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The thematic landscape of literature in sustainable supply chain management (SSCM)

A review of the principal facets in SSCM development

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Thematic
landscape of
literature in
SSCM

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Abstract

Purpose – The purpose of this paper is to comprehensively review the vast literature on sustainable supply chain management (SSCM), with the specific objective of a thematic exploration of the literature in order to explicate the principal facets of SSCM development.

Design/methodology/approach – This comprehensive review follows the systematic literature review approach.

Findings – The authors find SSCM to develop around five principal facets. The first facet is adoption, which accounts for the development of preparatory grounds – for facilitating the generation of a SSCM philosophy to gradually seep into the frame of traditional supply chain management (SCM). The second facet of implementation accounts for the manifestation of a SSCM-oriented transformation for producing gradual upgrades in the traditional SCM environment. The third facet of extension signifies the broadening of the scope of implementation at a more wider (supply chain) level. The fourth facet of maintenance outlines the need for ensuring the continuity of progress in the course of SSCM development. The fifth facet of outcomes focuses on the yields of SSCM's pursuit.

Originality/value – These principal facets are built across the multiple levels and unique conceptual standpoints as propagated by 13 themes and 34 sub-themes. These themes are generated based upon 419 articles (2000-2017) from more than 40 leading journals. The authors discuss the facet-specific key implications for guiding the literature in its further advancement, and thus propose a rigorous thematic landscape of the SSCM literature with a unique approach. Overall, the outcomes of this review provide a fundamental organization of the SSCM literature – from the perspective of a journey involved in the transition from traditional to sustainable supply chains.

Keywords Sustainable supply chain management, Conceptual, Literature review, Comprehensive, Research themes, SLR

Paper type Literature review

Introduction

Sustainable supply chain management (SSCM) addresses the management of the integration of economic and non-economic issues in a supply chain. Furthermore, SSCM explicitly integrates the social and environmental dimensions with economic considerations to the



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triple bottom line (TBL), and focuses on forward and reverse supply chains. The past two decades, in particular, have witnessed a growing interest toward this sub-discipline of supply chain management (SCM). As such, SSCM continues to be a topic of growing importance among scholars and practitioners. This is also reflected in the growth of scholarly literature on SSCM.

However, only some attempts have been made to comprehensively review the developments in the literature, i.e. review the entire body of literature, and not just a specific SSCM aspect. Further, those comprehensive reviews are broadly based on either of the two complementary principal orientations for defining their scope: structural and conceptual orientations. As such, very few reviews focus on evaluating the development of the SSCM literature via a mapping of the investigated topics to various aspects such as sustainability issues, industrial contexts, methodological rigor, and definitions (cf. Ahi and Searcy, 2013; Carter and Easton, 2011; Winter and Knemeyer, 2013). Although some interesting variations exist, for example, Seuring (2013) and Brandenburg *et al.* (2014) primarily focus on outlining the dispersion of quantitative modeling approaches in SSCM, and develop guidelines for encouraging modeling-based research. The review by Fahimnia *et al.* (2015) is based on a bibliometric analysis for explicating aspects such as geographical locations of the scholars, author influence, and affiliation statistics and citations. These works serve as an illustration of a structural orientation toward the review.

In addition to these comprehensive reviews strengthening the understanding of diverse structural aspects of the literature, another principal orientation that guides some comprehensive reviews is the objective to explicate the deeper conceptual issues inherent in SSCM. Specifically, these reviews either conceptualize the transformation inherent in the development of sustainable supply chains (Carter and Rogers, 2008; Seuring and Müller, 2008), or focus on propagating organizational level implications in SSCM through a multitude of organizational theories (Sarkis *et al.*, 2011; Touboulic and Walker, 2015a). Nevertheless, very few attempts have been made to locate the overarching conceptual themes prevailing in the literature across a larger sample of studies. As such, Srivastava (2007) focuses on the literature primarily from the reverse logistics angle, and Abbasi and Nilsson (2012) undertake a thematic exploration of the SSCM literature. The authors, however, limit their scope to only consider the environmental dimension in logistics and transportation. Similarly, Ashby *et al.* (2012) explicitly drop the economic dimension from their review scope. This suggests that the SSCM literature still requires a comprehensive mapping of its thematic coverage. In addition, in order to further strengthen the conceptual foundation of SSCM theory, it is important to delve deeper into the construction of a thematic landscape with a fundamental focus.

Given this current state of the literature, in this comprehensive review, we address these concerns by holistically mapping the SSCM literature in order to present a landscape of the principal facets of SSCM development as well as the inherent conceptual themes. A principal facet of SSCM development is defined as the distinct state of progress in the developmental journey of SSCM, whose attributes are characterized by an exclusive nature and key issues. This notion is fundamentally aligned with Silvestre (2015a), who suggests that SSCM is not a destination, but an endless journey characterized by trajectories of progress – due to the involvement of complex and radical changes. Our approach is unique and unprecedented, and intends to explicate the principal facets across the unique conceptual standpoints as propagated by the identified themes (and their sub-themes). Against this background, we specifically address the following research questions:

- RQ1. What are the principal facets of SSCM development that can be identified from the SSCM literature?
- RQ2. What dominant conceptual themes (and sub-themes) are present in the SSCM literature that addresses the principal facets of SSCM development?

In answering these questions and their ensuing discussion, we focus on the demonstration of the value associated with the proposed thematic landscape. Thereby, based on the results, we further attempt to understand the endless nature of a journey inherent in SSCM development. We also focus on understanding the co-existence of these principal facets in SSCM research, and thereby outline the nature of flow across the principal facets. We further discuss the critical implications of the findings toward ensuring the further advancement of the SSCM literature. Overall, addressing these aspects yields a conceptually stronger organization of the SSCM literature from the perspective of the fundamental notion regarding a journey that is involved in the transition from traditional to sustainable supply chains.

Methodology

This paper employs a systematic literature review (SLR) process, which offers a structured and transparent evaluation of the articles. It leads to an organized synthesis of the literature and thereby provides diverse knowledge and insights regarding the field. The three principal stages of a SLR involve planning, execution, and reporting (Tranfield *et al.*, 2003). We began the SLR by recognizing that, given the comprehensive conceptual underpinnings inherent in the research questions, it was essential to cast a wider net for the inclusion of relevant articles in the review set. This prompted us to focus on a review scope of at least 15 years. Following the example of existing comprehensive reviews, we judged the SSCM literature to have grown significantly post-2000. We further employed a diverse set of keywords for the literature search, which were deliberated in-depth by the research team. These aspects assisted us in defining a clear review protocol (Table I).

The literature search was executed in Scopus by allowing any keyword combinations. Search results produced 4,028 articles in the first week of September 2016. We stored these results in a Scopus profile and set a function to further augment these initial results with new articles appearing over time (a feature available in Scopus). Every result was manually assessed (by analyzing the article title and if required, going through the abstract/full paper/journal impact factor) against the backdrop of the criteria for article selection/de-selection. By following this process, we selected 396 articles for the review set and initiated the data analysis for addressing the research questions.

However, we also decided to keep track of the stored search results in Scopus for capturing the publication of new articles – in order to expand the review set to further include the latest articles. This step was based on our assumption that the project would be completed during the year 2017. By the last day of February 2017, we had made considerable progress with the data analysis in addressing the research questions – and gained confidence regarding the closure of the project within the next few months. This prompted us to stop considering the expansion of the review set with the next bi-monthly update cycle. On this date, the Scopus profile contained a total of 4,185 articles. Of these, a total of 419 articles were deemed appropriate for the SLR. We proceed with an explanation of the data analysis in further detail.

Data analysis

Data analysis involved a multi-stage coding process following Armstrong *et al.* (2012). The first stage involved the inclusion of articles in the review set based on the defined criteria (as described above). In the second stage, based on the research questions, we proceeded toward the creation of a multi-level conceptual matrix for representing the thematic landscape of developmental facets in the journey of SSCM. The research team began by discussing the notion of a journey involved in the transition from traditional to sustainable supply chains as propagated by Silvestre (2015a). Thereby, the principal facets of SSCM development were assigned as the top-most level of the conceptual matrix.

Research variables	Description
Database	Scopus is selected for the paper search, since it provides integrated results from a variety of databases, including Science Direct, Emerald Insight, Springer Link, Wiley Online Library, etc.
Article quality	This issue is addressed by considering articles primarily from the journals with a SCI/SSCI index (impact factor), as per the recent Thomson Reuters journal citation reports. Articles from other journals are considered as well, based on the authors' judgment regarding the suitability of an article
Review scope	The year 2000 is selected as the base year for the literature search. This is well aligned with the objective of the present research. As such, the comprehensive review considers the timeframe of 2000-2017 (February)
Keywords	Sustainable supply chain; SSCM; green supply chain; GSCM; sustainable purchasing and supply; procurement; sustainable sourcing; green; supplier; environmental, supply chain management; SCM; social; ethics; CSR; social responsibility; sustainable development; environmental management; triple bottom line; TBL; ISO14000/1; logistics; performance
Article selection criteria	The primary criteria are set to include the articles which are empirical in nature. Empirical approaches refer to methodologies such as survey, case, conceptual theory development, literature reviews (review focused on a specific SSCM sub-topic, excluding comprehensive reviews of the entire SSCM literature) and other-related quantitative and qualitative methods (Carter and Easton, 2011). Secondary criteria are set to include other articles that develop models (AHP, ANP, ISM, system dynamics, etc.) based upon empirical data collection from the industry that also then generate conceptual insights into SSCM. A further requirement is that the articles must contribute to the discussion of sustainability issues in the supply chain management. The sustainability issues had to be based upon a single or multiple dimensions of the TBL. These criteria were deemed sufficient for imparting rigor to the literature review
Article de-selection criteria	In order to obtain a review scope with a manageable number of articles, and given the conceptual underpinnings inherent in the research objective, papers based upon stochastic mathematical models were excluded from the review. The articles further had to have a management focus, including implications for the management of sustainability issues in supply chains. Articles with a technical focus, such as the end of pipe/life treatment, toxic materials, and waste management, which only tangentially relate to supply chain issues, are excluded. Articles dealing with corporate sustainability at the broader level without reference to supply chain management were excluded as well

Table I.
Review protocol

Further levels of the matrix were determined based upon broad themes and sub-themes. In order to facilitate a progressive expansion of the conceptual underpinnings (from the top level to the bottom level) for capturing the principal facets across the multiple levels, it was decided to first follow a bottom-up and then a top-down approach.

The bottom-up approach involved an inductive evaluation of the articles for locating the conceptual themes at the levels of broad themes and their sub-themes against the backdrop of the research questions. Thomas (2006) defines inductive evaluation as "detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher" (p. 238). As such, in a literature review, the empirical and conceptual discussions within the articles are treated as the raw data (Armstrong *et al.*, 2012). The bottom-up approach initiated with the extraction of the sub-themes. Individual research articles in the review set were evaluated inductively – and coding was oriented for capturing the most dominant conceptual standpoint in an article toward the distinct states/key issues of progress in the developmental journey of SSCM.

For example, the dominant conceptual standpoint, as observed in the paper by Linton *et al.* (2007), was to conceptualize the nature and the extent of changes involved in the transition from traditional to sustainable supply chains. On a similar note, Sarkis (2001) conceptualizes the contribution of manufacturing function in facilitating the

needed transition. Therefore, the segregation of articles into a specific sub-theme was based on a coherence noted in their conceptual standpoints. Further, these conceptual standpoints were carefully amalgamated to designate the collective conceptual underpinning of a sub-theme. However, for the ease of analysis, a requirement that we placed on each research paper was that it must fit into only a single sub-theme. In doing so, we also considered the possibility of creating sub-themes with fewer articles, if the specific articles were capable of outlining a critically distinct conceptual underpinning. Thereby, a similar approach was followed for extracting the broader themes, where the conceptual underpinnings of few coherent sub-themes were broadly integrated to represent the central tenet of a specific broader theme.

In order to ensure the validity and reliability of the coding, the research team read the articles (chronologically from 2000 onwards) and generated separate lists, which were then cross-validated. Specifically, the research team iteratively compared and contrasted the lists in order to reach an agreement on the final classification/conceptualization at the levels of broad themes and sub-themes. The iterations involved discussions on disagreements among the team, with the objective to work out the differences until a consensus was reached. If required, the research team also went back to the articles for resolving such differences. Overall, this rigorous process offered us much confidence regarding the strength of the coding.

With this bottom-up approach, the research team felt fairly confident regarding the notions inherent in the top level of the conceptual matrix (principal development facets). As such, we were able to realize five distinct states of progress in the developmental journey of SSCM. However, in addition, a top-down approach was followed in formally designating and describing these levels. Specifically, following Silvestre (2015a), we recognized that given the radical nature of changes involved in the transition from traditional to sustainable supply chains, the endless journey needs to be initiated, nourished, concluded, and re-initiated for driving and sustaining gradual transitions. This consideration was vital in outlining the principal facets of SSCM development based upon dual perspectives, i.e. perspectives already captured in the extant literature and additional still unidentified perspectives. Especially the unidentified perspectives are capable of guiding interesting discussions for the betterment and further advancement of the literature.

Overall, through the reconciliation of the insights emerging from the top-down and bottom-up approaches, we agreed upon the five principal facets of SSCM development – adoption, implementation, extension, maintenance, and outcomes – for representing the conceptual matrix at the top-most level. As such, the conceptual matrix is helpful in presenting a novel thematic landscape for SSCM literature; the next section will discuss these results in detail.

Results

The thematic landscape of SSCM developmental facets

The 419 articles in the thematic landscape span across the 43 journals as listed in Table II. The thematic landscape is helpful in strengthening the notion of a journey involved in the transition from traditional to sustainable supply chains by outlining the principal developmental facets. Further, the thematic landscape is developed around unique conceptual standpoints along three levels. The top level of the landscape outlines the five principal facets of SSCM development (Table III). The thematic landscape further expands into the levels of broad themes (Tables III and IV) and sub-themes (Table IV). As such, a total of 13 broad research themes and 34 sub-themes are identified in this regard, and summarized in the noted tables. These tables are helpful in understanding the specific conceptual underpinnings comprised in the thematic landscape.

Journal (SCI/SSCI: Yes/No)	Article count	Journal (SCI/SSCI: Yes/No)	Article count
<i>International Journal of Operations and Production Management</i> (Yes)	27	<i>Journal of Supply Chain Management</i> (Yes)	23
<i>Production and Operations Management</i> (Yes)	5	<i>Supply Chain Management: An International Journal</i> (Yes)	47
<i>Journal of Operations Management</i> (Yes)	10	<i>International Journal of Physical Distribution and Logistics Management</i> (Yes)	19
<i>Decision Sciences</i> (Yes)	2	<i>Journal of Cleaner Production</i> (Yes)	68
<i>Journal of Business Ethics</i> (Yes)	10	<i>International Journal of Production Research</i> (Yes)	19
<i>International Journal of Production Economics</i> (Yes)	45	<i>Transportation Research: Part E</i> (Yes)	15
<i>Journal of Business Research</i> (Yes)	2	<i>Production Planning & Control: The Management of Operations</i> (Yes)	4
<i>Journal of Purchasing and Supply Management</i> (Yes)	21	<i>Journal of Business Logistics</i> (Yes)	10
<i>Omega</i> (Yes)	4	<i>International Journal of Logistics Management</i> (Yes)	3
<i>Journal of Environmental Management</i> (Yes)	7	<i>International Journal of Management Reviews</i> (Yes)	1
<i>Ecological Economics</i> (Yes)	1	<i>Journal of Macromarketing</i> (Yes)	1
<i>Industrial Marketing Management</i> (Yes)	4	<i>Industrial Management and Data Systems</i> (Yes)	7
<i>Resources, Conservation and Recycling</i> (Yes)	12	<i>European Management Journal</i> (Yes)	5
<i>Business Strategy and the Environment</i> (Yes)	17	<i>Corporate Social Responsibility and Environmental Management</i> (Yes)	10
<i>Journal of Environmental Economics and Management</i> (Yes)	1	<i>Resources Policy</i> (Yes)	1
<i>European Journal of Operational Research</i> (Yes)	1	<i>Ecological Indicators</i> (Yes)	1
<i>European Journal of Purchasing and Supply Management</i> (Yes)	1	<i>Benchmarking: An International Journal</i> (No)	3
<i>Decision Support Systems</i> (Yes)	2	<i>International Journal of Quality and Reliability Management</i> (No)	1
<i>Journal of Engineering and Technology Management</i> ()	1	<i>International Journal of Retail and Distribution Management</i> (No)	1
<i>Public Administration</i> (Yes)	1	<i>Journal of Manufacturing Technology Management</i> (No)	1
<i>International Journal of Advanced Manufacturing Technology</i> (Yes)	3	<i>International Journal of Environmental Studies</i> (No)	1
<i>Sustainable Development</i> (Yes)	1		

Table II.
List of journals

Specifically, in Table IV, we begin by elaborating the central tenet of the broad theme. This is followed by a detailed explanation regarding the constituent sub-themes (designated as article streams), where we explain the conceptual underpinning of an article stream with selective and representative articles (in the interest of conciseness) from the sub-theme. However, the online supplementary document to this paper (download link available toward the end of the paper) can be referred to for obtaining further details on the thematic landscape. As such, this online document is helpful in revealing the finer details surrounding the conceptual standpoint of every article in the thematic landscape – against the backdrop of the respective article streams. Table V presents a quantitative view of the landscape by reporting the chronological developments.

Principal facet	Principal notion	Broad research themes constituting the principal facet ^a
Adoption	A principal focus which recognizes the need to build a favorable intent in the traditional supply chain system for weaving the readiness toward the initiation of SSCM transformation – in the frame of traditional supply chain management. Overall, given the radical nature of changes to be facilitated, this facet explores SSCM at the un-manifested state, i.e. the state prior to the actual implementation of SSCM	1. Conceptualizing the SSCM transformation phenomena 2. Carriers of the SSCM philosophy for initiating the transition from traditional supply chains 3. Contingencies shaping the favorability of intent toward transition
Implementation	A principal focus which signifies the manifestation of SSCM-oriented transformation for upgrading the traditional supply chain system. It is the space where the favorable intent and devised strategies (from the previous facet) interact with the practical challenges for producing changes in the system	4. From intent to action 5. Gauging the present state of industrial implementation 6. Approaches for implementation
Extension	A principal focus which signifies an advanced state of implementation, where SSCM development is attempted in a wider level across the supply chain. Thus, the facet can be understood as implementation at a more collective level. The ultimate aim of this attempt is to seek a chain-wide progress in SSCM	7. Approaches for extension 8. Ensuring the response
Maintenance	A principal focus which concerns the assurance of continuity and progress in the course of SSCM development. This further suggests that the transformational leads generated so far need to be maintained, in order to prevent any rollbacks to traditional SCM	9. Managing inter-firm dynamics toward sustained SSCM action 10. Performance management system 11. Essential elements of continuity
Outcomes	A principal focus which concerns the yields or outcomes generated in the pursuit of SSCM	12. Practice and performance 13. Contingencies affecting the performance outcomes

Note: ^aThe 13 broad research themes further expand into 34 sub-themes

Table III.
Principal facets of
SSCM development
and comprising broad
research themes

Discussion

The position and uniqueness of the research in relation to existing comprehensive reviews

In this research, we presented a comprehensive review by focusing on the SSCM literature as a whole; only very few review articles in the SSCM literature subscribe to such a comprehensive and overarching focus. Further, as outlined in the introduction section, existing reviews either focus on strengthening the understanding of the structural aspects or focus on explicating the intrinsic nature of the transformation involved in the pursuit of SSCM within a specific context. However, it is important to note though that both the orientations have a unique value of their own. As such, on the one hand, the comprehensive reviews focused on the structural aspects are helpful in demanding an elevation in the research's rigor in terms of structural dimensions. Further, they are also helpful in establishing the legitimacy of the field and substantiating the evolution and development of the literature. The conceptual orientation, on the other hand, is helpful in bringing some unexplored perspectives to the forefront toward the further strengthening of the theoretical foundation of the literature.

However, within the second orientation of conceptual issues, only very few comprehensive reviews have attempted to explicate the intrinsic nature of the transformation involved in the

Table IV.
Further expansion
of the thematic
landscape in terms
of broad themes
and sub-themes
(article streams)

SSCM facet (theme number): broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
<p>Adoption (1): conceptualizing the SSCM transformation phenomena</p> <p>The central tenet: a focus on conceptualizing the transformation phenomena inherent in SSCM development (i.e. transformations involved in the journey from traditional to sustainable supply chains) by primarily employing conceptual theory building methods, for exploring various aspects (nature/extent/approaches) of this transformation</p>	<p>Article stream (1): a focus on the critical analysis of traditional supply chains for determining the nature and the extent of changes involved in the SSCM transformation phenomenon. These conceptualizations are helpful in expanding the awareness about the present state of sustainability in supply chains, as well as what needs to be done in the future for developing more sustainable supply chains</p> <p>Article stream (2): a focus on suggesting that SSCM development requires the integration of environmental and social considerations into the predominantly economically oriented emphasis of traditional supply chains. These conceptualizations focus on various aspects concerning this integration, such as prerequisites/readiness for attempting the integration, after-effects/consequences of integration, and so on</p> <p>Article stream (3): a focus on suggesting that it is important to conceptualize practical roadmaps for SSCM development by focusing on industrial requirements and/or constraints. In doing so, these conceptualizations are particularly helpful in suggesting feasible practical approaches toward SSCM</p>	<p>Sarkis (2001), for example, conceptualizes the criticality of the role to be played by the manufacturing function in contributing to the environmental sustainability in supply chains. These perspectives were, however, introductory in nature and belong to the initial years of the previous decade. As such, the stream has played a dominant role in introducing sustainability as a legitimate supply chain agenda, and attracted the attention of scholars and practitioners (Linton <i>et al.</i>, 2007). However, this stream in particular, in recent years, has sparked some intense debates. For example, Montabon <i>et al.</i> (2016) stress that the logic of SSCM research must translate further from exploring the benefits of SSCM development to identifying how supply chains can become more sustainable</p> <p>The stream focuses on various aspects concerning the inclusion of environmental and social considerations into the predominant economic focus. Hoek and Johnson (2010) suggest that such inclusion may impart infeasibility to existing supply chain solutions. On the account of this infeasibility, the stream provides a primary emphasis on the decision trade-offs (Byggeth and Hochschorner, 2006). The stream also focuses on conceptualizing the prerequisites of this inclusion, such as environmental scanning prior to the re-engineering of supply chains (Fabbe-Costes <i>et al.</i>, 2011), an inclusion strategy in terms of proactiveness and defensiveness for governing the pace of inclusion (Maignan <i>et al.</i>, 2002), etc. This stream is fairly active at the present times</p> <p>The stream focuses on conceptualizing the various possibilities for practically realizing the SSCM transformation in the business environment. Ji <i>et al.</i> (2014), for example, conceptualize the construction of SSCM under two environmental standards (emission and waste-oriented regulations). The stream especially captures the practical industrial scenarios and their potential to embrace SSCM. Overall, the stream appears to be a somewhat dormant. However, the limited articles available are successful in propagating a unique collective notion toward a distinct SSCM issue</p>

(continued)

SSCM facet (theme number): broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
<p>Adoption (2): carriers of the SSCM philosophy for initiating the transition from traditional supply chain</p> <p>The central tenet: a focus on the importance of carriers that can be helpful in facilitating the SSCM philosophy in the frame of traditional supply chain environment. The emphasis is on outlining the value of synergy arising from various related philosophies in weaving preparatory grounds toward initiating SSCM</p>	<p>Article stream (4): a focus on suggesting lean philosophy as a potential carrier of the SSCM paradigm</p> <p>Article stream (6): a focus on suggesting environmental management system (EMS) as another important carrier of the SSCM paradigm</p>	<p>This stream suggests lean philosophy as an important carrier of SSCM. King and Lenox (2001) report how lean can be useful in further propagating the SSCM agenda. Campos and Vazquez-brust (2016) further outline finer nuances regarding how synergies between lean and SSCM emerge. Despite the presence of only a few articles in this stream, the stream is successful in representing a unique collective notion toward a distinct SSCM issue</p> <p>Chen (2005) demonstrates how EMS can be helpful in incorporating SSCM. Jabbour <i>et al.</i> (2014) further highlight that how the maturity of an EMS is a necessary condition for facilitating the transitional leap toward SSCM. Overall, a similar notion regarding the need of a synergy toward initiating SSCM, as prevalent in the previous article stream, can be observed here as well</p>
<p>Adoption (3): contingencies shaping the favorability of intent toward transitioning</p> <p>The central tenet: a focus suggesting that given the radical nature of the changes involved in the SSCM transformation phenomena, the incorporation of the TBL dimensions in the frame of traditional supply chain management is complex. Therefore, a favorable intent is a key prerequisite toward the needful initiation of this transformation.</p> <p>The overall emphasis lies in capturing the prior implementation issues concerning the SSCM uptake</p>	<p>Article stream (6): a similar focus on other-related philosophies for providing important developmental insights toward SSCM</p> <p>Article stream (7): a focus on the supply chain conditions that are responsible for imparting a favorable intent in the traditional supply chain environment for embracing SSCM</p>	<p>Sharma and Iyer (2012), for example, outline how resource constrained product development (usually prevalent in developing economies) can guide developments in SSCM. Further philosophies include industrial symbiosis and close loop supply chains. The stream, while having witnessed a minimal contribution in the previous decade, can still be considered active</p> <p>This stream outlines the importance of various supply chain parameters affecting the intent favorability. As such, Vachon and Mao (2008) outline the importance of supply chain strength of a country, i.e. the number and the quality of suppliers and customers in a country. More recent perspectives include aspects such as a firm's position in the supply chain (Lo, 2014), and site competence, i.e. operational competencies beyond production competencies at the plant level (Golini <i>et al.</i>, 2014). This stream has emerged predominantly in the last six years</p>
<p>Article stream (8): a focus on analyzing the external aspects that prompts a supply chain or an organization to begin considering sustainability as a legitimate supply chain focus. By explaining the building of a</p>	<p>Article stream (8): a focus on analyzing the external aspects that prompts a supply chain or an organization to begin considering sustainability as a legitimate supply chain focus. By explaining the building of a</p>	<p>Maignan and Mcalister (2003) suggest that external stakeholders play an important role in advocating SSCM considerations. The consideration of external pressures has evolved in this regard (Mathiyazhagan and Haq, 2013). The stream is relatively less evolved with the presence of only a few</p>

(continued)

Thematic
landscape of
literature in
SSCM

Table IV.

Table IV.

SSCM facet (theme number): broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
favorable intent toward a SSCM uptake, the focus suggests that reasons to embrace SSCM can be external	favorable intent toward a SSCM uptake, the focus suggests that reasons to embrace SSCM can be external	articles. However, the stream is successful in representing a unique collective notion toward a distinct SSCM issue
Article stream (9): a focus on the internal aspects responsible for the shaping of favorable intent toward embracing SSCM. The focus suggests that reasons to embrace SSCM can also be based internally	Article stream (9): a focus on the internal aspects responsible for the shaping of favorable intent toward embracing SSCM. The focus suggests that reasons to embrace SSCM can also be based internally	Yen and Yen (2012) outline the importance of top management favorability in shaping the organizational intent toward SSCM. Pedersen (2009) explores the importance of voluntary motivation toward the recognition of SSCM issues in the supply chain. The stream also includes behavioral issues such as a pro-sustainability orientation of top executives toward SSCM (Signori <i>et al.</i> , 2015). This stream appears to be fairly active
Article stream (10): a focus on the complexities associated with embracing SSCM. These complexities, in turn, can affect the intent favorability toward the prospective SSCM uptake	Article stream (10): a focus on the complexities associated with embracing SSCM. These complexities, in turn, can affect the intent favorability toward the prospective SSCM uptake	This stream outlines that there exist aspects that support and impede changes toward SSCM transformation. An interaction of these aspects gives rise to complexities. The interaction, for example, can be found in the literature in terms of the interaction of pressures and motivators (Kumar <i>et al.</i> , 2015), and motivators and barriers (Björklund, 2011). Articles also take a futuristic view for gauging the nature of complexities with the intent building toward SSCM development (Hall <i>et al.</i> , 2012). This stream appears to be moderately active
Implementation (4): from intent to action The central tenet: a focus to capture the further nuances concerning the transition of intent to action by focusing on the actual implementation of SSCM practices – and thereby characterizing the onset of practical realities with actual implementation. Overall, the theme propagates a fundamental distinction between intent to implement and actual implementation of SSCM in the purview of radical changes	Article stream (11): a focus on practical realities associated with the actual implementation of SSCM in terms of contextual impediments, impelling forces, and supporting agents in the wake of attempting implementation	This stream captures the aspects of contextual impediments, impelling forces, and supporting agents in the wake of SSCM implementation using terminologies such as drivers, pressures, and barriers. Hsu <i>et al.</i> (2013), for example, focus on drivers responsible for governing the SSCM implementation in an emerging economy. Giunipero <i>et al.</i> (2012) cover another variation, where the influence priorities of these aspects are considered. Another evolutionary variation involves a sectoral comparison regarding the influence of these aspects (Brammer and Walker, 2011). The stream has undergone a considerable evolution over the years. However, it presently appears to be saturated due to the over-reliance on a monotonous research design involving analytic hierarchy process (AHP) and interpretive structural modeling (ISM) methods in the majority of the articles

(continued)

SSCM facet (theme number); broad theme and its central tenet for reflecting the broader focus	Article stream (number); conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
Implementation (5): gauging the present state of industrial implementation The central tenet: a focus to map the present state of the industrial relevance of SSCM philosophy. The emphasis lies in mapping toward SSCM. In this regard, this theme demonstrates three unique variations, which are represented in the inherent article streams	Article stream (12): a focus on the contingencies concerned with the actual implementation of SSCM practices. The emphasis lies in outlining critical aspects that are helpful in further reinforcing the implementation pursuit of SSCM Article stream (13): a focus on evaluating the industry- or sector-specific relevance/importance of specific SSCM practices Article stream (14): a focus to further gauge the preference toward SSCM by evaluating the corporate narratives	Schneider and Wallenburg (2012), for example, outline the importance of managing the interests of diverse stakeholders in easing the implementation efforts. Jabbour (2015) outlines the importance of internal restructuring within an organization. The stream has witnessed considerable activity post-2010 onwards and is presently active Zhu <i>et al.</i> (2008), for example, explore various SSCM practices implemented by Chinese manufacturers. The authors also compare the implementation of practices across four industries. Similarly, McMurray <i>et al.</i> (2014) focus on the preference of SSCM practices among Malaysian organizations. The stream has witnessed considerable activity post-2010 onwards and is presently active This stream also gauges the industrial preference toward SSCM. However, the specific focus lies in the evaluation of corporate narratives. Tate <i>et al.</i> (2010), for example, analyze the CSR reports of about 100 companies to gauge the industrial preference toward SSCM. This stream is very recent and unique in nature. Further, despite the presence of only a few articles in this stream, the stream is successful in representing a unique collective notion toward a distinct SSCM issue
Implementation (6): approaches for implementation The central tenet: a focus on building further	Article stream (15): a focus on gauging the present state of the transition from traditional supply chains to SSCM by examining the current state or the extent of inclusion of sustainability criteria. Overall, the stream has an exploratory focus to detect and gauge the relevance of SSCM in the present business scenario Article stream (16): a focus on theorizing the firm-specific/context-specific implementation experiences. Overall, the	Jabbour and Jabbour (2009), for example, explore the present state of inclusion of environmental criteria in supplier selection in Brazil. Similarly, Beske <i>et al.</i> (2008) explore the prevalence of environmental and social standards in the German car industry. The stream is successful in representing a unique collective notion toward a distinct SSCM issue despite just a few articles. The stream, however, has remained dormant from 2010 onwards Silvestre (2015b), for example, outlines the implementation trajectory of a focal firm in an emerging economy context. The author highlights the role of innovative approaches for dealing with context-specific implementation

(continued)

Table IV.

Thematic
landscape of
literature in
SSCM

Table IV.

SSCM facet (theme number): broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
knowledge around the facilitation of SSCM implementation. Specifically, the emphasis lies in identifying ways to attempt the radical change phenomena inherent in the SSCM transformation	focus is helpful in highlighting the implementation lessons with respect to the efficacy of approaches, as well as approaches for dealing with practical challenges with a retrospective viewpoint Article stream (17): a focus on the role of functions in facilitating the SSCM implementation. The emphasis is also helpful in outlining the specific changes or the nature of efforts concerning various organizational functions involved in an implementation Article stream (18): a focus to propagate the need for an appropriate starting point (or few critical standpoints) for attempting and further strengthening the SSCM implementation	challenges. Further articles in this stream focus on describing firm-specific implementation experiences. The stream appears to be moderately active Carter and Jennings (2002), for example, outline the importance of involvement from different functions (purchasing, transportation, and warehousing) in SSCM implementation. Garcia-Rodriguez <i>et al.</i> (2013) highlight the importance of reverse logistics for facilitating raw materials purchases. Further, purchasing appears as the most significant function in this stream (Hoejmose and Adrien-Kirby, 2012). The stream appears to be moderately active
Extension (7): approaches for extension The central tenet: a focus on various issues concerning the chain-level extension of the SSCM agenda to other actors in the supply chain. Specifically, the emphasis lies in building knowledge around how to facilitate the extension, i.e. the extension of SSCM outside the organizational boundaries	Article stream (19): a focus on the necessary conditions for facilitating the SSCM extension. The emphasis is on outlining the relevance of different aspects responsible in generating a conducive environment toward extension Article stream (20): as a variation to the previous stream, this stream exclusively and more finely focuses on the challenges, facilitators, or hindrances toward SSCM extension with an emphasis on outlining the associated complexities	Matos and Hall (2007), for example, demonstrate the use of life cycle analysis and outline the importance of undertaking incremental changes related to SSCM. Andic <i>et al.</i> (2012) similarly focus on the possibility of deploying waste management as a starting point toward SSCM implementation. Pagell and Wu (2009) outline the importance of new behaviors (a re-conceptualization of supply chain and supply base continuity). The stream remains moderately active Hall (2000) suggests that extending environmental practices to suppliers requires a channel leader with technical competencies and channel power over its suppliers. Recent perspectives include the role of embeddedness and density in a firm's social network (Tate <i>et al.</i> , 2013), and institutional pressures in the supply chain (Hoejmose <i>et al.</i> , 2014). The stream appears to be fairly active Koh <i>et al.</i> (2012), for example, outline how the extension of SSCM creates cross-tier ripples, i.e. a disturbance in the functioning of the supply chain. Busse <i>et al.</i> (2016) focus on the contextual barriers faced by western buyers in extending SSCM to their suppliers in developing countries. The stream appears to be moderately active

(continued)

SSCM facet (theme number); broad theme and its central tenet for reflecting the broader focus	Article stream (number); conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
<p>Extension (8): ensuring the response</p> <p>The central tenet: a focus to approach the SSCM extension from the response perspective, i.e. the response of a supply chain actor to accommodate the call for a SSCM extension. The notion inherent in this theme can be understood as the flip-side of the previous theme</p>	<p>Article stream (21): a focus on explicit approaches for facilitating the SSCM extension. As such, the focus is helpful in outlining the means for achieving extension</p> <p>Article stream (22): a focus on the recipient's perspective toward the call for the SSCM extension in addressing the SSCM requirements. The specific emphasis rests on critical aspects in governing the desired response from the recipient</p> <p>Article stream (23): a focus on the actor's response to collaborative SSCM. The focus is helpful in outlining intricate details concerning the response to the call of SSCM extension</p>	<p>Kogg and Mont (2012) classify the extension approaches as direct and indirect. While the indirect approaches involve compensation schemes and philanthropy, the direct approaches consider two formats: (a) ensuring compliance with the criteria in sourcing and purchase decisions, and (b) inter-organizational management of SSCM, which involves collaboration and a focal firm's independent action. Ciliberti <i>et al.</i> (2008) illustrate varied approaches undertaken by Italian SMEs for extending socially responsible practices to suppliers operating in the developing countries. The authors outline the usage of diverse management systems, strategies, and tools in this regard. Vachon and Klassen (2006) emphasize the importance of technological and logistical integration for developing a collaborative response to SSCM. This stream appears to be fairly active</p> <p>Lee (2008) addresses the issue of supplier willingness in the participation of SSCM initiatives. The author outlines the importance of factors such as a buyer's implementation of SSCM practices, supplier capability and its slack resources, and government indulgence in promoting SSCM. In this regard, Hsu <i>et al.</i> (2014) evaluate the response of an MNC subsidiary in the wake of pressure from the headquarters for embracing SSCM. The article stream appears to be moderately active</p> <p>Ramanathan <i>et al.</i> (2014) focus on the perspective of suppliers, retailers, and logistics. The authors report how various companies in the UK shape the nature of their collaborative response toward SSCM. MacCarthy and Jayarathne (2012) outline how collaboration fosters a compliance culture in the supply network toward the addressing of SSCM requirements. This is an emerging stream including only a few recent articles. However, the stream is successful in representing a unique collective notion toward a distinct SSCM issue</p>
<p>Maintenance (9): managing inter-firm dynamics toward sustained SSCM action</p> <p>The central tenet: a focus which suggests</p>	<p>Article stream (24): a focus on the importance of inter-firm relationships in enhancing the cooperation and coordination among SSCM</p>	<p>Simpson and Power (2005) recognize the importance of buyer-supplier relationships in maintaining SSCM. The authors suggest that SSCM without focusing on buyer-supplier relationships becomes a costly</p>

(continued)

Table IV.

Thematic
landscape of
literature in
SSCM

Table IV.

SSCM facet (theme number): broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
that the continuity or efficacy of SSCM transformation depends upon various inter-firm issues. Addressing these issues is essential for maintaining a continued SSCM response	<p>Article stream (25): a focus on further inter-firm issues (apart from directly focusing on the relationships) influencing the continuity of SSCM. The emphasis lies in explicating further critical aspects toward a continued SSCM response</p> <p>Article stream (26): a focus on the materialization of risks in SSCM. The emphasis lies in understanding the various dimensions of risks and means for mitigating/avoiding them</p>	<p>endeavor. Leppelt <i>et al.</i> (2013) suggest that risk perception toward sustainable development initiatives, corporate strategy alignment, and recognition of the company's effort, prompts a firm to focus upon inter-firm dynamics concerning SSCM. The stream has remained fairly active over the previous and the present decade</p> <p>Foerstl <i>et al.</i> (2015) outline the importance of achieving a transition from compliance to commitment in an inter-firm response toward SSCM. Cheng <i>et al.</i> (2008) call attention to the importance of inter-firm trust and knowledge sharing in enhancing the efficacy of SSCM response.</p> <p>Meinlschmidt <i>et al.</i> (2016) emphasize on the role of absorptive and descriptive capacity in facilitating inter-organizational knowledge transfer toward SSCM. The stream has witnessed considerable activity post-2010 and is presently active</p>
Article stream (27): a focus on supply chain governance for addressing the issues of inter-firm coordination, cooperation, and SSCM risks for ensuring a continued SSCM response. The emphasis lies in recognizing the value of different governance strategies and their efficacy	<p>Article stream (27): a focus on supply chain governance for addressing the issues of inter-firm coordination, cooperation, and SSCM risks for ensuring a continued SSCM response. The emphasis lies in recognizing the value of different governance strategies and their efficacy</p>	<p>Li <i>et al.</i> (2014) distinguish governance mechanisms as internal (inter-firm) and external (stakeholders such as customer, NGO, government). The authors suggest that while the internal governance strives for efficiency, the external governance focuses on ensuring the legitimacy of the institutional environment. Touboulic and Walker (2015b) outline the importance of investment in formal and informal relationship oriented governance mechanisms, in managing the inter-firm dynamics toward SSCM. Harms <i>et al.</i></p>

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SSCM facet (theme number): broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
Maintenance (10): performance management system The central tenet: a focus on design and development of performance management systems for obtaining performance feedback regarding SSCM maintenance	Article stream (28): a focus on conceptualizing performance management systems for maintaining SSCM. Overall, the stream particularly recognizes the abstraction associated with the measurement of social and environmental performance, and thereby conceptualizes various facets of measurement. In addition, it outlines the essential conceptual standpoints that a SSCM performance management system should comprise	(2013) differentiate between risk-oriented (reputation management, supplier evaluation, and selection) and opportunity-oriented (development of sustainable products, customers, marketing, R&D, supplier development, and supplier training) governance strategies. Apart from this, a dominant focus lies in ensuring the effectiveness of these governance mechanisms (Porteous <i>et al.</i> , 2015). The stream has witnessed a high activity post-2010 Veleva <i>et al.</i> (2003), for example, present a hierarchy of environmental indicators / metrics for the measurement of progress toward SSCM. Hervani <i>et al.</i> (2006) provide guidelines for the inclusion of metrics in the performance management systems. Nikolaou <i>et al.</i> (2013) present a TBL-based segregation of various indicators/metrics toward SSCM. While just a few articles are in this stream, it appears to be fairly active
Article stream (29): an enhanced focus for developing performance management systems specifically based on empirical insights derived from industry. This emphasis is further helpful in better understanding the industrial requirements with SSCM performance management	Nagel (2003) takes a facility-level view and presents a method for the benchmarking of environmental performance of suppliers. Naini <i>et al.</i> (2011) develop a performance measurement system based upon the parameters of the customer, finance, internal business processes, learning, and growth. This stream appears to be fairly active	<i>(continued)</i>

Table IV.

SSCM facet (theme number): broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
<p>Maintenance (11): essential elements of continuity</p> <p>The central tenet: a focus for investigating the various essential aspects for ensuring a continued SSCM response</p>	<p>Article stream (30): a focus on the development of performance management systems by considering the specific supply chain segments. The stream lays an exclusive focus by conducting an in-depth analysis of performance management on a specific SSCM issue</p> <p>Article stream (31): a focus on the individual level perspective toward SSCM maintenance. The emphasis is on propagating the relevance of human-level involvement in guiding the transformation inherent in the SSCM journey</p>	<p>Swanson <i>et al.</i> (2005) develop a priority-setting tool for guiding decisions in green purchasing. Tseng and Chiu (2013) develop a supplier selection method based on supplier relationship, profitability, customer satisfaction, and various SSCM practices. The segment-specific focus inherent in this stream was particularly active in the previous decade. The stream is moderately active presently</p>
<p>Maintenance (12): essential elements of continuity</p> <p>The central tenet: a focus for investigating the various essential aspects for ensuring a continued SSCM response</p>	<p>Article stream (32): a focus on various aspects essential for the further strengthening of a SSCM response. The explicit focus here lies in outlining the importance of various aspects essential for the further reinforcement of the SSCM journey</p>	<p>Park and Stoel (2005) recognize the importance of fostering change in the organizational environment and study the individual level decision-making process of the sourcing professionals. Gattiker <i>et al.</i> (2014) outline the importance of influence tactics (inspirational appeals and legitimating) and values for enhancing an individual's commitment in further guiding SSCM. The stream is presently in a nascent state. Further, despite the presence of only a few articles in this stream, the stream is successful in representing a unique collective notion toward a distinct SSCM issue</p> <p>Andersen and Skjoett-Larsen (2009) outline the importance of further strengthening the value of sustainability within the organization, its subsidiaries, and partners. Wu <i>et al.</i> (2014) call attention to the importance of aligning supply chain strategy with corporate environmental strategy. Grosvold <i>et al.</i> (2014) focus on the coupling of SSCM practices with measurement systems. Sandha <i>et al.</i> (2015) outline the importance of institutional pressures at the country level in further encouraging collaborative responses toward SSCM. The stream appears to be highly active</p>

(continued)

SSCM facet (theme number); broad theme and its central tenet for reflecting the broader focus	Article stream (number): conceptual underpinning for reflecting the finer-grained focus of the sub-theme	Conceptual standpoints of selective articles (full list in the online supplementary document)
Outcomes (12); practice and performance The central tenet: a focus for examining the outcomes (yields) of SSCM efforts	Article stream (33): a focus on evaluating the influence of SSCM practices over the standalone or overall TBL dimensions	Carter <i>et al.</i> (2000) investigate the influence of environmental purchasing on the financial performance (net income and COGS). Similarly, there exist a large number of studies in this stream, which bring varied perspectives with respect to TBL outcomes (Yusuf <i>et al.</i> , 2013). Golcic and Smith (2013) conduct a meta-analysis for the linkage between SSCM practices and performance outcomes (market, operational, and accounting). The authors report the existence of a significant and a positive linkage. This stream is among the most highly active streams with significant activity spanning across both decades. However, the inherent articles do not show any further conceptual variation and only evaluate the link between various SSCM approaches and performance dimensions
Outcomes (13); contingencies affecting the performance outcomes The central tenet: a focus to outline the importance of various contingencies for further enhancing performance outcomes or yields	Article stream (34): a focus on understanding the relevance of various aspects in further affecting SSCM performance outcomes. This focus is an interesting variation to the previous theme	Carter (2005) outlines the importance of supplier performance and organizational learning for further assisting SSCM in achieving cost reductions. Blome <i>et al.</i> (2014) suggest the importance of alignment between upstream and downstream sustainability-related collaboration for governing superior performance outcomes. Similar to the previous stream, this stream has remained highly active across the decades. However, the inherent articles do not show any further conceptual variation, and result in this broad theme to be based on just a single sub-theme

Table V.
A detailed timeline of SSCM literature

Article stream (AS)	Year																	Total	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		2017 ^a
SSCM facet																			
AS 1	1				1	1	1	1					1		1		3		10
AS 2	1	1	1	1		1	1	1	1				2		3		1		12
AS 3								1	1						1		1		4
AS 4	1									1				1	1	1			6
AS 5					1			3	1			2			3				10
AS 6				1				1	1				2		2		1	1	7
AS 7								1	1				1	2	2		1	1	9
AS 8				1													1		4
AS 9							1		1				1	2	2	3	1		10
AS 10						1		1	1				1		2				9
Adoption	0	3	1	2	2	3	3	7	3	5	4	4	8	5	15	8	8	2	81
AS 11	1					2		3	1				6	7	3	5			32
AS 12								1	1			1	2		3	4			13
AS 13								3	2					2	1			2	11
AS 14										1				1		1	1		4
AS 15								1	2										4
AS 16										1			2			1			6
AS 17					1			1	1				1	2		1			9
AS 18					2					1			1				3		8
Implementation	0	1	1	0	3	0	3	2	8	7	5	5	12	12	7	14	4	3	87
AS 19	1							1	1			1	1	1	2	1	2		10
AS 20													1	1	3	1	2		8
AS 21												2	3	2	1	1	1		18
AS 22	2			1		1	2	2	2			1	1	1	1		1		7
AS 23								2	1				1		2				3
Extension	1	2	0	0	1	1	2	5	1	0	4	4	6	5	9	3	6	0	46
AS 24	2	1			1		1	1	1			2	2	2	3	1	5		20
AS 25								1	1		1	1	2	3	2	2	4	1	17
AS 26										2	2	2	1	1	2	2	3		10
AS 27				1				1	1	2	2	2	1	2	3	3	2	2	17

(continued)

	Year																	Total	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		2017 ^a
AS 28			1	1		1				1	1	1	3	1	2	2	2		15
AS 29				1						1	1	2	1	3	2	3	1		14
AS 30					1	1	1						2	1				2	8
AS 31					1			1					2	1	1				3
AS 32									2	1	3	6	2	2	6	4	3	3	30
Maintenance	2	0	2	3	0	4	1	2	4	5	8	9	18	14	21	15	20	6	134
AS 33	1		1	1	1	1				1	2	3	10	3	3	2		1	30
AS 34					2	2		3		1	2	2	9	2	6		2	1	28
Outcomes	1	0	1	0	1	3	1	3	0	1	3	5	19	5	9	2	2	2	58
Reviews ^b							1	1	2	2	2	2	2	3	1	2			13
Total	4	6	5	5	7	9	9	13	26	17	21	29	65	44	62	44	40	13	419

Notes: ^aThe year of 2017 is considered up to the month of February; ^bcomprehensive reviews as outlined in the introduction section

pursuit of SSCM. Seuring and Müller (2008) can be considered as an initial attempt to strengthen this notion. As such, the authors conceptualize a view of SSCM in order to explicate its essential elements such as triggers (pressures and incentives), execution strategies, managerial aspects, etc. Carter and Rogers (2008) further conceptualize the elemental aspects inherent in the uptake of SSCM in the business environment. Subsequent years witnessed a further strengthening of this notion against the backdrop of organizational theories (cf. Sarkis *et al.*, 2011; Touboulic and Walker, 2015a). However, in order to further strengthen the conceptual foundation of SSCM theory, a finer characterization of the fundamental nature relating to the journey inherent in SSCM is needed – we addressed this shortcoming in extant research.

In so doing, we draw fundamental insights from Silvestre (2015a) – a non-review article – outlining the fundamental notion of a journey involved in the transition from traditional supply chains to sustainable supply chains. Specifically, the author suggests that SSCM is not a destination, but an endless journey attempting to facilitate radically complex transformations in the frame of traditional SCM – characterized by endless efforts and trajectories of gradual progress. Therefore, subscribing to this fundamental standpoint, and based on the thematic exploration of the SSCM literature, we attempted to generate finer-grained conceptual insights by locating the principal facets involved in the journey, when transitioning from traditional supply chains to sustainable supply chains.

Furthermore, the thematic landscape is based on a multi-level conceptual matrix for propagating conceptual themes across three distinct levels. The multi-stage approach undertaken for examining the articles in this review enhances the conceptual strength of the themes. As such, existing thematic reviews appear to be straightforward in generating themes (cf. Abbasi and Nilsson, 2012; Ashby *et al.*, 2012; Srivastava, 2007). For example, most of them generated themes at the surface level by taking the viewpoint of functions, supply chain segments, TBL dimensions, etc. However, our approach (and focus) generates a landscape with enhanced conceptual strength and precision in terms of conceptual interconnectedness between the themes. Furthermore, every theme captures a unique conceptual standpoint for representing a set of articles. Thus, the outcomes of this comprehensive review are also helpful in complementing the existing thematic coverage. In addition, the scope of this comprehensive review is wider in terms of timeframe, article selection criteria, article quality, and number of journals than existing review studies – thus, facilitating the inclusion of 419 articles. These aspects prompt us to outline the value of the thematic landscape.

The value of the thematic landscape against the backdrop of key fundamental aspects noted in the results

Fundamentally, the sub-discipline of SSCM maintains a key distinction within its parent area, i.e. SCM. This revolves around the focus to facilitate radical changes inherent in the integration of economic and non-economic objectives in the management of supply chains. In this comprehensive evaluation, overall, we find the central objective of the SSCM literature to answer the two-folded challenges of what to change in SCM and how to facilitate the desired change.

In response to these questions, the SSCM literature appears to propagate two principal positions. While the first position focuses on figuring out the challenges and possible solutions toward SSCM development, the second position focuses on evaluating the discrepancy between the achieved state and ideal settings for SSCM – to further outline the efficacy of corrective measures toward existing solutions. As such, almost every research in SSCM pertains to strengthen the first position (Abbasi and Nilsson, 2012). The second position has started to emerge predominantly in the past few years – with articles critically evaluating the conclusions achieved in the development of SSCM theory.

Illustrative examples include Pagell and Shevchenko (2014), Markman and Krause (2016), Montabon *et al.* (2016), and Shevchenko *et al.* (2016). Overall, recent developments in the second position outline that, fundamentally, it is important to identify the ideal requirements for successful SSCM toward the achievement of a uniform equilibrium among social, environmental, and economic supply chain objectives. Specifically, this is essential for establishing a cycle toward the generation of reconciliatory perspectives leading to enhanced knowledge. Thus, this further suggests that the advancement of SSCM literature essentially requires a progression along these positions in tandem, as noted above.

However, it is also important to recognize that this tandem-based advancement must aim to facilitate complementary insights for the betterment of the literature, and must not end up in creating dichotomous views (opposing views, with each claiming to be the real “flavor” of sustainability in supply chains) surrounding SSCM. As such, a dichotomy may potentially arise, especially when the fundamental essence surrounding the pursuit of SSCM is unclear – primarily due to the lack of strength in the conceptual foundation of SSCM theory. In this regard, the present research adds further clarity to a vital fundamental stance in SSCM theory, particularly toward the strengthening of its conceptual foundation. Specifically, it strengthens the fundamental notion of a journey involved in the transition from traditional to sustainable supply chains. In so doing, the present research offers crucial implications for the overall progress of SSCM literature. These implications are delineated in the following.

First, the thematic landscape characterizes the journey of SSCM development along the five principal facets of adoption, implementation, extension, maintenance, and outcomes. Specifically, these facets represent the culminating results from the analysis of the SSCM literature in order to strengthen the notion of a journey inherent in the transformation from traditional supply chains to sustainable supply chains. In doing so, the framework sheds light on the fundamental nature and characteristics of the proposed facets (Table III). As such, these facets demonstrate a sound conceptual inter-linkage. For example, every facet conceptually feeds the next facet, and the transition from one facet to the next is marked by an increase in the scope of complexity in facilitating SSCM. Therefore, the proposed landscape fragments bigger phenomena into more comprehensible aspects of these.

Second, the proposed landscape provides a logically interconnected and sequential segregation of key issues in SSCM theory. As such, it facilitates access to multifarious issues of SSCM at various levels – by presenting a logical segregation of the very large body of literature on SSCM at multiple levels: macro (principal facets), intermediate (broad themes), and micro (sub-themes). The principal facets of SSCM development are situated at the macro-level of the conceptual matrix in order to propagate distinct fundamental underpinnings associated with the SSCM journey. As such, the essential foundation inherent in these facets revolves around the initiation, nourishment, and conclusion of the endless transformations involved in the SSCM journey. Further, the intermediate and micro levels are helpful in facilitating a further detailing of these facets based on the insights derived from the extant SSCM research.

Third, the proposed landscape presents a comprehensive organization and classification of the SSCM literature with a unique focus. Therefore, apart from the principal facets, the broad themes and the sub-themes are freshly carved. As such, every part of them (Table IV) provides intriguing insights on how the present body of literature is fundamentally aligned with the macro-level of the conceptual matrix in order to strengthen the notion of a journey inherent in SSCM development.

Overall, the thematic landscape provides a logical structure for SSCM literature against the backdrop of the notion of a journey involved in the development of sustainable supply chains. Therefore, the framework is capable of serving as a foundation toward the further advancement of SSCM theory. It is further capable of encouraging a more structured investigation into the field. In this regard, we now focus on further explicating the principal facets involved in SSCM development in order to outline the facet-specific key implications.

Facet-specific key implications and further directions

In order to understand the key facet-specific implications, we now focus on understanding the abstract aspects inherent to these facets in order to outline the endless nature of the SSCM journey. In doing so, we develop concrete propositions, thereby focusing on outlining the critical implications toward the further advancement of SSCM theory. Specifically, we weigh the existing state of the literature in relation to each facet, in order to briefly highlight the unrealized perspectives within the facet – with some quick abstract points – capable of guiding interesting discussions for the betterment and further advancement of the literature. We conduct this analysis along the proposed sequence of principal facets (Table III).

We begin by recognizing that the journey within the facet of adoption commences with traditional SCM. As such, SSCM can be understood as a reform entering the space of traditional SCM. Further, this reform aspires to induce radical changes in the way of managing supply chains by advocating the need to address the TBL. However, the pursuit itself is associated with challenges, when faced with the inertia associated with traditional SCM. As such, this inertia tends to resist the SSCM philosophy due to the extensive required change in mindset and cultural shift involved (cf. Preuss and Walker, 2011). The facet of adoption further outlines that overcoming such inertia cannot be achieved unless a favorable intent is infused into the traditional SCM system toward initiating SSCM. Thus, even before the actual implementation of SSCM, it is critical to ensure that the system perceives the SSCM transformation favorably, and is ready to break the inertia. The following propositions reflect this:

- P1a.* The facet of adoption signifies the un-manifested state of SSCM, where it is essential to set the preparatory grounds for SSCM to seep in.
- P1b.* The journey within the facet is characterized between the two extremes, i.e. the prevailing inertia with traditional SCM on the one end and a favorable intent or readiness for overcoming the inertia on the other end.

Constituent research themes from this facet propagate three principal viewpoints. First, a conceptual gauging of the nature/extent of changes involved in the SSCM transformation. Second, the need of carrier agents or champions that introduce the SSCM philosophy in the environment of traditional SCM. Third, contingency factors that further shape the intent favorability in the system. Based on this discussion, below outlined are some illustrative critical aspects essential to further strengthening this facet:

- Explicitly position studies for capturing the SSCM transformation at un-manifested states, i.e. a focus on the prior actual implementation issues in the pursuit of SSCM. As such, only a few studies provide an explicit capture of this viewpoint.
- Further focus on the facet-specific standpoint of the un-manifested initiation of the SSCM transformation by addressing critical questions such as, what is the need, rationale, and expected outcome for embracing SSCM, as well as what prompts a business to recognize the legitimacy of the SSCM paradigm.
- Further focus on the facet-specific standpoint of knowledge building for the SSCM philosophy by addressing critical questions such as, what is the extent and purview of changes demanded by SSCM, what are the aspects of infeasibility in the present industrial scenario, what prevents SSCM from attaining a perfect equilibrium along the TBL, how to gradually part the discrepancy between the aspects of feasibility and infeasibility, amidst the interplay between the feasibility and infeasibility – what are the possible means to facilitate SSCM, and, with the focus of achieving gradual developments in SSCM, what are doable changes in existing business scenarios.

- Further focus on the facet-specific standpoint of intent building toward embracing SSCM by addressing critical questions such as, how to mainstream the SSCM paradigm in the present business environment. Further, how to generate system-wide support toward SSCM at various levels, including industry, organizational, and workforce (top management, middle management, and line workers).

The facet of implementation accounts for the real-time efforts toward the manifestation of SSCM, within the frame of traditional SCM. The implementation strategies and the favorable intent derived in the previous facet is now confronted with the inertia oftentimes inherent in traditional SCM. However, only a few scholars have examined this aspect in a greater detail. Matos and Hall (2007) characterize this confrontation to be embedded with complex and ambiguous challenges – which tends to resist SSCM-oriented changes in the system. The authors further highlight that, given the presence of this resistance, implementation strategies have to undergo a continuous reconciliation to produce gradual or incremental changes in the system. Preuss and Walker (2011) characterize this inertia and thereby present a detailed account of materialization of resistance and subsequent struggle with SSCM implementation. Silvestre (2015b) designate this struggle (the deviation between the intended and the achieved implementation outcome) as trajectory. The author thereby suggests that a SSCM implementation is a continuous process that evolves across trajectories of efforts by seeking solutions to context-specific challenges. Thus, developments in this facet are highly dynamic. This leads us to suggest the following propositions:

- P2a.* The facet of implementation signifies the gradual manifestation of SSCM within the frame of traditional SCM.
- P2b.* The dynamic journey in this facet begins with the confrontation between implementation strategy and inertia associated with traditional SCM. Giving rise to context-specific challenges, the journey in this facet progresses along trajectories of efforts for seeking solutions toward the incurred challenges.
- P2c.* SSCM implementation develops along a non-linear pathway, i.e. the intended changes in SSCM do not develop as directed.

The literature deals with this facet from the following three principal viewpoints. First, to examine the transition from intent to action with respect to hindrances and assistances over the course of the implementation. Second, to gauge the present state of industrial relevance regarding SSCM. Third, to build knowledge around the facilitation of implementations with respect to functional responsibility, insights from exemplary experience, and guidelines for attempting an implementation. Critical aspects for further strengthening this facet are outlined below:

- As an important guideline, future research in this facet must explicitly capture the actual implementation scenario, thus delineating principally the characteristics of the facet of adoption (which is concerned with SSCM at the un-manifested state). As such, the literature often employs the terms adoption and implementation interchangeably.
- The present state of literature provides a due recognition of the aspect of resistance, as outlined earlier (see the theme: from intent to action). However, existing research largely propagates a static viewpoint that focuses on issues such as classification, priority, and sectoral importance of factors based on monotonous methods (MCDM, descriptive, etc.). Future research is needed to make this coverage more dynamic by explicitly recognizing the role of resistance in changing the course of the intended implementation outcomes – thus giving rise to an implementation trajectory for producing gradual SSCM developments.

- Explicitly address the confrontation of SSCM implementation strategy with the inertia associated with traditional SCM for building knowledge around gradual developments in SSCM implementation. As such, the present literature is almost entirely silent on how to approach the implementation and what to do when traditional SCM inertia suppresses the intended change. This view is essential to propagate a dynamic viewpoint of the implementation process.
- Overall, future research in this facet needs to be more dynamic in recognizing that SSCM implementation is a non-linear pathway.

The facet of extension accounts for the SSCM implementation at a more holistic level across the supply chain. Given the inherent complexity in governing radical changes in SSCM, it is impractical to expect a simultaneous implementation of SSCM across the supply chain. However, it sounds logical to seek SSCM development in an appropriate sequence. This facet outlines a sequence in this regard by suggesting that SSCM is required to be initially developed on particular node(s) of a chain and to be subsequently propagated to other node(s). This suggests that after some time, SSCM develops at a more collective level. The journey inherent in this facet is thus characterized with the roles of parties involved in the achievement of the SSCM extension. This facet, therefore, paves a further passage for a more holistic development of SSCM at a wider (supply chain) level (cf. Brockhaus *et al.*, 2013; Gimenez and Tachizawa, 2012). This further suggests that the wider level of action toward SSCM development intensifies the challenges inherent in developmental trajectories. The facet of extension, therefore, can be further understood as the extension (or intensification) of the scope of the facet of implementation. We suggest the following propositions in this regard:

- P3a.* SSCM reaches a holistic state of development when it is extended from particular node(s) to other node(s) in a supply chain.
- P3b.* The journey inherent in this facet is characterized by the roles of parties involved in the achievement of a more holistic level of SSCM development, by reaching out to the various parts of the supply chain.
- P3c.* The facet of extension resembles an extension in the scope of the implementation trajectory to further address the intensified challenges – due to the need to address a wider scope of SSCM development.

The constituent research themes from this facet propagate two principal viewpoints. First, related to the knowledge around the various aspects regarding the call for extension. These aspects further include finer aspects, such as necessary conditions, resistances, and explicit approaches toward extension. Second, related to the aspects revolving around the perspective of the respondent party for accommodating the call for extension. Critical aspects for further strengthening research in this facet are outlined below:

- The present literature covering this facet primarily operates within the purview of the extension between a buyer and a supplier. However, the previous proposition suggests that extension is a much wider phenomenon, which is largely unexplored in the literature. Therefore, it is essential to advance the literature to explore the length and breadth of this facet, also as it relates to other actors. For example, extension of SSCM can also occur on the same level, such as between two focal firms. Further, it can also occur among supply chain actors from distinct levels. Thus, extension is possible in any node of the supply chain.
- Understanding the demarcation between the facet of implementation and extension by focusing on when the facet of implementation qualifies to set out for an extension.
- Further refinement of the view of resistance in the course of extension.

- Further capture of the dynamic and gradual SSCM progress in the path of extension, with the special focus on how to approach the extension and what to do when resistance suppresses the intended change.
- Overall, future research into this facet needs to further explore the various possible formats of extension with a dynamic viewpoint.

The facet of maintenance accounts for the continuity of progress in SSCM development. It is also noted that the course of progress in SSCM is gradual in nature, and is characterized with trajectories of effort for seeking solutions to context-specific challenges. This further suggests that a developmental trajectory (inherent in the implementation and extension facets) comprises a successful and an unsuccessful upgrade component. For example, a firm may initiate a trajectory for guiding a particular SSCM practice into organizational routines. However, in the end, the practice may receive a mixed response toward the desired implementation across the departments (due to the prevailing inertia). In this regard, the view of maintenance suggests that a successful upgrade component, i.e. a SSCM-oriented gradual change successfully absorbed in the normal operating patterns of a firm, needs to be preserved. However, it is also important for the unsuccessful upgrade component to draw learning insights to further enrich the supply chain knowledge base (Gosling *et al.*, 2016; Schoenherr *et al.*, 2014). Thus, this would require the pursuit of SSCM to revert to the initial facet of adoption for further upgrading the knowledge of the devised SSCM strategy *vis-à-vis* the unsuccessful upgrade, and to reinitiate the development trajectory. This further highlights the intensity of dynamism involved in SSCM development. This leads us to suggest the following propositions:

- P4a.* Operating against the backdrop of the prevailing inertia associated with traditional SCM, the SSCM developmental trajectories produce gradual upgrades in the traditional supply chain system for facilitating a transition from an economic to a sustainability focus.
- P4b.* These upgrades are comprised of success and failure components. It is therefore important to preserve or maintain the successful upgrades for preventing any possible roll back.
- P4c.* It is essential to rework the unsuccessful upgrade component for drawing corrective insights, and to reinitiate the development trajectory. In order to draw corrective insights, the unsuccessful upgrade component needs to be readdressed with the focus inherent in the facet of adoption. This path retracement intends to learn from the challenges and failures to further upgrade the knowledge inherent in the undertaken SSCM strategy.
- P4d.* The upgraded knowledge base forms the basis for the restart of the trajectories within the subsequent facets (implementation and extension). Thus, a loop of trajectories is responsible for further refining the progress in SSCM development.

The existing literature dealing with this facet revolves around three principal viewpoints. First, the view of inter-firm issues in SSCM maintenance. Second, the need for developing performance management paradigms. Third, essential conditions for guiding SSCM maintenance. Critical aspects for further strengthening this facet are outlined below:

- Explicit recognition that in the absence of maintenance efforts, the progress made in the course of SSCM could always roll back to traditional SCM. For example, an SSCM initiative may start very well within an organization, but given the involvement of radical changes, it always faces the risk of losing its momentum or a complete roll back in the worst case (cf. Preuss and Walker, 2011). This view is essential to unlock the dynamic nature of this facet.

- Further recognition that after some time, maintenance efforts need to start all over again from the initial facet, thus forming a loop of trajectories toward gradual SSCM upgrades. This also further highlights the dynamic nature of SSCM's pursuit.
- Overall, the existing coverage in literature of this facet is rigorous. However, future research requires capturing this facet with a more dynamic lens.

The facet of outcomes accounts for the yields generated in the pursuit of SSCM. Ideally, the pursuit of SSCM must culminate in a complete transformation of traditional SCM, where an equilibrium in the focus toward the TBL dimensions is achieved. However, given the gradual nature of progress within the non-linear pathway, the focus on the yields cannot be conventional to expect an equilibrium-based conclusion of the SSCM journey (Silvestre, 2015a). Thus, the focus on the yields itself needs to be justified. Further, in order to understand the distinction, it is important to note that only successful upgrades (as outlined in the previous facet) qualify to enter this facet in order to account for yields across the TBL. Thus, the facet of outcomes can be comprehended in two ways. The first is concerned with the extent to which the successful upgrades have been absorbed permanently into the normal routines of SCM (Beske *et al.*, 2014) – so that the specific gradual shift toward SSCM does not roll back to traditional SCM protocols. The second is concerned with the yields generated across the TBL dimensions due to these successful upgrades (Geng *et al.*, 2017; Golicic and Smith, 2013). We outline the following propositions in this regard:

- P5a.* While the facet of outcomes accounts for the yields generated across the TBL dimensions in the course of the SSCM journey, it also signifies a transitional or a gradual intermediate shift of the economic focus inherent in traditional SCM toward a sustainability focus.
- P5b.* This intermediate shift is permanent, and cannot roll back to traditional SCM protocols, which represent a standalone focus on the economic dimension.

The existing treatment of this facet in the literature revolves around two principal viewpoints. The first pertains to the evaluation of yields generated across the TBL dimensions. The second is concerned with the contingencies for further enhancing the yields generated. Critical aspects for further strengthening the coverage of these issues pertaining to this facet are outlined next:

- The existing coverage of this facet is rigorous. However, it has started to face strong criticisms. See for instance Pagell and Shevchenko (2014), Touboul and Walker (2015b), Montabon *et al.* (2016), and Markman and Krause (2016). Overall, these criticisms point out the need for a more holistic examination of the yields, as the present evaluation is primarily inclined toward the economic front. Further, these criticisms suggest that it is unclear whether the superior outcomes are resultant of SSCM, or simply due to companies embracing SSCM, which were already performing superiorly. Despite these criticisms, we believe that this research has played a very important role in highlighting sustainability as a legitimate supply chain agenda (Zhu and Sarkis, 2004). Therefore, such articles hold a distinct and respectable value in the literature.
- In order to lay a more holistic focus toward the yields, the investigation of this facet must incorporate the view pertaining to the gradual nature of SSCM progress. As such, the existing literature is too straightforward in linking the constructs encapsulating SSCM practices and performance outcomes. Incorporating the view of gradualness would also demand to examine the extent to which SSCM practices are absorbed in the normal working routines of supply chain members under consideration. Thus, it is essential to verify how the various SSCM practices are being respected and practiced in organizational or inter-firm supply chain routines.

- While it is essential to explore how SSCM produces favorable yields across the TBL dimensions, it is also essential to explore when these yields are not favorable. Research should thereby focus on developing knowledge around how to strike a balance when a particular TBL dimension is compromised in terms of an unfavorable yield.

Based on this discussion, the nature of flows across the facets is outlined in Figure 1. Given the significant trajectory scope associated with the facet of extension, this facet cannot be activated unless the facet of implementation is attained. Further, the facet of maintenance can be immediately activated after implementation or extension. However, due to the presence of unsuccessful upgrades, i.e. upgrades which were rejected by the system, the flow retraces its path back to the facet of adoption (loop) for seeking corrective insights. Only successful SSCM upgrades in the frame of traditional SCM qualify to enter the facet of outcomes. In line with Shevchenko *et al.* (2016) and Silvestre (2015a), this further explains the dynamic and open-ended nature of the SSCM journey – where the developmental facets coexist due to the gradual nature of progress and the reversal of the flow.

Attention to these aspects can be further helpful in guiding SSCM research toward deeper underlying issues. Given the divide prevailing between the developed and the developing worlds, focusing on an alignment between the context and the conceptually suited facet will allow scholar to arrive at more meaningful research questions. For example, in a developing world context, the state of the SSCM journey can be understood to primarily address the challenges inherent in the initial facets, such as adoption and implementation (see Jayaram and Avittathur, 2015). A developed world context, on the other hand, can be considered to primarily address the challenges inherent in the more advanced facets, such as maintenance and outcomes. However, given the nature of the inherent inter-facet flow as outlined in this paper, both contexts can be well examined through the lens of all the outlined framework, which clarifies the co-existence of the SSCM facets.

Conclusion

With this comprehensive review, we proposed a thematic landscape for SSCM literature by focusing on the principal facets of SSCM development. As such, the thematic landscape is a multi-level conceptual matrix being comprised of five inter-linked principal facets: adoption, implementation, extension, maintenance, and outcomes at the top-most level. The further levels of the landscape are based on 13 broad themes and 34 sub-themes. Overall,

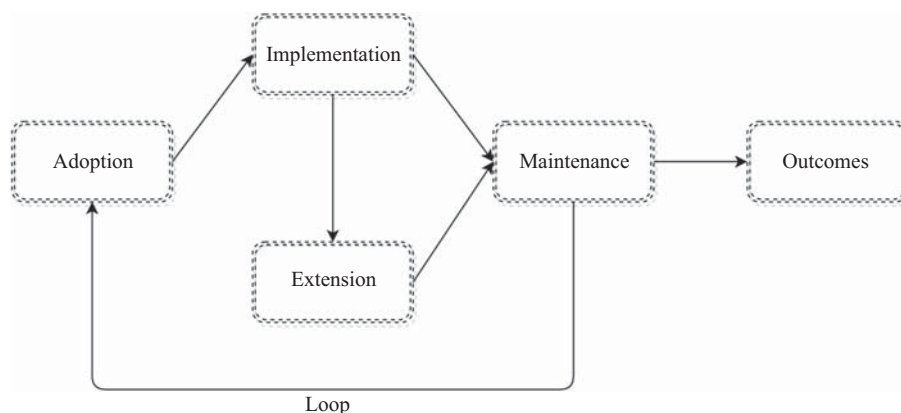


Figure 1.
The nature of flow
along the facets of
SSCM development

based on 419 articles, the thematic landscape propagates unique conceptual standpoints from these levels to further outline the journey involved in the transition from traditional to sustainable supply chains. As such, the review presents rich insights toward the further advancement of the literature.

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Appendix. Online supplementary document

www.dropbox.com/s/8yzxd7mvdzkg42d/2018%20Roy%20et%20al.%20The%20thematic%20landscape%27s%20Online%20Supplementary%20Document.pdf?dl=0

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