behavioural SCM has grown over the years, as shown for instance in the articles by Harland (1996) and Tokar (2010), and this might be a sign that a similar progression is likely to happen in SSCM.

RQ2 – How have dominant theories influenced the conceptualisation of SSCM?

Current sustainability issues

It is interesting to consider the issues that have been researched to date in order to see whether any striking pattern is emerging and how it can be linked with the findings on theories. Looking into the evolution of these issues over time can help define what may constitute a fruitful way to develop the SSCM conceptual base. We consider the issues addressed by papers between 2010-2013 in order to build a current picture of the field.

In order to offer clear and simplified insights into the current issues mostly addressed in SSCM research, we have used the 3BL as underlying framework. The 3BL is a concept used in many articles in SSCM to make sense and explore the dimensions of sustainability. It is a prominent approach to CSR and sustainability in general, which helps authors conceptualise SSCM (see for example Craig R. Carter & Rogers, 2008). Using the 3BL helps classify the sustainability aspects researched in the literature (i.e. environment, social, economic or integrated). It is possible to argue that all papers in the sample fit within the economic dimension as they all address specific issues related to business transformation for sustainability. The interesting part is to see what links are then explored: economic and environment, economic and social, or a link between all three dimensions.

A higher proportion of articles explore links with the environment/green dimension rather than social dimension (See Figure 7). In line with our earlier analysis of definitions, quite a large proportion of papers between 2010-2013 adopt a mixed approach to sustainability (i.e. combining two dimensions or more) (39.9%). In 2013, 60% of the articles considered environmental or green issues. Figure 8 actually shows that the proportion of articles considering green and mix sustainability issues remain high between 2010-2013 compared to the ones considering social issues. The articles have classified according to the 3BL dimensions in Table 9.

Figure 7. 3BL issues in papers between 2010-2013

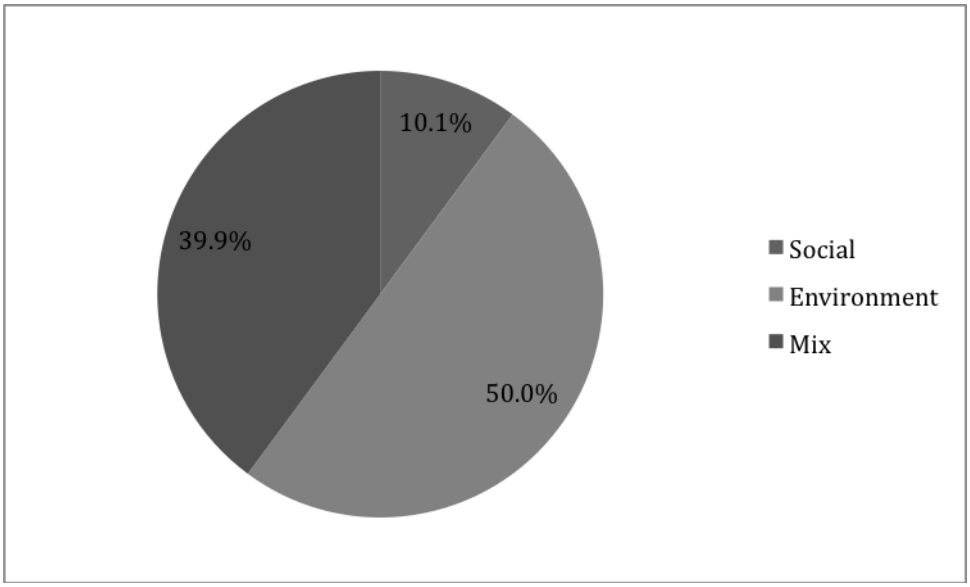


Figure 8. Evolution of 3BL issues between 2010-2013

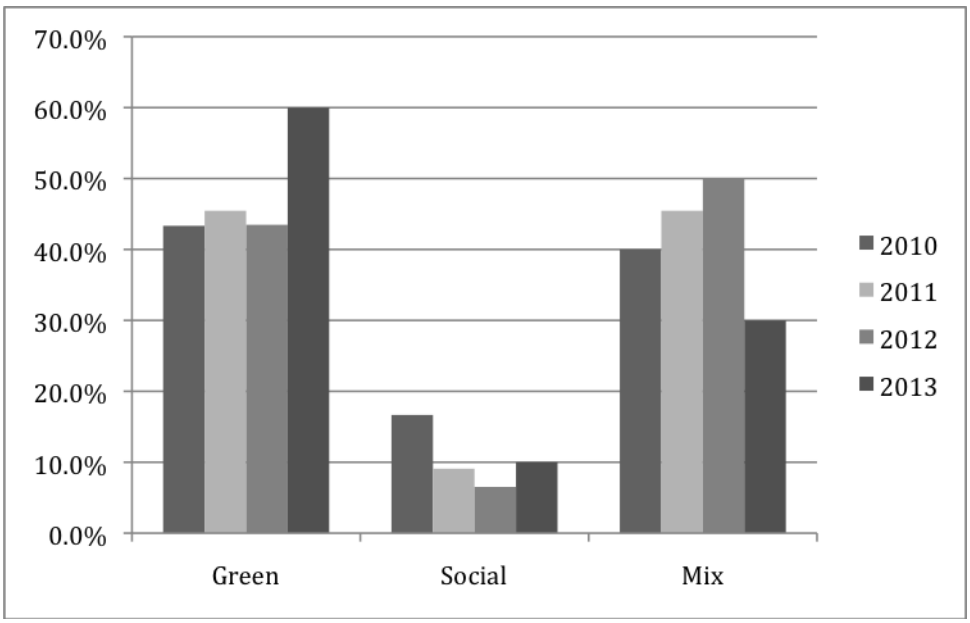


Table 9. Sustainability issues in articles between 2010-2013 (with article reference numbers)

Year	Green	Social	Mixed
2010	104, 159, 171, 216, 241, 259, 270, 287, 299, 15, 190, 255, 177	156, 268, 191 16, 214	8, 29, 90, 78, 211, 254, 208, 125, 103, 202, 189, 18
2011	68, 26, 219, 72, 150, 153, 180, 14, 134, 149	53, 284	227, 269, 292, 43, 172, 110, 192, 32, 74, 288
2012	234, 7, 163, 139, 1, 218, 293, 27, 36, 49, 83, 98, 111, 151, 185, 194, 243, 280, 298, 19	137, 173, 183	109, 113, 174, 278, 4, 23, 65, 76, 88, 89, 94, 124, 238, 250, 286, 12
2013	52, 60, 123, 17, 33, 58, 71, 169, 182, 213, 224, 271, 282, 283, 294, 160, 67, 119, 130, 212, 261, 92, 290, 167, 118, 301, 307, 253, 57, 100, 291, 37, 85, 86, 209, 181	34, 48, 112, 28, 114, 258	285, 5, 131, 228, 6, 22, 108, 129, 157, 296, 95, 115, 11, 179, 2, 240, 164, 195

Prevailing conceptualisations of SSCM

Borrowing theoretical perspectives from other disciplines has an influence on the way SSCM has been conceptualised. Table 5 reveals a focus upon the concepts of resources, performance, and power. Specifically, resources and the way they are managed are seen as the source of competitive advantage for companies, which are faced with the challenge of how to access and make the most of these resources. There has been strong emphasis on studying the correlation between firm performance and sustainability, and in particular the identification of sources of competitive advantage through the harnessing of environmental and social challenges within business capabilities (Hart, 1995; Hart & Milstein, 2003). The concept of power is also apparent, either in the form of power differential emanating from the firm's strategic abilities (RBV) or understood as a form of dependence and control over the exchange process and/or the resources. All three notions of resources, performance and power are connected. This fits with the focus in practice on building the business case for sustainability.

The RBV of SSCM suggests that competitive advantage can be gained through unique sustainability-related competencies in their SCs, which reflects a classic view of business performance and power. SSCM becomes integrated within the realm of strategic management and described as an evolution of traditional purchasing and supply activities, and the RBV perspective shows how this evolution fits in the overall business performance objectives. Pullman, Maloni and Carter (2009) used the RBV and NRBV to formulate hypotheses and study performance outcomes related to environmental and social practices in the food SC. Markley and Davis (2007) compare the NRBV and the triple bottom line and describe how firms can generate competitive advantage from the incorporation of stakeholder and sustainability concerns in their SC. There has been a strong interest in investigating the link between firm financial performance and the management of environmental and social issues. While several studies have identified a relationship between firm performance and aspects of SSCM (Krause et al., 2009) and specifically between environmental SCM and economic performance (Qinghua Zhu & Sarkis, 2004), the direction of this relationship is ambiguous. It is unclear whether economic performance is a result of the adoption of SSCM practices or if companies performing well have adopted SSCM practices. The operationalisation of sustainable development concepts into tangible metrics, and financial indicators in particular, is difficult and does not fit in traditional performance systems (Srivastava, 2007; Tsoulfas & Pappis, 2008).

The correlation between performance and sustainability may be more complex and dependent upon other mediating variables, such as collaboration between SC partners to enhance both environmental and economic performance (S. Vachon & Klassen, 2008), or organisational learning as suggested by Carter (2005) who has utilised the RBV to demonstrate the criticality of more intangible resources such as human capital and knowledge. TCT (Williamson, 1981) has also been applied to understand the relation between performance and sustainability but in the context of transactions. Authors have investigated how organisations can manage uncertainty by choosing to

internalise or externalise environmental activities (Stephan Vachon & Klassen, 2006). Attention has also been paid to understanding the modes of governance between buyers and suppliers that are more likely to lead to high environmental and social performance.

The other main theoretical perspectives are stakeholder theory and institutional theory. Both theories tend to be found in papers exploring drivers and enablers of SSCM and the challenges it poses. Stakeholder theory is utilised to capture the intertwinement of multiple actors within SCs, which often straddle national boundaries. Both stakeholder and institutional theory highlight the emergence of SSCM as a result of the influence of parties impacted by business activities. Institutional theory offers a lens to understand the pressure that firms put on one another in the movement towards adopting more sustainable practice in the SC. (i.e. mimetic isomorphism – the way in which organisations tend to emulate each other's best practices). Park-Poaps and Rees (2010) study stakeholder forces of socially responsible SC orientation (SRSCO) in the footwear and apparel industry. They differentiate between internal and external forces and show that SRSCO in this industry has a strong positive relation with consumers, industry and media influences. Interestingly, institutional theory has been adopted in several studies examining corporate ethical communication through CSR reports or codes of conduct. Preuss (2009) shows that the adoption of ethical sourcing codes is strongly influenced by isomorphic and public pressures. Tate, Ellram and Kirchoff (2010) use institutional theory to analyse the content of CSR reports and highlight that although institutional pressure is clear across various industries, the way in which it is interpreted and translated within reports varies according to the size of the company and its geographic location.

RQ3 – What are the promising avenues for the future development of SSCM?

We provide propositions for research based on our findings of existing shortcomings and of promising areas for contributions that could guide future research efforts in the advancement of the sustainable development agenda in SCs.

Under-explored aspects of SSCM

On the whole, the most popular theoretical perspectives utilised in SSCM fail to capture all aspects of practices in the field. In particular, the emphasis on performance seems correlated to the prevalence of environmental and economic approaches to SSCM, which present more quantifiable characteristics. There is certainly a gap around social and human dimension of sustainability. The competitive paradigm seems to dominate the SSCM landscape and it is difficult to go beyond traditional perspectives, which have been strongly influenced by neo-classical economics. Sustainability issues may require a shift in mindsets and business models. This could allow transitioning to new conceptions of consumption and a firms' purpose as well as developing alternatives to the dominant discourse of growth.

SSCM research to date has been primarily focussed on economic and environmental aspects and has not addressed the full complexity of systemic sustainability research. In order to investigate the human aspects of SSCM, authors could borrow theories from organisational behaviour and psychology such as sensemaking theory (Weick, 1979) and even extend well-known theories such as Maslow's hierarchy of needs (Maslow, 1970). For instance, the latter could help explore how individuals in different organisations across the SC may have various needs and motivations affecting their ability to deal with environmental and social issues, hence impacting on how sustainability can be implemented in the SC as a whole. These findings lead to our first proposition:

> *Proposition 1. For the field to gain in maturity, researchers in SSCM should consider testing and extending other potentially relevant theories from various disciplines, outside*

the few popular lenses that have been applied to date, and the value of grounded approaches to give the field its own theory.

There is potential to move from the macro theoretical trend to more multilevel theoretical perspectives, to gain a comprehensive understanding of SSCM (Astley & Van de Ven, 1983; Klein et al., 1999). It is most certainly challenging to conduct multilevel research but such approaches may constitute a fruitful way to capture the multifaceted reality of SSCM. Several authors have acknowledged the importance of leadership and corporate culture (Doppelt, 2003; Dunphy, Griffiths, & Benn, 2003), which both bring attention to human decisions and interactions in the change towards sustainability. It does therefore make sense to consider the roles and perspectives of individuals towards achieving SSCM. Our second research proposition is therefore:

Proposition 2. For the full integration of sustainable development into SCM, research needs to build a more holistic and multilevel understanding of SSCM rather than being constrained by the prevalent macro competitive paradigm, and all aspects and levels of sustainability, especially the social/human aspects and micro behavioural level, need to be explored.

The idea that SSCM signifies an evolution of business practices has not been thoroughly explored. These aspects could be further investigated through other theoretical lenses. For example, social exchange theory (Emerson, 1976) or social network theory (Granovetter, 1973) could be used to investigate how organisations adapt and respond to the sustainability challenge through their social relationships and the development of social capital. Organisational change theory for corporate sustainability (Dunphy et al., 2003) could provide a basis to look into the more psychological and behavioural aspects of change in organisations. Finally, authors could borrow theories such as natural capitalism (Hawken, Lovins, & Lovins, 1999) or evolutionary theory (Nelson & Winter,

1982) to examine how firms can adapt to their evolving environment through the development of knowledge and how they can capture new opportunities. This leads to our third proposition:

> *Proposition 3. Previous research has explored drivers and barriers to SSCM and its relation to performance; hence future research efforts could seek to develop our understanding of the implementation process of SSCM by framing it as transformation/change in organisational practice.*

Towards new theory

If we were to identify the dominant types of theoretical articles, the majority of them would be classified as 'reporters' and 'testers'. Indeed, articles either present low levels of both theory testing and theory building (reporters) or high levels of theory testing with little attention to theory building (testers) (Colquitt & Zapata-Phelan, 2007).

There have been more theory building efforts in recent papers. They remain scarce but provide very insightful directions for future research. For instance, a few authors have adopted a grounded theory approach to develop models or propositions from case studies. Some papers have attempted original approaches to SSCM through a combination of theoretical perspectives, as for example Walker and Brammer (2009) in their investigation of sustainable procurement practices in the public sector. Other studies take their starting point in the literature to develop conceptual models, which they then test empirically. They draw from themes in the literature to analyse their data and propose conceptual frameworks. For example, Spence and Bourlakis (2009) investigate the progress from CSR to supply chain responsibility. Some conceptual frameworks have recently been developed using the 3BL, and could benefit from testing and extension to grow into theories of SSCM. Carter and Rogers (2008) integrated some of the key theoretical perspectives into a comprehensive framework for SSCM, which can be tested in different contexts.

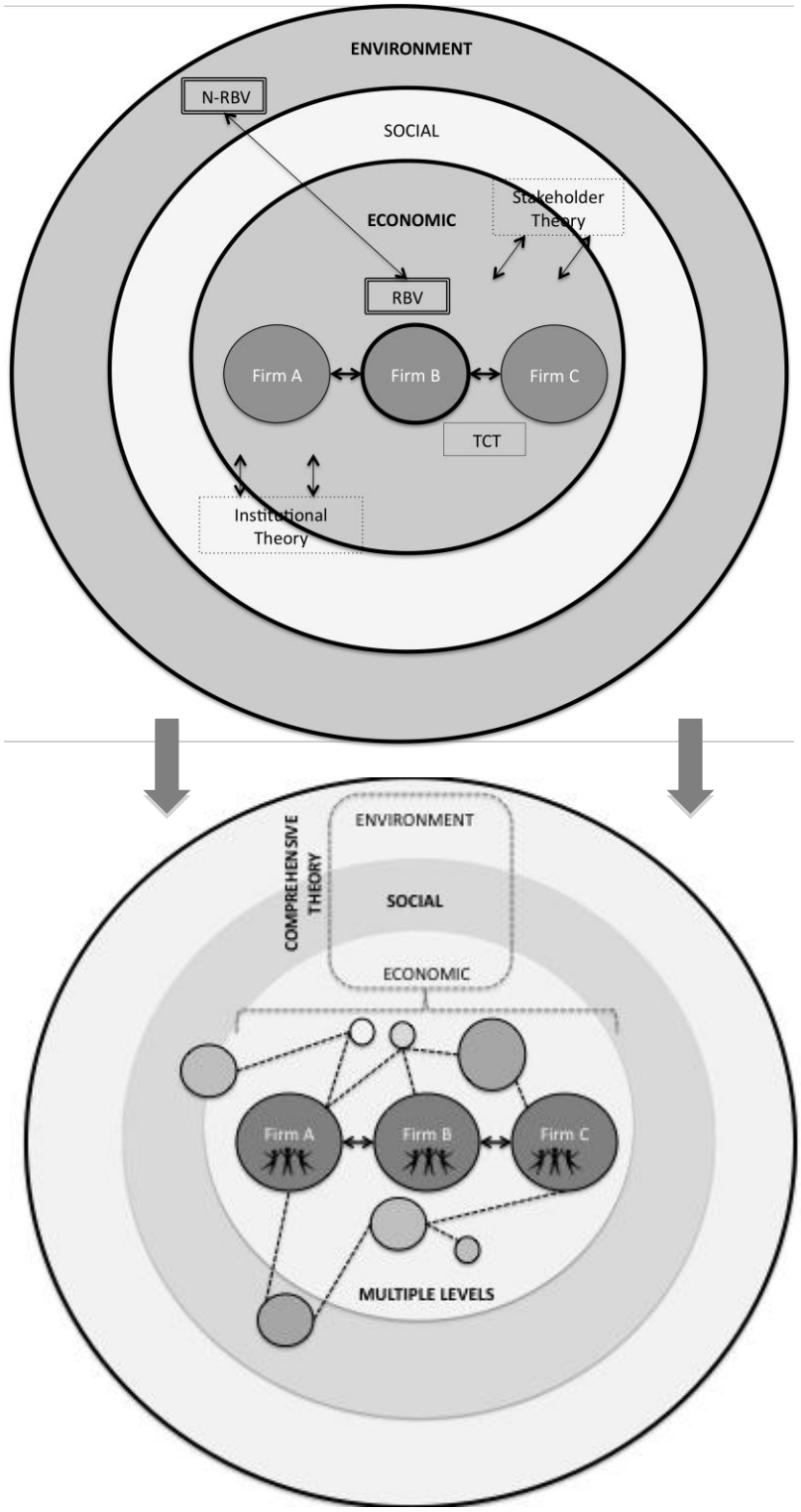
The development of theory in SSCM should capitalise on the strong connections with practice. Companies are faced with the reality of addressing sustainability challenges and theories may constitute useful frames to make sense of these. Van de Ven accurately noted that a "good theory is practical precisely because it advances knowledge in a scientific discipline, guides research toward crucial questions, and enlightens the profession of management" (Van de Ven, 1989: 486). Consequently, a final proposition is made:

> *Proposition 4. In order to support the development of SSCM as an academic discipline, it is necessary to move beyond producing exploratory, a-theoretical and descriptive research, and engage in further theory testing and consolidating efforts, drawing from the empirical richness in the field and applying frameworks in practice.*

Based on our findings and propositions, we have developed a theoretical map of SSCM (Figure 9). The 3BL serves as the theoretical underpinning for Figure 9, which attempts to capture the current and possible future state of the SSCM conceptual base. Society would not exist without the natural environment so the social dimension sits within the environment. Similarly, the economic sphere emanates from society and therefore sits within the social dimension. The first part of the figure represents the current state of SSCM research, highlighting the most popular theories as well as the more explored dimensions (economic and environment in darker shade of grey). The NRBV is concerned with the use of natural resources, and falls in the environmental sphere. Stakeholder theory and institutional theory are represented at the social level, although they overlap with the economic level. Organisations at the societal and economic levels can place pressure on firms to adopt SSCM, such as government regulations and other firms applying pressure through mimetic isomorphism. Stakeholders can both be within society at large (e.g. Non Government Organisations) and part of a firm's more immediate economic arena (e.g. shareholders). Within the economic sphere, we have placed RBV and TCT as they concern processes and resources that firms have control over and may use and develop to deal with sustainability issues.

We have illustrated the potential development of the SSCM conceptual base in the second part of the figure, which shows a more integrated and multilevel approach to sustainability. We acknowledge the multiple SC layers and boundaries (Sarkis, 2012) to illustrate the need for more multilevel research from the individuals to the organisations and the networks. The social dimension is emphasised using a darker colour to show that this is a promising area for future research. This figure represents a first attempt at a theoretical map of SSCM. It would be possible in the future to add flesh to the bones of this model as more work on evaluating the conceptual development of SSCM progresses. This could begin by adding detail of the factors influencing the change towards SSCM and the relationships between such factors.

Figure 9. Conceptual map of SSCM theory: current and future



CONCLUSION

This paper has provided an overview of how theoretical perspectives are utilised in the field of SSCM. The analysis showed that the majority of papers in SSCM do not employ any theories, while those articles that are theoretical rely mainly on the importation of macro theories from other disciplines. The paper has drawn from the identification of the main theories to propose an integrated theoretical map of SSCM, which provides a comprehensive view of the field. We have also shown how the field could evolve after having identified existing gaps. We have acknowledged in the analysis that theories carry with them the assumptions of their mother discipline, and therefore an important limitation of our map is that it brings together unrelated traditions under a single roof. This paper is a first step towards understanding theoretical dynamics in SSCM, and it encourages further analyses to enrich the findings.

SSCM is a growing field and more research and some accumulation of results are needed in the future. In an emerging field, keeping the discussion going and the meanings open signifies a multiplication of ideas contributing to the broadening of the SSCM knowledge base. Nonetheless, the fragile theoretical base on which much of SSCM research is resting is a concern that needs to be addressed in future research. Another concern that emanates from this study is that some issues (environmental and economic) have received more attention than others. This shows the need to dive into unexplored areas and possibly reflect on the existing paradigm that currently influences SSCM research.

The integration and holistic understanding of sustainability seems is the main challenge ahead. Testing and further developing existing frameworks constitutes a possible future avenue for knowledge to grow in a consistent manner in the field. In their recent study, Carter and Easton (2011) advocate the combination of multiple theoretical perspectives as a way to offer original insights into the field and help define the boundaries of the theories more rigorously. We also suggest that authors might want to consider more micro and if possible multi-level approaches to

researching SSCM as both are likely to lead to new insights in the field and allow capturing its multiple aspects more comprehensively.

There is also a need for researchers to engage in more theory building. The richness of the settings for empirical studies needs to be exploited towards developing innovative theoretical ideas. The process of theory development in SSCM need not be restricted to the traditional deductive model involving the testing of hypotheses. Good theories are likely to emerge from creative and original research approaches that provide unique insights into the practical issues in the field. Empirical evidence is a fundamental input for theorizing, but it needs the researcher's ability to identify 'mysteries' and take on the challenge of solving them to create new knowledge (Alvesson & Kärreman, 2007).

The last point reveals the implications of this study for managers seeking to advance the sustainability agenda. The recent financial and economic crisis has not meant a decreasing interest in sustainability. On the contrary it has arguably fomented research into ways businesses can address external risks and become truly sustainable in the long-term. It is therefore important to nurture the relationship between practice and academia. Relevant theoretical frameworks provide a way to simplify and address the complex challenges posed by sustainability. Theories can be developed and tested through interaction with practising managers, who are in a position to inform where the "wicked" problems that SSCM research needs to address are.

The future development of theories in SSCM is tightly related to its practical roots. Indeed, there is nothing so practical as a good theory (Lewin, 1943: 118), as it helps practitioners understand and respond to real life SSCM issues.

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