

## Reflecting on theory development in sustainable supply chain management

Stefan Seuring\*, Sadaf Aman, Biman Darshana Hettiarachchi, Felipe Alexandre de Lima, Lara Schilling, Jayani Ishara Sudusinghe

Chair of Supply Chain Management, Faculty of Business and Economics, University of Kassel, Kassel, Germany



### ARTICLE INFO

Handling Editor: Yutao Wang

#### Keywords:

Supply chain management  
Sustainability  
Conceptual development  
Supplier management  
Risk and performance management

### ABSTRACT

Sustainable supply chain management (SSCM) emerged as a niche topic around 20 years ago but moved into the mainstream. This paper revisits some of the conceptual developments of the field-building on Seuring and Müller (2008). We draw upon this framework and its core constructs to revisit the status quo of theory development in SSCM. We reflect on the research needs for each construct of the initial framework. Some constructs, like drivers and barriers, are well researched, while stakeholder management issues or supplier development warrant future research. Risk and performance aspects will stay on the agenda, albeit some more critical accounts are needed. This discussion forms the second main part of the paper thereby pointing toward future research needs. The link between digital transformation and sustainable development would be one of the core topics driving change in SSCM. More research on emerging economies and the environmental and social impact of supply chains in such contexts would be welcome. Contemplating on the constructs' content and arrangement for prospective future endeavours drive this research, while not conducting a complete analysis including all aspects can be seen as a limitation.

### 1. Introduction

In line with the increasing relevance of sustainable development, research on sustainable supply chain management (SSCM) has now reached the mainstream. While several of the SSCM issues raised by Pagell and Shevchenko (2014) remain and true sustainability is still an aspiration of most supply chains, there is progress on multiple fronts of related research. The existing multitude of papers raises questions of how to position future research and drive the field forward. This would also respond to, e.g., the critique rightly put forward by Carter and Washipack (2018) that there might be no need anymore for structured literature review papers providing a broad overview of the topic. Yet, following (Seuring et al., 2021), it is a “normal” question of how to identify a research gap and to position research accordingly, irrespective of the method employed for the single piece of research.

Based on a critical reflection of the SSCM domain, we address the following research questions: What are the conceptual elements of SSCM? How has theory development in SSCM evolved? How can future research directions be identified?

Following the well-cited conceptual work by Seuring and Müller (2008), this paper is based on the first author's knowledge and experience in the field of (S)SSCM since the early 2000s. We adopt Seuring and Müller's (2008) structure as a blueprint for the arguments raised here and, consequently, follow the triggers, supplier management and sustainable products logic. Based on Weick's (1989) insights into “theory construction as disciplined imagination,” our reflections contribute to designing, conducting and interpreting imaginary experiments through which carefully selected papers provided us with further evidence to explain SSCM developments.

A note of caution is due here. First, we ground our reflections on various papers, yet we do not systematically review the SSCM literature. Second, the adopted conceptual elements might not capture every facet of the SSCM literature. In line with Seuring and Müller (2008), we did not consider transport and logistics or reverse logistics aspects. However, the adopted conceptual elements are meaningful, as they fulfil the often-asked criteria of being mutually exclusive but collectively exhaustive (often acronymised as MECE). Each conceptual element has its own core and sums up arguments on specific content. Overall, the original framework outlines many debates in SSCM, and

\* Corresponding author at: Chair of Supply Chain Management, Faculty of Business and Economics, University of Kassel, Kleine Rosenstraße 1-3, 34117 Kassel, Germany.

E-mail addresses: [seuring@uni-kassel.de](mailto:seuring@uni-kassel.de) (S. Seuring), [sadaf.aman@uni-kassel.de](mailto:sadaf.aman@uni-kassel.de) (S. Aman), [biman.hettiarachchi@uni-kassel.de](mailto:biman.hettiarachchi@uni-kassel.de) (B.D. Hettiarachchi), [felipe@uni-kassel.de](mailto:felipe@uni-kassel.de) (F. A. de Lima), [lara.schilling@uni-kassel.de](mailto:lara.schilling@uni-kassel.de) (L. Schilling), [jayani\\_sudusinghe@uni-kassel.de](mailto:jayani_sudusinghe@uni-kassel.de) (J.I. Sudusinghe).

the lines of reasoning are still applicable. Third, there are issues where categories have links to each other. We clarify them subsequently, albeit and again, in a more selective and not in a systematic manner. Fourth, we use some papers in more than one category. In this respect, we depart from the logic of a structured literature review [Seuring et al. \(2021\)](#) to illustrate certain aspects of the debate. Nonetheless, we point out that the paper selection process can be subjective or miss other pertinent papers. Finally, some bias derives from the fact that the paper's first author refers to his own past research. Thus, the paper contains elements of personal reflections on the field.

This leads us to structure the paper as follows. In the next section, we revisit [Seuring and Müller's \(2008\)](#) paper and succinctly present its core constructs. We then link each construct to research on related topics in SSCM. This poses the challenge that some papers are positioned at the intersection of topics; consequently, they might have been taken up in different parts. Next, we adopt the logic of the theory, method, and empirical field to unveil future research directions. As this paper is solely committed to discussing the developments of the field, there is no discussion but a conclusion section.

## 2. Identifying the conceptual core

[Seuring and Müller \(2008\)](#) structure their paper into three parts, which can be used for empirical analysis ([Seuring et al., 2019](#)). Hence, the initial conceptual framework will briefly be summarised, and some constructs will be identified, which will structure the subsequent section. This is one particular way of operationalising the framework, which might be challenged, as the focus is on single topics. This approach might risk that overarching lines of research would not be addressed, an issue we will return to at the end of this section. The single conceptual elements identified will be numbered against the logic of the subsequent text, which is also presented in [Fig. 1](#). This allows a more logical form of arguments.

### 1. Triggers for SSCM

The central starting point for why companies deal with SSCM is seen in stakeholder groups exerting pressure on focal companies and providing incentives outside of the company-based factors. The two core lines of theoretical developments are therefore on (1) stakeholder management and (2) pressures and incentives, which also capture internal drivers and barriers.

### 2. Supplier management for risk and performance

This part of the framework looks at the relationship of a focal company and its (3) (multiple-) tiers suppliers and related management practices. The core line of reasoning is based on supply management and related processes, with a focus on (4) supplier selection and evaluation. The results are categorised into (7) risk management and (8) performance management.

performance management of the supply chain, thereby focusing on the outcomes to be achieved.

### 3. Supply chain management for “sustainable” products

The third building block, where [Seuring and Müller \(2008\)](#) provide a figure for summing up elements, centres on the product dimension. The next conceptual element relates to supplier management processes, particularly in (3) multi-tier supply chains, where (5) supplier development and (6) communication and collaboration take a central role. This often requires or aims at moving toward (9) sustainable products.

In sum, a visual representation of the nine conceptual elements identified above is presented in [Fig. 1](#). Admittedly, [Fig. 1](#) solely shows the most common connections between focal companies and related SSCM conceptual elements. As the subsequent sections will show that there are multiple ways of reasoning, the aim here is to sum up the key SSCM conceptual elements. The first two conceptual elements link the focal company to stakeholders. Numbers (3) to (6) look at the supplier side and the focal company's relationships with suppliers. On the outcome side, and therefore connected by uni-directional arrows, there is on the one hand side the link to (7) risk and (8) performance management, while there is also the link to offering (9) sustainable products and services.

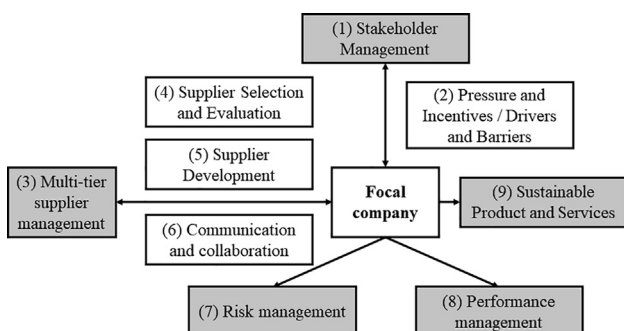
## 3. Reflecting on the conceptual elements

### 1. Stakeholder management

Initially, [Seuring and Müller \(2008\)](#) explore how SSCM is coming into force or why companies turn to it. The central starting point is the stakeholder perspective, which has received much attention and is mentioned in multiple papers. In this regard, one key aspect is how stakeholder management takes place and how it might be shaped or how it might shape SSCM. Systemising the pressure of multiple stakeholder groups that might get involved into supply chains, [Meixell and Luoma \(2015\)](#) point to a three-step process of awareness, adoption and implementation of sustainability in the supply chain. This aligns with stakeholder theory and its application in sustainability and points to sustainability-based value creation for stakeholders ([Hörisch et al., 2014](#)). Interesting perspectives have been added, where [Liu et al. \(2018\)](#) distinguish three roles for stakeholders: driver, facilitator and inspector. This moves beyond the pressure debate and offers insights that stakeholders do much more than just pressuring companies. The facilitator role has been explored by, e.g., [Rodríguez et al. \(2016\)](#), who show how nongovernmental organisations (NGOs) can take an active role in developing and managing supply chains. The authors offer insights into how NGOs apply their knowledge, provide bridging capabilities and enable organisational routines in the networks, thereby helping to establish sustainable supply chains ([Cole and Aitken, 2020](#)). This allows implementing sustainability initiatives and reaching social and economic goals. The inspector role is relevant for the debate on environmental and social standards ([Seuring et al., 2019](#)), while this then falls short of the more proactive roles ([Liu et al., 2018](#)) and related stakeholder management practices ([Siems and Seuring, 2021](#)).

A special but not much addressed issue is that stakeholder management can also be linked to corruption ([Silvestre et al., 2018](#)). Hence, this issue is a highly relevant research gap that requires additional scholarly work. This would take a critical debate on the role of stakeholders, which can also raise false claims or even contribute to fraud or organisational hostility ([Markman et al., 2016](#)). Still, in most cases, the pressures and incentives they offer are instrumental for driving change in corporate sustainability and supply chain management.

Stakeholder theory still has to offer more for the SSCM field. Both positivist studies on engagement taking different forms as well as critical studies on what might, but also what might not be achieved, are highly welcome.



**Fig. 1.** Core conceptual elements of Sustainable Supply Chain Management.

## 2. Pressures and incentives as well as drivers and barriers

To understand what makes companies get involved in stakeholder management Seuring and Müller (2008) distinguish among pressures and incentives, rather driven by stakeholder pressure and external to the focal company and its supply chains. Based on how certain barriers to greening supply chains might be overcome (Mathiyazhagan et al., 2013), the social aspects were also integrated (Bai et al., 2019). This field has seen several papers consolidating drivers and barriers (Diabat and Govindan, 2011). Sajjad et al. (2015) distinguish internal and external motivators and barriers, somewhat following the logic of Seuring and Müller (2008).

More recently and linked to the stakeholder debate, scholarly discussions on drivers and barriers have been extended to the circular economy (Govindan and Hasanagic, 2018). They also point to the relevance of governance aspects, a topic guiding a further stream of SSCM research.

As already mentioned in the previous section, further progress might rather come from, e.g., the integration of different stakeholder groups and their roles. Aspects of pressure would also be relevant linking to other theoretical domains, such as institutional theory (Sauer and Seuring, 2018) or institutional uncertainty (Kelling et al., 2020), where forms of pressure are taken up. This topic might only be explored further when deliberate theoretical contributions would be made, in some cases borrowing theory from other fields (Touboulic and Walker, 2015b).

## 3. Multi-tier supplier management

Expanding the perspective from the direct suppliers, one highly relevant line of research is the one on multi-tier supply chains (Tachizawa and Wong, 2014), which has been linked to sustainability issues (Govindan et al., 2021; Sauer and Seuring, 2018; Wilhelm et al., 2016a). In extreme cases, such as the frequently long mineral supply chain, upstream focal firms might play a central role overseeing the supply chain closer to the virgin material. This is particularly challenging as focal companies will frequently find it demanding moving beyond the first-tier, leading to a double agency role of the first-tier supplier, reporting to the focal company on the one hand side, but ensuring compliance at lower tiers of the supply chain (Wilhelm et al., 2016b) and limiting supply chain visibility (Busse et al., 2017). Consequently, a cascaded approach is proposed, where demands, but also monitoring processes are passed on step by step (Sauer and Seuring, 2019), which should improve transparency for sustainability (Garcia-Torres et al., 2019, 2021).

Multi-tier supply chain management and related sustainability issues seem to warrant more research. The intersection particularly to the digitisation topic seems hardly explored so far. However, blockchain approaches for documenting (mis)conduct (Cole et al., 2019; Saberi et al., 2019), use of artificial intelligence approaches (Nishant et al., 2020) and Industry 4.0 technologies such as big data (Fosso Wamba et al., 2018) and cybersecurity (Sawik, 2020) for predicting and preventing the issues raised from fraud and misconduct to disruptions seem promising topics for addressing the related intersection. This can also be challenged since blockchains would not always lead to more traceability (Bischoff and Seuring, 2021). Given the dynamic development of digital transformation of business (Hanelt et al., 2020), this seems a promising research direction linking into multiple further topics.

## 4. Supplier selection and evaluation

Supplier selection and evaluation have been addressed taking multiple forms (Miemczyk et al., 2012). Starting from green supplier selection (Kuo et al., 2010), there are multiple numerical and optimisation tools (Luthra et al., 2017) that have been used as review papers illustrate (Govindan et al., 2015; Igarashi et al., 2013; Zimmer et al.,

2016). This links into the wider debate on environmental purchasing and supplier management (Tate et al., 2012) and related management practices (Blome et al., 2014a). This topic now gets new impetus as a consequence of the Covid-19 pandemic (Mahmoudi et al., 2021), where issues of green and resilient sourcing and shorter supply chains are addressed, which links into sustainable supply network management (Matthews et al., 2016) and re-evaluating supply chain objectives (Siebert et al., 2021). Therefore, supplier selection and evaluation might also be the topic, where future development can be expected.

## 5. Supplier development

Supplier development (Krause and Ellram, 1997) played and still plays an important role in the SSCM debate. This links to the pressure debate (Busse et al., 2017) as well as stakeholder management (Liu et al. 2018) and shows a possible connection with mimetic pressure (Sancha et al., 2015). In line with Seuring and Müller (2008), Yawar and Seuring (2017) point out that supplier development is highly relevant for addressing social issues in supply chains. This is explored in greater depth by studies pointing to the relevance of supplier development for achieving social outcomes (Yawar and Kauppi, 2018) and improving performance (Aman and Seuring, 2021; Blome et al., 2014a). Recent developments show that supplier development (Jia et al., 2021; Yawar and Seuring, 2020) can also be applied to addressing institutional voids (Parmigiani and Rivera-Santos, 2015) and sustainability tensions and paradoxes (Hahn et al., 2015), which is a recent and rapidly emerging debate in the sustainability domain. Both have been linked to the sustainable supply chain topic. Xiao et al. (2019) explore how purchasing and sustainability managers within buying firms make sense of and respond to paradoxical tensions in SSCM, which is certainly a challenging issue, also reflected in further research (Zehendner et al., 2021). Staying in emerging market contexts, supplier development might address institutional voids (Brix-Asala and Seuring, 2020). Particularly, supplier development might also address what is termed the inclusion(-exclusion) paradox (Brix-Asala et al., 2021). The integration of farmers from low-income countries into global supply chains demands that certain standards are implemented, thereby aiming for performance improvements (Aman and Seuring, 2021). However, smallholders are hardly equipped for fulfilling the rigorous quality and safety checks and numerous requirements. Thus, standards can create barriers for smallholders to become part of global supply chains, which are increasingly required to ensure fair wages and achieve other social objectives (Glasbergen, 2018; Valkila, 2009). This points to an issue taken up in the future research section, i.e., base-of-the-pyramid and emerging economy-related research aiming at sustainable value creation (Schilling and Seuring, 2021).

## 6. Communication and collaboration

If positive outcomes are to be achieved and more sustainable development along the supply chain is to be obtained, communication, coordination and collaboration with suppliers seem evident (Seuring and Müller, 2008). In the analysis of base-of-the-pyramid-related literature against supply chain constructs, communication emerged as one of the central constructs (Khalid and Seuring, 2019). Subsequent empirical research revealed a link between communication and strategic purchasing and technological integration with suppliers as well as purchasing performance (Khalid et al., 2020). Both studies thereby offer insights on how essential communication with suppliers is. A different observation is made in the empirical analysis by Seuring et al. (2019), where the communication item is mainly connected to auditing and third-party involvement and ensuring minimum standards of environmental and social conduct. This is in line with Silva et al. (2021), who explain: "sustainability is spread driven by market pressure, mainly through the diffusion of technical information, either by lead organisations enablers or inter-organisational relations" (Silva et al., 2021, p.1030).

Turning to supply chain collaboration, similar arguments can be found; therefore, aligning supply chain initiatives pays off (Blome et al., 2014b) and confirming the often made win–win argument. This seems to be one of the central aspects of communication and collaboration with a range of stakeholders, often linked to environmental objectives, such as a carbon cap and addressing trade-offs among environmental and economic objectives (Ding et al., 2016). Such trade-offs would link into the already mentioned tension and paradox debate (Brix-Asala et al., 2021), where many questions are still open and research seems to emerge. More critical analysis on sometimes even unforeseen outcomes of related measures would certainly be welcome (Matos et al., 2020). It also links into the two subsequent issues of risk and performance management.

Further, the role of collaboration has evolved from the traditional dyadic relationships (e.g., buyer–supplier relationship) to triadic and myriad relationships (Mokhtar et al., 2019) in order to integrate stakeholders as discussed in the previous sections. Chen et al. (2017) comprehensively elaborated this diversity through a list of supply chain collaboration practices worth further studying to understand their contribution to the environmental, social and economic performances. Touboulic and Walker (2015a) highlighted the importance of understanding how companies from different industries collaborate to achieve improved sustainability performance in supply chains, while Benstead et al. (2018) encouraged horizontal collaboration with NGOs to improve sustainable performance while overcoming uncertainties faced during legislation changes. Hence, moving beyond the boundaries of traditional supply chains and collaborating with non-traditional supply chain actors can spark new avenues to drive innovation (Aman and Seuring, 2021) and improve sustainability performance in supply chains.

## 7. Risk management

Based on the links to environmental and social risks in supply chains (Freise and Seuring, 2015), it can be expected that there will be an ongoing debate analysing multiple impacts from disruption (Jabbarzadeh et al., 2018) to external shocks and extreme conditions (Sodhi and Tang, 2021) linking to the aspects mentioned for supplier selection. It is almost hard to point to a specific issue, as the research on sustainable supply chain risk is multifaceted (Lima et al., 2021b; Rebs et al., 2018). The intersection of sustainability and resilience (Ivanov, 2018) would be particularly relevant for this analysis, again linking into the Covid-19 aftermath topic. It can be expected that this stream of research will continue further, which seems well justified given changing global conditions and open research issues in supply chain resilience (Wieland and Durach, 2021). These changing global conditions also link digital transformation to environmental and social risks. In this regard, both appreciation and criticism are expected if we combine research from the emerging and the developed markets.

## 8. Performance management

Searching for performance management in a supply chain context gives an almost endless number of hits. The challenge seems to be how this performance would be comprehended. As mentioned already, Seuring and Müller (2008) point to environmental and social standards serving to set minimum requirements that need to be monitored along the supply chain. Such standards can have a positive impact on the communication of related objectives (Laihonen and Pekkola, 2016), given that environmental and social standards are fulfilled (Seuring et al., 2019). A critical account is presented by Lima et al. (2021a), who ask whether organic standards are “socially just, ecologically regenerative, economically robust, and politically inclusive” (Lima et al., 2021a, p. 89), thereby being linked to the already mentioned question on how sustainable supply chains can be managed in an inclusive manner (Brix-Asala et al., 2021).

This links into the wide debate on supply chain governance structures in global supply chains (Koberg and Longoni, 2019) and points to different governance structures (Formentini and Taticchi, 2016). Future SSCM research may adopt different theoretical frameworks and critical perspectives to further theorise the relationship between governance structures and sustainability outcomes. In the agri-food sector, early influential research suggested that private and neoliberal forms of governance can provide firms with a competitive advantage, but the social and environmental protections they offer are often minimal (Guthman, 2007). These reflections concerning the business potentials and complications of market-driven governance structures could also be brought into the realm of manufacturing, electronics, retail, logistics and more, which received little scholarly attention when compared to agri-food research (Wahl and Bull, 2014). An additional link is evident in the already covered multi-tier challenge, where first-tier suppliers and focal companies have a formal contract, which is usually not the case with second or third-tier suppliers, also raising governance-related issues. This also then links to the emerging economies debate where governance structures are often criticised. Besides, they also serve as second- or third-tier suppliers in some of the resource-based global supply chains. As Silvestre (2015, p. 156) mentioned, “although globalisation is a trend, natural resource-based supply chains are often more geographically bounded and susceptible to local social demands than other supply chains”. Therefore, consideration of governance structures and sustainability outcomes offers interesting research directions.

More conventional forms of performance management and measurement in sustainable supply chains addressing economic criteria and particularly the intersection to environmental and social issues still offer an interesting research topic. For instance, Sudusinghe and Seuring (2020) addressed this intersection between social and economic performance in apparel supply chains while hinting at the importance of future research to explore the scholarly debate related to the direction of causality on whether socially sustainable supply chains achieve economic performance or vice versa.

## 9. Sustainable products and services

The sustainable products are mentioned here for completeness. As Seuring and Müller (2008) point out, the supplier and process-related aspects are linked to the product and outcome-related ones. While they are often kept apart in the academic debate, they are clearly interrelated in real-world examples. The link to sustainable new product design and related capabilities is already established (Gmelin and Seuring, 2014), but still a current stream of research (Guimarães et al., 2021). It seems nearly impossible to define a sustainable product in line with hardly any supply chain being truly sustainable (Pagell and Shevchenko, 2014). Hence, this links into the debates on life-cycle management (Benoît et al., 2010), which plays a role in supply chain management. With the evolution of the technologies, digitalised supply chains integrated with Industry 4.0 technologies such as additive manufacturing (3D printing) (Mellor et al., 2014), cloud computing (Queiroz et al., 2021), the internet of things (Da Xu et al., 2018) have the potential to positively impact product life-cycle management. Therefore, this topic needs further investigation.

Moving on from these lines of reasoning, several other debates are emerging in the SSCM domain. Such a list can only look at selected topics, which are based on our admittedly personal observations.

## 4. How to move on in SSCM?

For looking at how to move on, we build on the logic of the theory, method, and empirical field as three distinct aspects of academic research in the social sciences (see Seuring et al., 2021).



## 1. Theory

Touboulic and Walker (2015b) opened up the debate of what theories are used for in SSCM, which is in line with the demands raised by Carter et al. (2015). There are multiple facets of theories borrowed into SSCM, where it is hard to present a list of what might be relevant. The dynamic capability approach (Carbone et al., 2019; Gruchmann et al., 2019; Siems et al., 2021) should be one candidate for comprehending changes in the supply chains, both on explaining what is happening but also predicting future directions. Given the constellation of theories within supply chain management, marketing and management, we refer the reader to Gligor et al.'s (2019) 217 theoretical approaches that can help supply chain scholars explain the phenomena of interest.

In the previous sections, we briefly outlined several theories, such as institutional theory or sustainability tensions and paradoxes. This shows how different theoretical streams inform SSCM, a line of development that is expected to continue. The paper titled “dancing the supply chain” (Wieland, 2021) points the way forward in broadening our comprehension of supply chain management.

## 2. Methods

The field seems to be dominated by either modelling research or empirical research, where Rebs et al. (2018) even show that there is not much exchange among these two substreams. This is a clear point of criticism, as colleagues from other management domains would not distinguish this. Therefore, it is a kind of plea to all of us writing in the field not to ignore development in SSCM just because they use a different methodological approach. More studies building on behavioural research methods would certainly enrich the comprehension in the field.

The critique of Carter and Washispack (2018) made for literature review papers would also hold for other cases: without a sound theoretical grounding, yet next study in a dynamic but established field is not expected to make a difference.

One core challenge in supply chain management research is data collection on multiple tiers of the supply chain. This is still rarely implemented, as it is challenging to access focal companies, suppliers, and customers. So, research will be very well received if data on a longer part of the supply chain can be presented.

To illustrate some issues appearing on the intersection of theory and method, we refer to recent calls for theorising the intersection between circular economy and supply chain management, often called circular supply chains (Farooque et al., 2019). Some challenges in applying empirical methods might hamper the development of sound research and theory. We share that “empirical evidence of non-linear production benefits is sparse” (Sehnm et al., 2019), primarily due to the limited number of organisations implementing circular practices rather than recycling and managers' time constraints to participate in research (Sehnm et al., 2019). Overall, we regard the latter issue as a recurring trend within supply chain research, where some firms might see no “obligation” to participate in, for instance, case study research unless they could benefit from it in the short term. While an effective solution to overcome this issue may vary across different disciplines and fields of research, we insist that “nothing is quite so practical as a good theory” (van de Ven, 1989).

Nevertheless, to enlighten the profession of management through good theory, we believe it is highly crucial to establish, among other things, collaboration with practitioners, e.g., through workshops where both practitioners and scholars can benefit from knowledge sharing. Other scholars also stress the role of adopting critical, engaged research to embrace transformative opportunities and the power to re-imagining issues in supply chain management and the building of novel theory (Touboulic et al., 2020). Notable examples in this regard include but are not limited to experimental action research, emancipatory and participatory research, narrative inquiries, and reflexive deconstruction through collaborative inquiry.

## 3. Empirical fields

Looking at empirical fields, there are always new topics coming. Structuring the debate, we group this into the three dimensions of sustainability logic and discuss some issues on the environmental and social sides. As before, there is no assumption that the lists would be complete.

### a) Environmental issues

The driving issue on the environmental side receiving a lot of attention at the moment is carbon emissions and climate change (Ghadge et al., 2020). Given the broader debate on planetary boundaries, many environmental issues have hardly been connected to supply chain management, posing many challenges (Clift et al., 2017). For instance, looking at biodiversity, the use of phosphorus and nitrogen has hardly been linked to the supply chain debate. This would allow to explore new environmental challenges, which can serve as a test on whether developed constructs and concepts would also hold in this domain.

A different kind of logic is evident in the circular economy and circular supply chains debate, which is gaining more attention (Batista et al., 2018; Calzolari et al., 2021). Related models of managing supply chains will be needed to avoid the overuse and exploitation of resources.

### b) Social issues

Following an initial slow start, the social side is not well covered (Yawar and Seuring, 2017). There are still many issues left, where base-of-the-pyramid (Brix-Asala et al., 2021; Khalid and Seuring, 2019) and emerging economy (Silva et al., 2021) related topics warrant more research. In this regard, a range of social issues is addressed. So, there will be ample research opportunities looking into, e.g., social and sustainable value creation (Lashitew et al., 2021) and aiming at “good supply chains” (Carbone et al., 2019).

A particularly relevant topic is modern slavery (Caruana et al., 2021), which moved into the focus of supply chain research (Cole and Shirgholami, 2021; Gold et al., 2015). In line with the argument just mentioned on the environmental side, in this context, existing concepts can be put to the test and advance knowledge accordingly.

### c) Digital transformation toward sustainability

The other core theme driving business and management related research forward at the moment is the briefly bypassed digital transformation (Hanelt et al., 2020; Klos et al., 2021), which seems highly relevant for reaching a sustainable future, but has not been addressed more often (Liu et al., 2020). Hence, topics such as blockchains (Cole et al., 2019; Esmaeilian et al., 2020; Saberi et al., 2019), artificial intelligence (Kuo et al., 2010; Pournader et al., 2021), Industry 4.0 (Bag et al., 2018; Yadav et al., 2020), and its related technologies including big data (Fosso Wamba et al., 2018), additive manufacturing (Ford and Despeisse, 2016; Oettmeier and Hofmann, 2016) offer ample research opportunities. Linking this to environmental and social outcomes and critical assessments of their impact would offer changes for driving the comprehension of SSCM forward and enabling sustainable value creation (Schilling and Seuring, 2021), thereby advancing the lines of research envisioned in the extant paper.

## 5. Conclusion

This paper operationalised one of the frameworks of SSCM that has impacted the field (Seuring and Müller, 2008) which serves as a foundation to reflect on developments in the field. First, nine conceptual elements of SSCM are identified to address theory development: (1)

stakeholder management, (2) pressures and incentives/drivers and barriers, (3) multi-tier supplier management, (4) supplier selection and evaluation, (5) supplier development, (6) communication and collaboration, (7) risk management, (8) performance management and (9) sustainable products. Second, lines of research were illustrated for each field to elaborate on the current status of the field and, thereby, pointing to future research directions. While only selected issues could be covered in such a manner, the paper outlined many developments and pointed to future research directions. Both environmental and social sides still have much to offer on several issues to be addressed given the many needs people and planet have for their survival and further sustainable development.

Third, the paper reinforced the need for a sound choice and justification of theory, method, and empirical field to advance future SSCM research. Although each element has its own underlying complexities, carefully planning the respective research process is paramount. Thus, planning and reflection are crucial processes that require SSCM scholars to critically theorise the phenomena of interest while considering disruptive risks, such as climate change and biodiversity loss. Theorising in SSCM can elucidate and explain supply chain management phenomena toward economic, environmental, and social sustainability. The paper highlights that hot topics such as the circular economy, digital transformation and base-of-the-pyramid supply chains, to name a few, still require careful scrutiny and theorising in SSCM. This is particularly important to enable future SSCM research “to tackle (...) grand societal challenges” (Wickert et al., 2021, p. 297) such as exceeding planetary boundaries and social issues in underdeveloped economies in order to create impact on various levels.

### A personal acknowledgement

Admittedly, this paper is partly based on personal reflections on 20 years of research in the field. I, Stefan Seuring, like to thank Martin Müller, my co-author from 2008, for the hard work and many debates leading to the initial paper. Further, I like to thank all co-authors of the past years for their inspiration and dedication. Finally, I also like to thank all reviewers and editors that handled our papers over the years. Progress comes from the exchange in the field.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Acknowledgement

We like to thank the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie European Training Networks (H2020-MSCA-ITN-2018) scheme, grant agreement number 814247 for funding the Realising the Transition to the Circular Economy (ReTraCE) project, supporting the research of Jayani Ishara Sudusinghe, Biman Darshana Hettiarachchi and Felipe Alexandre de Lima.

We like to thank the Deutscher Akademischer Austauschdienst (DAAD, German Academic Exchange Service) for funding of the project “Exploring focal firm’s performance features in BoP supply chain management – taking the case of Pakistan” (Grant number 57459038 and 57567483), supporting the research of Sadaf Aman and Lara Schilling.

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