

Where Do We Go From Here? Progressing Sustainability Implementation Efforts Across Supply Chains

Sebastian Brockhaus¹, Wolfgang Kersten¹, and A. Michael Knemeyer²

¹Hamburg University of Technology

²The Ohio State University

The findings from an inductive study conducted in the United States and Europe focused on sustainability implementation efforts across supply chains are reported. In particular, the study focuses on developing a better understanding of: “how do companies involve other members of their supply chain into their sustainability efforts?” Building upon themes that emerged from the data, a typology for the supply chain implementation of sustainability initiatives is proposed. A lack of supply chain integration was identified and companies reported a tendency toward a “mandated” implementation when extending efforts across companies. These efforts are generally initiated by the dominant companies and then forced onto the weaker upstream members. The data suggests that the merits of these initiatives are viewed as being disproportionately awarded to the dominant firm and thus did not receive full buy-in from the other party. A common vision by both sides of this relationship is to develop a more collaborative implementation that can be supported by all the involved parties. In theoretical implications, empirical findings are viewed through the lens of several prominent management theories in order to augment and elaborate current theory. Managerial implications, limitations, and opportunities for further research are detailed.

Keywords: sustainability; supply chain integration; collaboration

We were in a meeting with a retailer 2 years ago. They said: ‘You WILL [emphasis added] provide us with a sustainable product’. We won’t forget. It wasn’t a question; it wasn’t a request; it was a statement. (Interview # 17, Home Appliances, U.S.)

INTRODUCTION

Today’s consumers pay attention to the environmental impacts of the products they use. Although this awareness might not translate directly into buying behavior—83% of consumers in a recent poll expected companies to become more environmentally friendly, whereas only 22% were going to pay more for environmentally sustainable products (The Nielsen Company 2011)—as such, sustainability claims surely impact the perception consumers have of products, for the better or worse (Luchs et al. 2010). Consequently, an increase in interest in the topic from an industry perspective has been observed (Markley and Davis 2007) and the topic is considered a megatrend in today’s global economy worthy of additional academic focus (Lubin and Esty 2010; Carter and Easton 2011; Fawcett et al. 2011). Despite this rising level of attention, sustainability is often treated as an abstract, relative concept (Faber et al. 2005)—the diversity of business strategies, marketing campaigns, product introductions, and whole corporations labeled “sustainable” adds to the fuzziness around the concept.

There has been only a limited amount of research focused on developing and expanding theory in the area of sustainability as

the term was first defined by the Brundtland Commission as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, 8). This perspective toward sustainability is still prevalent in academia, industry, and public media even though alterations (e.g., Solow 1993) and new definitions (e.g., Ehrenfeld 2008) have emerged (Laws et al. 2004). For this study, the term sustainability describes all activities aimed at improving the social and ecological performance of a company while also retaining the financial bottom line (Carter and Rogers 2008; Baumgartner and Ebner 2010). This view toward sustainability is based on the concept of the “triple bottom line” (TBL), which includes economic, social, and ecological perspectives (Elkington 1998).

There have been several attempts to translate the concept of sustainability into business strategy, often referred to as corporate sustainability (Robèrt et al. 2002; Baumgartner and Ebner 2010). However, implementation in practice still lacks a comprehensive structure and supply chain perspective (Baumgartner and Ebner 2010; Lubin and Esty 2010; Connelly et al. 2011b). This lack of structure is a central reason why even sincere attempts to implement sustainability often result in superficial solutions that deliver insignificantly improved ecological performance, sometimes referred to as “greenwashing” (Laufer 2003; Ramus and Montiel 2005). Although “greenwashing” implies intentionally deceiving consumers about the ecological performance of a product by making it appear “greener” than it actually is, one might extend this perspective to a sustainability initiative that overstates positive results due to a lack of true supply chain integration and clear structure for ensuring cross-firm alignment—despite a firm’s good intentions.

Therefore, the underlying research question of this study is to better understand “how companies involve other members of their supply chain into their sustainability efforts?” Although existing work and theories provide insights into the implementation within

Corresponding author:

Sebastian Brockhaus, Institute of Business Logistics and General Management, Hamburg University of Technology, Schwarzenbergstraße 95, 21073 Hamburg, Germany; E-mail: sebastian.brockhaus@tuhh.de

the four walls of an individual company and the formation of relationships in a supply chain, only a limited amount of research has focused on the interplay between companies as it relates specifically to sustainability efforts.

In the next section, the extant literature is presented and then offered as motivation for addressing the issue of how to implement sustainability efforts from a supply chain perspective. Following this, the methodological process used in this research is described. Next, the findings of the analysis are presented, accompanied by relevant excerpts from the qualitative data, which reflect emerging concepts. This section establishes a typology for implementing sustainability initiatives across one's supply chain and makes propositions for further inquiry. This is followed by a presentation of the theoretical and managerial implications of the findings from the study, along with limitations and future research opportunities. Finally, conclusions are drawn.

LITERATURE REVIEW

While the concept of sustainability has been around for decades, a clearer understanding of the topic has only emerged in the past 20 years (Haugh and Talwar 2010). As sustainability has been discussed in several publications in recent years, the point of this research was to focus on the implementation of the concept across the network of companies that represent a supply chain and expand existing theory surrounding this specific issue as theoretical gaps can be identified in this context (Carter and Rogers 2008).

Green supply chain management

There are several streams of literature that cover the role of sustainability in supply chain management (SCM). One of the major areas is the field generally termed green SCM (GSCM). As the term suggests, the focus here is on the environmental aspects of supply chains. The literature reviews by Srivastava (2007) and Abukhader and Jönson (2004) provide a good overview of this stream of research. Both articles point out that GSCM is mainly derived from a reverse logistics angle, but also has inputs from concepts focusing on overall process efficiency. Reverse logistics describes the upstream flow of resources in combination with a reduction in materials to make the transport more efficient (Carter and Ellram 1998). Reverse logistics activities play an important role with respect to the environmental impact of supply chains and have received amplified attention in the literature. For a current review of work in this area, see Chan et al. (2010).

Srivastava (2007) examines the synergy of the ecological and economic aspects of SCM. This notion has been promoted by several authors before when describing the role of "green" for competitive advantage (e.g., Porter and Van der Linde 1995a,b; Florida 1996; Rao and Holt 2005; Kersten et al. 2010; Mollenkopf et al. 2010). This literature suggests that resource efficiency leads to a reduction in operating costs as well as having a positive environmental impact and thus strengthens the competitive position of the enterprise. However, as Mollenkopf et al. (2010) and Kersten et al. (2010) among others caution, creating genuine and long-lasting competitive advantage for the entire

supply chain also requires a stable and fair distribution of the burdens and benefits across the companies involved.

Sustainable supply chain management

The literature analysis by Seuring and Müller (2008b) broadens the view from GSCM to also including the social dimension and thus—drawing on the TBL approach—provides an overview of the sustainable SCM (SSCM) literature. SSCM is defined "as the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains" (Carter and Rogers 2008, 368). Furthermore, Carter and Rogers (2008) assert SSCM that lacks a theoretical background and suggest a framework for sustainable supply chains that supports the concept of intercompany integration in pursuit of sustainability.

Analogous to the asserted synergy between the ecological and economic bottom line, among SCM researchers, there is a general consensus that companies can create competitive advantage through sustainability-focused activities (e.g., Hart 1995; Bekefi and Epstein 2008; Flint and Golobic 2009; Godfrey et al. 2009; Hart and Dowell 2011). The natural resource-based view of the firm as introduced by Hart (1995) suggests a decisive effect on competitive positioning for sustainability issues (Carter and Easton 2011). Although the positive impact of sustainability on the competitive position is well documented theoretically and anecdotally for individual companies, current literature lacks insights into how the notion of sustainability can be implemented—especially with regard to intercompany initiatives (Wolf 2011).

To shed light on this aspect, a further clarification of the understanding of sustainability and SSCM is needed. As stated previously, the TBL is the main theoretical underpinning for sustainability in this study. The TBL concept was further adapted by Carter and Rogers (2008), as part of their framework for SSCM. The notion of interorganizationality and the fact that even though all three bottom lines are mentioned, ultimately long-term economic performance is the firm's goal, are the main

Figure 1: Illustration of sustainable supply chain management.



ideas influencing this paper. As illustrated in Figure 1, SSCM encompasses the full TBL approach with respect to supply chain operations and strategy as defined by Carter and Rogers (2008), whereas GSCM incorporates only the environmental and economic issues and is thus only an aspect of SSCM.

To implement SSCM, sustainability initiatives should be integrated across selected key members of a supply chain. Several contributions in the literature provide insights into this notion: Rao and Holt (2005) argue—drawing on empirical data—that purchasing as well as operations and distribution activities have to be redesigned with respect to sustainability to create genuine competitive advantage for the supply chain. As purchasing and distribution directly involve suppliers, logistic service providers (LSPs), and customers, supply chain integration in the pursuit of sustainability is an imperative. Similarly, Handfield et al. (2005) assert that sustainability initiatives need to take a strategic supply chain-oriented approach to engrain sustainability in the business strategy of all supply chain members. Darnall et al. (2008) support this notion and show that supply chain integration can be facilitated by the adoption of an environmental management system (EMS). They argue that successful internal implementation of a sustainability effort is a prerequisite for reaching out into the supply chain. While an EMS is only directly relevant for environmental sustainability, initiatives can be rolled out—once in place—to include social issues.

In addition, the literature suggests the need for enhanced cooperation for sustainability in the supply chain (Seuring and Müller 2008a; Hopkins 2009; Pagell et al. 2010; Wolf and Seuring 2010; Seuring 2011), yet most work dealing with sustainability strategies focuses on collaboration only in the economic dimension of sustainability (e.g., Baumgartner and Ebner 2010) and neglects possible benefits of collaboration on the social and environmental aspects. The majority of reviewed publications conclude that the state of SSCM implementation in practice can still be considered low. Although many companies pursue isolated, internal sustainability initiatives, only few programs extend across companies in a structured way. Albino et al. (2009) found SSCM to be the least adopted sustainability strategy in a sample of companies listed in the Dow Jones Sustainability World Index (DJSWI). This result is even more meaningful as companies in the DJSWI are assumed to be sustainability leaders and thus should be considered state of the art in sustainability implementation. Furthermore, Albino et al. (2009) find that internally focused energy efficiency initiatives are the primary focus for companies in their sample. Consequently, their results provide additional support for the notion that even among companies with an independently established strong sustainability focus, SSCM practices are not commonly implemented across companies. Although a practical lack of SSCM integration is therefore well documented empirically, an understanding of this lack of implementation and insights into how to change this situation remain elusive.

Concerning the role of certification for SSCM, Rondinelli and Vastag (2000) point out that the implementation of certification from the ISO 14000 family alone does not guarantee sound sustainability performance. Bansal and Hunter (2003) empirically show that ISO 14000 certification will be more likely pursued by companies who are already concerned about sustainability than by those that are heavy polluters. Although certification is therefore a good indicator for advanced sustainability practices, ISO

14000 is ill-equipped to foster diffusion of the sustainability concept across companies. Potoski and Prakash (2005) demonstrate that ISO 14000 lends itself well to a reduction in the necessary effort for compliance with environmental and social regulation, but is not of much benefit to implementing sustainability outside of compliance issues, thus falling short of holistic SSCM implementation.

Connelly et al. (2011b) argue that the theoretical foundations for sustainability in businesses are comprised of several theories. Similarly, Carter and Easton (2011) explicitly recommend the use of multiple theories when engaging in research around sustainability to improve the depth of the analysis. In a recent piece, Seuring (2011) argues that SSCM theory changes the application of general SCM theory as certain criteria and assumptions (e.g., concerning sourcing decisions) are altered by expanding the view from the single to the TBL. Thus, current management theories will augment this study's data in support of deriving a typology for SSCM implementation. A selection of theories suggested by Carter and Rogers (2008), Connelly et al. (2011b), and Carter and Easton (2011) with high relevance for SSCM is presented in Table 1. The selection of theoretical lenses displayed in Table 1 will be applied in the description of this study's findings to derive theoretically sound implications. The findings are mirrored with theory to gain further insights into the relevance of the findings as well as to provide suggested advancements of the theory based on the analysis.

METHODOLOGY

As established through the literature review, the theory around implementing SSCM is still abstract and broad in nature (Faber et al. 2005). As argued by Lubin and Esty (2010), this results in implementation of sustainability efforts that are characterized by a lack of structure. Thus, consistent with the suggestions of Fawcett and Waller (2011), this study was conducted to seek clarity around sustainability implementation in companies and supply chains rather than confirm preconceived ideas. Starting from the empirical data, a theoretical framework is derived and then mirrored with existing theories and literature. A qualitative research design (Easterby-Smith et al. 2002; Frankel et al. 2005) was deemed appropriate given the goals of the study. In particular, a grounded theory (GT) approach is taken, based on the fact that it is designed to explore complex phenomena in real-life situations (Glaser and Strauss 1967). As the implementation of the theoretical concept of sustainability across supply chains is being investigated and the authors have a strong desire to conduct research of high managerial relevance, GT suits the topic in question (Glaser 1999; Mello and Flint 2009).

GT was established by Glaser and Strauss (1967) and further refined by many authors, for example Glaser (1978), Goulding (1999, 2000, 2002), Corbin and Strauss (1990, 2008) and Charmaz (2006). Following the suggestions of Pratt (2008, 2009), an explanation of how sampling, data collection, and analysis were conducted and how research validity as well as ties to existing theory was ensured is provided. Further guidance on how to employ GT for business logistics and economics research beyond the scope of this section can be found in Mello and Flint (2009), Maital et al. (2008), Flint et al. (2005), Wilson (2002) and Finch (2002).

Table 1: Theoretical lenses for this paper

Theory	Role with respect to sustainable supply chain management (SSCM)	Sources
Stakeholder theory	The fundamental concept of stakeholder theory is to extend the view of a firm's constituents beyond the direct representatives and the shareholders. Primary stakeholders are actors with direct influence on the company (e.g., customers, suppliers) while secondary stakeholders can affect the company through influence on the primary stakeholders (e.g., nongovernmental organizations). All supply chain (SC) partners are thus stakeholders of the focal company.	Agle et al. (2008); Garvare and Johansson (2010)
Resource dependence theory	Companies' decisions depend not only on rationality but also on power. Furthermore, companies attempt to reduce resource constraints, namely from single suppliers for a resource—either by diversification or by taking control of the resource themselves. As dependency increases, firms should attempt to also increase control and integration to ensure sustainability of the resource.	Casciaro and Piskorski (2005); Carter and Rogers (2008); Davis and Cobb (2009); Hillman et al. (2009); Connelly et al. (2011b)
Transaction cost economics	Transaction costs (TCs) incur for monitoring the sustainability performance of SC members. TCs are perceived to be a major barrier for implementation of SSCM.	(Carter and Rogers (2008); Connelly et al. (2011b))
Signaling theory	Communicating SSCM activities is often costly. Sustainability marketing is threatened by greenwashing. SC-integration of sustainability efforts is crucial to sending a uniform signal as a SC.	(Connelly et al. (2011a,b))

Sampling and data collection

Over the span of 15 months, in-depth semistructured interviews were conducted with 28 companies in the United States and Europe. As some interviews involved more than one company representative at a time, a total of 36 people with varying backgrounds were interviewed. An interview guideline was used to initiate the discussions (Patton 2002); however, care was taken to always react to themes and topics as they emerged. The interviews were carried out in person whenever possible and ran for 45 min on average. All interviews were recorded and then transcribed. The transcriptions were the basis for the analysis. As the authors performed the transcription, accuracy and correct use of terminology were secured.

Theoretical sampling (Corbin and Strauss 1990; Goulding 2000; Charmaz 2006; Breckenridge and Jones 2009) was employed. Theoretical sampling bases the selection of participants on the prospect of adding new approaches and inputs to the study as well as saturating categories, thus driving sampling by theory as it emerges (Glaser 1978; Goulding 2000). The focus is on gathering rich data, not achieving statistical validity (Barbour 2001; Charmaz 2006). Sampling, data collection, and data analysis are carried out simultaneously and the activities are interrelated (Corbin and Strauss 1990; Glaser 2002; Suddaby 2006). For this study, sampling decisions were based on the goal of providing a diverse picture of different perspectives and respondents. The interviewed companies therefore represented a cross-section of industries. The interview participants also came from diverse functional positions, such as operations, logistics, sustainability, and corporate social responsibility (see Table 2).

An initial sample consisting of five companies provided a sound starting point for validating the design of the interview guideline and provided a survey of the topic (Charmaz 2006). After these initial interviews, the guideline was adapted to further specify the topic in question and include emerging categories. The guideline was again modified after additional interviews were completed as themes began to be distinguished more clearly. A final modification to the guideline was made after the 15th interview (the lead author will provide the different versions of the interview guideline upon request). Additional theoretical sampling was conducted after each of the changes.

In addition to the interview data, secondary information about sustainability activities within the participating companies was collected. Most of this information came from corporate sustainability reports and data that were made available publically on the web. In several cases, interviewees provided internal presentations and memos. This secondary data (data triangulation) made verification of the information from the interviews possible and added objectivity to the data (Glaser and Strauss 1967; Böger 2010).

Data analysis

Parallel to data collection, data analysis was conducted through coding activities (Glaser 1978; Charmaz 2006). Multiple researchers analyzed the data simultaneously to improve validity and reduce the impact of potential individual biases (Corbin and Strauss 1990).

According to Charmaz (2006), coding should be conducted in three stages: initial coding, focused coding, and theoretical coding. During initial coding, analysis was performed very close to the

Table 2: Overview of the sample

No.	Industry	Region	Respondent position/department
1	Consulting	Europe	Consultant
2	Food and Retail	Europe	(1) Head of Sustainability and (2) Representative from the Logistics Department
3	Consumer Electronics	Europe	General Manager Logistics
4	Retail	Europe	Head of Logistics
5	Chemicals	Europe	Supply Chain Management
6	Food	Europe	Chairman of Executive Board
7	Food	Europe	(1 and 2) Logistics Management, and (3) logistics service providers of interview partner
8	Food and Retail	U.S.	(1) Customer Service, (2) Head of Logistics, and (3) Head of Sustainability
9	Logistics	Europe	Global Head of Green Logistics
10	Logistics	Europe	(1) Senior Director Logistics and (2) Head Business Development
11	Logistics	Europe	Head of Green Logistics
12	Retail	Europe	Division Management CSR
13	Logistics	U.S.	Head of Sustainability
14	Industrial Products	U.S.	Vice President of Global Sustainability
15	Paper	Europe	Head of Group R&D
16	Apparel	U.S.	Head of Logistics and Supply Chain Management (SCM)
17	Home Appliances	U.S.	(1) Head of Sustainability and (2) Logistics and Supply Chain
18	Medical Supplies	U.S.	(1) Category Management and (2) Warehouse and Logistics
19	Food	U.S.	Supply Chain Management
20	Food	U.S.	Product Design
21	Automotive	U.S.	Product Design
22	Logistics	U.S.	(1) Human Resources and (2) Internal Consultant
23	Food	U.S.	Head of Logistics and SCM
24	Consulting	U.S.	Consultant
25	Food	U.S.	(1) Supply Chain Management and (2) Product Design and Packaging
26	Industrial Products	U.S.	Logistics and Supply Chain
27	Food	U.S.	Corporate Social Responsibility
28	Sporting Goods	U.S.	Operations and Logistics

data and the interview transcriptions were approached without direct consideration of existing theory (Corbin and Strauss 1990; Charmaz 2006). The data was broken down to make it more accessible for constant comparisons (Glaser and Strauss 1967; Fendt and Sachs 2008). Open coding resulted in approximately 1,800 codes. During the coding process, certain groups of codes with close ties emerged and consequently categories were formed.

During the focused coding phase, all codes were reviewed and further generalized (Charmaz 2006). The most frequently used codes were examined for their adequacy and renamed if necessary to include higher level concepts (e.g., when differentiating approaches by companies how sustainability programs were introduced into their supply chain, “push” and “pull” approaches were termed with the higher level concept “initiation”). This activity was not carried out in a linear fashion, but instead went back and forth to the data as more abstract concepts emerged.

The final coding phase—theoretical coding (Charmaz 2006)—aims to reassemble the data fractioned in the initial coding process and thus foster the deduction of general themes. In this phase, the data were regrouped to create the proposed typology for SSCM implementation. The analysis provided an ability to assign more generic categories and reevaluate the typology repeatedly to derive strong connections between the concepts established (Corbin and Strauss 1990).

Saturation and sample size

Data collection was concluded when category saturation was reached. The main indicator for saturation is the lack of new aspects being revealed through additional data collection (Goulding 2002; Patton 2002; Charmaz 2006; Corbin and Strauss 2008) in combination with constant comparison not indicating the existence of new properties within the categories (Holton 2010). As data analysis revealed that the main categories formed a clear picture of companies’ attempts to implement SSCM and that these emerging categories were supported by study participants, it was concluded that saturation had been reached after interviews with 28 companies. Although the number of interviews is not the key indicator of saturation, it should be noted that this amount exceeds the suggested number of eight interviews by McCracken (1988) for homogeneous samples and 12–20 interviewees for heterogeneous samples (Carter and Jennings 2002).

Research validity and ties to existing theory

To ensure high validity, the integrity of the research process was verified employing criteria for qualitative research developed by Mayring (1990). Measures taken to satisfy the criteria are summarized in Table 3.

Table 3: Actions taken to assure research validity

Criteria	Measures taken by research team
Documentation	Detailed documentation of data analysis and rigorous reevaluation of codes with multiple researchers. Use of software to structure and document the analysis.
Using conclusive arguments to validate interpretations	All interpretation of the data is documented and identified as such. Reference to quotations by participants when viable.
Methodological rigor and systematic approach	Employment of different stages of coding with reevaluation of categories. Constant comparison of codes with data.
Collecting data from real-life situations	Conducting interviews in person where possible. Semistructured interviews ensured openness to new aspects versus inflexible questionnaires.
Evaluation of results with participants	Concepts that emerged throughout the interviews were discussed with following participants.
Triangulation	Data triangulation with secondary data like sustainability reports. Researcher triangulation.

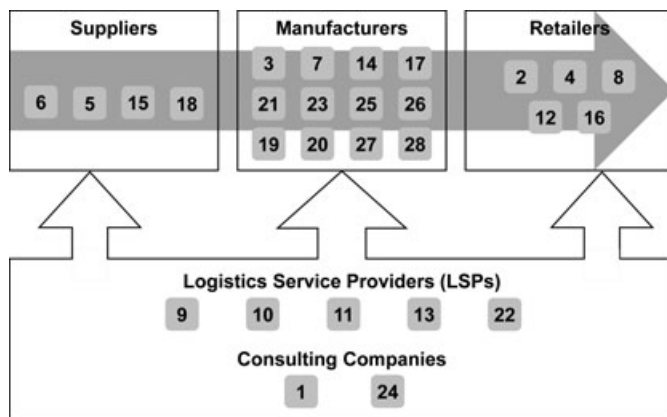
Table 4: Measures taken to ensure high quality of theory development

Criteria	Measures taken by research team
Credibility <i>Results must be adequate representations of the data</i>	Theory directly grounded in the data Interview and research process of 15 months allowed for detailed data analysis at every stage of the process Simultaneous analysis and data collection allowed for feedback and cross-checks
Transferability <i>Applicability of results to larger population</i>	Theoretical sampling Only reoccurring themes were transferred into theory
Dependability <i>Stability and consistency of results regardless of time and place</i>	The collective experience of all participants was tapped into for the study, providing a large body of know-how International nature of the study reduces strong regional impact International research team reduces potential regional researcher bias Long data collection process ensures avoidance of ad-hoc conclusions
Confirmability <i>Results are grounded in actual data versus driven by researcher bias</i>	Researcher triangulation Feedback of results with participants
Integrity <i>Results are influenced by reality and not intentionally misguided by participants</i>	Anonymity was guaranteed to all participants Interviews were conducted in a nonthreatening manner Data triangulation

Continued.

Table 4: (Continued)

Criteria	Measures taken by research team
Fit <i>The results are significant and meaningful for the topic under investigation</i>	Interviews were conducted in an open manner, allowing for participants to raise issues of importance to them All theory is directly taken from data
Understanding <i>The respondents understand the conclusions derived by research team</i>	A summary of the interviews was given to all participants as well as colleagues and practitioners for review Working results were presented on conferences (POMS 2010) and workshops (workshop about sustainable products at Indiana University, 14th–15th October 2010) and feedback was included
Generality <i>The findings cover the subject under investigation in a holistic fashion and include multiple dimensions of the topic</i>	Semistructured interviews were open and of sufficient depth to allow for multiple aspects of the issue to be discussed Interview guideline was adapted to include further aspects as pointed out by the participants
Control <i>Participants have an influence on developed theory</i>	Executives of multiple different functional backgrounds were interviewed about their take and input on the topic Focus on possible influence of participants' companies and their role in the supply chain

Figure 2: Sample-companies' positions in the supply chain.

Research validity was evaluated following the view of Glaser and Strauss (1967) that the quality of theory developed using this approach is highly dependent on its generation process. The approach was verified for GT generation following the criteria of Glaser (1978, 2002) as refined and expanded by Flint et al. (2002). Efforts to ensure high quality of theory development and methodological rigor are summarized in Table 4.

FINDINGS

Companies interviewed for the study represent the different roles of a generic supply chain: suppliers, manufacturers, retailers, and LSPs. The generic supply chain employed here is an adapted version

of the extended/ultimate supply chain model established by Mentzer et al. (2001). These terms will be employed in the remainder of this paper to identify the position of a company in the supply chain. As companies from different continents and industries were interviewed, the sample provides coverage of the different roles and views in a supply chain (see Figure 2).

With all interviewed companies, their individual understanding of sustainability was discussed at the beginning of the interview. Thus, use of common terminology during the interviews could be ensured. The understanding of the concept of sustainability in all interviewed companies resembled the TBL approach. The concept of viewing sustainability from a social, environmental, and economic perspective resonated well with the participants and was found to be an accessible approach as has also been suggested by Carter and Rogers (2008). All participants stressed that a potential positive impact on the economic bottom line was an imperative for pursuing an initiative as companies will: *...do all the things that make sense for the planet that have an economic payback*. (Interview # 23, Food, U.S.) This attitude directly supports the economic impact paradigm put forward by the employed SSCM definition established by Carter and Rogers (2008) and therefore further supports the adequacy of the current definition.

In accordance with the GSCM and SSCM literature summarized in the literature review section, the participants claimed that they felt that pursuing sustainability would help their companies build a competitive advantage in the future. Therefore, all participants had already started engaging in sustainability initiatives within the realms of their organizations. However, a lack of cooperation with other members of one's supply chain with respect to sustainability was identified in the current sample, as also suggested by the research summarized in the review of the extant literature (e.g.,

Figure 3: Typology of the supply chain approach toward sustainability.

Mandated	Collaborative
<ul style="list-style-type: none"> • Time horizon: Short/medium term, no supplier development • Implementation: Dyadic, formal • Split of Benefits: Disproportionately • Initiation: Pulled by the upstream SC partners (retail) • Communication: Low level, formal • Internal implementation: Driven by short term cost reduction or marketing opportunities 	<ul style="list-style-type: none"> • Time horizon: Long term, calling for extended supplier development • Implementation: Integrated, formal and informal • Split of Benefits: Proportionately • Initiation: Engaging SC partners • Communication: High level, formal and informal • Internal implementation: Driven by desire to achieve long term competitive advantage

Sabath and Fontanella 2002; Barratt 2004). Baird and Rowen (2010) attribute the lack of reaching out into the supply chain to the fact that companies in their sample viewed outsourced processes and logistics to be beyond their direct control and they preferred to focus on their own operations. In accordance with this, the participating companies of this study tended to have a strong internal focus and showed only limited, sporadic activity aimed at extending sustainability initiatives across their supply chain.

If companies did, in fact, extend their sustainability efforts into their supply chain, the focus with respect to sustainability can be differentiated into what can be termed “mandated” or what can be termed “collaborative.” To achieve more clarity around this apparent disconnect between perceived importance and actual implementation, a typology of SSCM implementation is developed. In accordance with Carper and Snizek (1980), Marradi (1990), and Rich (1992), the term “typology” is employed, because this is a multidimensional classification scheme of the implementation approach. The proposed typology also provides direction for further research activities and the associated propositions are detailed as they emerge. An overview of the typology is presented in Figure 3 and will be further explained in the following paragraphs. In support of the propositions that emerge around the typology, statements from the participants are incorporated into the text. In addition, further proof-quotes for each of the propositions are provided.

“Mandated” implementation of sustainability in the supply chain

The data strongly support the view that if companies reach beyond their own borders, they are currently doing so in a mandated fashion. Mandated sustainability initiatives are usually initiated by the retailers (buying firm) in the supply chain and then extended to the upstream members (selling firm), as this participant reports: *normally we approach the supplier and say*

‘hey you know for us it is a very important topic and by the way, reducing your energy input could even save your money’ (...). So it is mostly a matter of us persuading and convincing them to tackle some of the points that we show them (Interview # 12, Retail, Europe). Organized in the form of dyads, this cooperation only involves companies in subsequent tiers in the supply chain. It was the perception of the participants in the study that the initiatives were implemented in this way across the supply chain because only the stronger and more powerful members of the chain could initiate such initiatives as this participant explains: *our ability to push an agenda on sustainability to our retailers is relatively small. That is the same environment that exists with our suppliers. So it is a pull process. And it starts with leadership and the folks who have the leverage to get things done. Clearly speaking, most of our suppliers do not have that leverage* (Interview # 14, Industrial Products, U.S.). Based on the current statements (see also Table 5 at the end of this section) and the aggregated data analysis, the following proposition emerges:

Proposition 1

Sustainability efforts are currently implemented in a mandated fashion as a pull process through the supply chain and initiated by the stronger members of the chain.

Mandated sustainability initiatives are usually implemented on a formal “here is what we need you to do” basis. A good example of this is the use of codes of conduct a retailer requires their manufacturer, supplier, or LSP to sign to establish a business relationship as this participant notes: *usually the customers have a policy we have to sign or we fill out a questionnaire. There is not really a discussion* (Interview # 9, Logistics, Europe). This form of implementation can be labeled “mandated” because it does not involve much two-way conversation or sharing of best practice or experience as the following participant

Table 5: Proof-quotes for the emerging propositions

Further support for Proposition 1	<p>“I would say, at this point it is on our end. We have a lot of reaching out to suppliers to do (...) these are all things that we have initiated.” (Interview # 18, Medical Supplies, U.S.)</p> <p>“From a supplier perspective, they have never come to us. It is us coming to them. We’ve had no push from the supplier perspective. So it’s this trickle-down effect, we are a big supplier to some retailers, who have put us in their high-risk, highly monitored kind of group and we have replicated that process with our supply base. But generally speaking, our suppliers are not pushing this topic at all.” (Interview # 14, Industrial Products, U.S.)</p> <p>“The bigger companies can pretty much get suppliers to create whatever they want or at least consider it. With us, if it is not something that is emerging or readily available they are not creating it. Only in very few cases, folks are going to create something special for us because of our [small] size.” (Interview # 23, Food, U.S.)</p>
Further support for Proposition 2	<p>“Our suppliers are always involved and quite frankly, we are very tough on our suppliers. We do supplier challenges. You go out to current suppliers and potentially new suppliers and tell them what you are looking for. (...) We definitely take advantage of the resourcing, insights and capabilities that our supplier have.” (Interview # 20, Food, U.S.)</p> <p>“We haven’t had a lot of success to be honest with you. The suppliers will call and promise the world and when you sit down and dig down, in every case we’ve had so far, they are not really much further ahead than the folks we are dealing with now. There is a lot of greenwashing going on and a lot of self-promoting.” (Interview # 23, Food, U.S.).</p>
Further support for Proposition 3	<p>“I was invited to a sustainability workshop at a company recently and they just kept talking about prices for the logistics lanes in their last tender. Then somebody got up and asked if this was about sustainability or about prices and they admitted that it was just pricing negotiations but they knew we’d show up for sustainability talks...” (Interview # 7, logistics service providers of interview partner, Europe).</p> <p>“Something that deeply impressed me, (...) there were customers who had been evaluating the company and conducted a benchmark and we were in the top segment environmentally...and then finally they give you no business and make their contracts with the cheapest company.” (Interview # 10, Logistics, Europe)</p>
Further support for Proposition 4	<p>“We are moving to this notion of shared benefits and shared responsibility and that is really the key to a good relationship with any outside vendor. (...) As far as hiding the benefits of those things in partnerships, that doesn’t work. So we are really trying to roll that out across the company, this notion of shared benefits.” (Interview # 8, Food and Retail, U.S.)</p> <p>“In terms of collaboration, what I am seeing this far is that a lot of companies want to get together and not just discuss: what is our sustainability strategy? But they want to look at what organizations are doing, independently or collectively to be more sustainable and seek opportunities to collaborate. I think one other plus side from just leaning your operation (...) sustainability in a macro view really is about collaboration on one level in order to agree upon the processes, procedures and technologies that are used to move products around the globe.” (Interview # 13, Logistics, U.S.)</p> <p>“I think what I would do (...) is horizontal integration. Because I think for example trucks in Europe are on average only 20–30% full of cargo. So a huge opportunity lies in collaborating in the supply chain. But obviously there are severe obstacles; companies do not want to share data or any information about their supply chain. So I think there is a lot of work to be done in this area.” (Interview # 9, Logistics, Europe)</p> <p>“...if I sat at my desk alone, I would not have these ideas, but if you go out to talk with carriers and service providers, industry at conferences or whatever, talk to your own people; the network in Europe is big enough; then you get new ideas and some of them are really great.” (Interview # 3, Consumer Electronics, Europe)</p>

indicates: *we were in a meeting with a retailer 2 years ago. They said: ‘You WILL [emphasis added] provide us with a sustainable product’. We won’t forget. It wasn’t a question; it wasn’t a request; it was a statement* (Interview # 17, Home Appliances, U.S.). Communication around sustainability in a mandated initiative is often characterized by strict instructions that are made by the dominant party. Commonly, the communication is focused on economic aspects rather than truly broaching sustainability topics as this interviewee illustrates: *my feeling is that they are*

approaching us but not on a constructive basis that they honestly want to make suggestions or know what they are talking about or want to discuss. They are basically approaching us with a slim commercial line (...) and they just want to show off that they have less greenhouse emissions or whatever. So that is not what I feel is some kind of working together, it is more just a simple commercial pressure that is put on somebody and on the company (Interview # 10, Logistics, Europe). Based on these findings, the following proposition is established:

Proposition 2

Mandated sustainability implementations are characterized by a lack of communication and collaborative behavior.

The powerful members in the supply chain (typically retailers in this study) generally strive to capitalize on short- to medium-term cost reductions or marketing opportunities. Rather than developing a long-term competitive advantage for the supply chain as a whole, in case of mandated implementation, the low hanging fruit of working with the manufacturers is harvested by the retailer. The main motivation as a manufacturer or supplier to engage in this form of SSCM implementation is generally not to improve their own sustainability performance, but to comply with retail requirements. Consequently, these efforts can often be characterized by a lack of buy-in by the manufacturer, supplier, or LSP forced to implement the initiative because there is no or limited internal benefit on their side. The cause of this situation lies in the fact that a major characterization of mandated initiatives is the disproportionate distribution of the incurring benefits, risks, and investments across the companies involved. Specifically, evidence emerged in the data that companies with major bargaining power in the supply chain use this influence to benefit disproportionately from sustainability activity because: *if you are the power player in the supply chain, you just force all the companies around you to be green and take advantage. That is more common for larger retailers and larger players in the supply chain. So they push the cost onto their suppliers and the actual green improvements are from the suppliers but it is not necessarily more green within the four walls of the larger player in the supply chain* (Interview # 24, Consulting, U.S.). As mentioned in the literature review, work by Lee (2009), Mollenkopf et al. (2010), and Kersten et al. (2010) provide support for this finding.

Although the retailers in strong bargaining positions have the power to force their manufacturers and suppliers to implement certain sustainability measures, they will also demand potential cost-savings be passed on to them entirely and directly. Several suppliers and manufacturers across different industries indicated that they had found their large customers to use sustainability discussions as “code word” for pricing negotiations, arguing the suppliers’ sustainability initiatives would lower operating costs due to incurring efficiency gains. In certain cases, suppliers might thus even be hesitant to implement or communicate sustainability initiatives because they fear consequential price reduction demands by their customers. Plambeck (2007) reports similar problems in her analysis of Wal-Mart’s sustainability program.

Especially for generic, easily exchangeable services like basic transportation or warehousing activities as well as low-tech commodity suppliers and companies that are very much dependent on a customer that does not really depend on them, this fear was ever present when talking about sustainability-induced efficiency efforts. Several examples of this perspective emerged in the logistics sector where participants reported that they had become hesitant to fully disclose their sustainability efforts to their customers because they feared price reductions (see quote from interview # 7 in the following section). However, even companies supplying more specific products to retail customers suddenly found themselves facing pricing discussions with their retail partners after successfully implementing a program that saved energy and emissions, for example, in

their warehouses: *the retailer we worked with wanted the cost reductions passed on, that is the underlying thing* (Interview # 27, Food, U.S.). These findings lead to the following research proposition:

Proposition 3

Sustainability efforts characterized by uneven distribution of incurring benefits and risks and implemented in a mandated fashion suffer from a lack of buy-in by the dominated party.

A majority of the interviewees agreed that sustainability cannot yet be considered a standardized differentiation criterion for supplier selection processes even though its importance is widely recognized. Literature supports the importance as well as the lack of practical implementation (Handfield et al. 2002; Baumgartner and Ebner 2010; Wolf and Seuring 2010). A simple explanation would be that companies have just not adapted their institutionalized supplier selection process criteria yet and therefore currently fail to adequately consider sustainability.

Furthermore, many participants mentioned that they had trouble quantifying sustainability and were lacking the tools to assess it as part of their supplier selection process. Support for this notion can be found in the literature (e.g., Handfield et al. 2002; Staniškis and Arbačiauskas 2009; Wolf and Seuring 2010). Another possible explanation of this finding is provided by transaction cost economics (TCE). Companies perceive monitoring costs for a sustainability assessment to be high and thus often refrain from making sustainability issues a selection criterion. As introduced in the literature review, ISO 14000 certification provides a possible alternative to individual sustainability monitoring. Yet, as mentioned previously, ISO 14000 does not fully cover SSCM implementation, certification can only be a positive indicator while companies still have to make costly individual assessments. The role of TCE will be further explored in the implications section.

“Collaborative” supply chain sustainability initiatives

Collaborative sustainability efforts in this paper are defined as a higher level concept. The concept is derived from the statements and views of the participants of the study and represents their “ideal vision” of sustainability implementation in the supply chain. This vision involves at least two companies working jointly for an extended period of time on sustainability initiatives and collaboratively improving their performance on the TBL criteria. Fully implemented instances of this type of approach did not surface during the interviews; however, the participants indicated that they had a desire to get further engaged in these efforts. However, they found this collaboration to be challenging because: *the relationship is critical. To have a truly sustainable product, you have to go up and down the supply chain in both directions. If it is going to be forced on us, the result isn’t going to be as good as if it is partnership, working towards the same vision* (Interview # 17, Home Appliances, U.S.). As collaboration of this kind requires a relationship with a high degree of trust and a long-term perspective, it is most likely to evolve from preexisting strong relationships that are expanding into the area of sustainability.

The main motivation for companies to engage in collaborative sustainability efforts is the opportunity to gain long-term competitive

advantages for their whole supply chain. While participants found it difficult to pinpoint the exact source of the expected competitive advantage, there was consensus among all interviewees that collaborating around sustainability would be beneficial as opposed to more mandated forms of implementation. Existing literature (Steger 1996; Sinding 2000; Sharfman et al. 2009; Seuring 2011) supports the view that collaborative initiatives are preferable to a mandated approach as they are more likely to produce satisfactory results for all parties involved. The following statement provides support for this viewpoint: *Customers approach us very differently. Some just write a letter saying: 'This is what we want, see how you can make it happen. And because we know you will be saving fuel by being more efficient, we will pay you 5% less from now on'. So they are all about the money. Others will try to work with you and find solutions and will share benefits. That makes things a lot easier.* (Interview # 7, logistics service providers of interview partner, Europe). Based on these findings, it is proposed that:

Proposition 4

Sustainability initiatives pursued in a collaborative fashion are more likely to be accepted by supply chain members than initiatives based on "mandated implementation."

IMPLICATIONS, LIMITATIONS, AND FURTHER RESEARCH OPPORTUNITIES

Theoretical implications

As pointed out by Lee et al. (1999) and Pratt (2009), qualitative research and GT in particular is well suited to augment and elaborate existing theory. As stated in the literature review and methodology sections, there is no single "sustainability theory." In Table 1, an overview of a selection of management theories with respect to SSCM implementation is provided. In this section, these theories will be connected to the results of this study. The main research question was to identify how companies involve other members of their supply chain in their sustainability efforts. As the answer to that question, the proposed typology of sustainable supply chain implementation was developed.

The basis of the theoretical analysis is the application of stakeholder theory (SHT) to SSCM because SHT defines the relevant actors and recipients for any sustainability activity (Carter and Easton 2011). SHT explicitly points out that all members of a supply chain have to be considered stakeholders of a focal company. The notion of stakeholders is therefore part of general SCM definitions (e.g., Lambert et al. 2008) and is at the core of the SSCM definition established by Carter and Rogers (2008). The findings of this study support the importance of SHT, as the underlying tenets of the theory were referenced by the participants. Consequently, the data shows that SHT has a wide acceptance among practitioners involved in sustainability issues. On one hand, companies felt a strong push by stakeholders like customers, the government, and nongovernmental organizations to get engaged in sustainability, therefore the expected connection of SHT and sustainability is supported by the data. On the other hand, the strong internal focus held by the companies in the

sample does not fit SHT because companies either do not fully identify other members of their supply chain as important stakeholders with respect to their sustainability programs or at least do not act on this belief if they do. With respect to the statements of the participants supporting a more collaborative approach, the data suggest that companies acknowledge the need to include other members of their supply chain in their sustainability efforts, thus supporting the later conclusion.

An examination of the data suggests that companies currently have a tendency to pursue a mandated implementation approach for sustainability efforts. They use their power over other members of their supply chain to force them to implement sustainability-related measures. In addition, there is a tendency for the buying firm to skim most of the benefits even though many participants suggested that they would consider collaborative approaches to be more successful in the long run. Resource dependence theory can help explain this type of behavior as it predicts firms to use organizational power to reduce dependencies on other supply chain members by loosening relationships or diversifying (Min and Galle 2001; Connelly et al. 2011b).

The current data indicate, however, that the observed behavior can be explained by a simple lack of sufficient SSCM implementation and companies were generally interested in moving in a more collaborative direction and were also slowly starting to do so. This notion is supported by work by Pagell et al. (2010) who find companies that had already successfully implemented SSCM to work much more collaboratively than a supplier selection concept following Kraljic (1983) would suggest. They find companies in their sample to refrain from leveraging the suppliers of commodities, even though standard supplier selection concepts would expect them to do so. Rather, they find a desire for long-term collaborative relationships to progress sustainability initiatives across the supply chain. Although this behavior could not be found in the current data, the participants repeatedly suggested that they were moving in this direction.

Based on this result, the current findings were also analyzed with respect to TCE. Data from this study indicate that collaborative sustainability efforts are understood to facilitate more benefit than mandated implementation approaches—a view reported by all participating companies. This finding supports the views put forward by Seuring (2011) in his recent analysis of SSCM. Seuring (2011) further argues that SSCM implementation strongly depends on increased supplier development and monitoring of performance on a large variety of criteria. Furthermore, he cautions that increased monitoring can lead to rising transaction costs, ultimately possibly even driving costs above the value of the supply itself. If rising transaction costs for SSCM are thus inevitable, yet companies are pressured to grow more sustainable by their stakeholders, collaborative efforts for sustainability are the key to leveraging a joint effort to increase performance of the entire supply chain. Consequently, the findings of the study that collaborative sustainability efforts are preferable to mandated implementation can be supported by TCE as collaboration can be a way to reduce sustainability-related monitoring costs.

In this regard, signaling theory (ST) may also play an important role for transaction costs and SSCM implementation. ST predicts that companies have a rationale for making costly investments to convey a message to the recipient that is difficult

to imitate (Connelly et al. 2011b). As mentioned previously, ISO 14000 certification is a good example of those signaling costs incurred to indicate commitment to the constituents. With regard to both TCE and ST, this study's findings can contribute the approach of leveraging the transaction costs incurred by a sustainability effort. The data suggest that collaborative efforts can be more effective because they generate high levels of buy-in for all parties due to efficient incentives allowing everyone to benefit. As argued in the literature, TCE and ST underline the importance of bringing down the cost of sustainability implementation (Nidumolu et al. 2009; Connelly et al. 2011b). The current data suggest that collaboration provides opportunities to enhance the efficiency and effectiveness of sustainability initiatives, thus reducing the impact of the transaction costs relative to the overall benefits.

Managerial implications

This study provides several findings with high relevance for supply chain managers as well as practitioners in charge of sustainability efforts. Primarily, from the data, it can be concluded that the current level of SSCM implementation and thus the supply chain integration of sustainability initiatives can be considered insufficient. Companies should consider quickly stepping up their involvement with other members of their supply chain in their implementation of sustainability initiatives as this will be an important opportunity to leverage their relationships. Furthermore, the data indicated that most companies currently waste the vast potential of involving other supply chain members in sustainability efforts by not approaching these outside companies in an appropriate way. The current focus on mandated implementation does not allow for sustainability initiatives to generate as much impact as they could because there is a misalignment of incentives. If the less powerful players in the supply chain (often the suppliers) are not allowed to benefit from sustainability improvements, they will not fully endorse initiatives, thus falling short of the potential. Power players in the supply chain should possibly even consider enabling suppliers to contribute more to the sustainability initiatives by helping them with the necessary resource investments. Pagell et al. (2010) find evidence of companies already making sustainability initiatives an important part of their supplier development efforts and also financing investments that their suppliers could not have managed on their own. Although this study did not contain any participants who had experienced efforts in this direction, several interviewees mentioned that they would be willing to explore the possibilities. The results of the study should encourage practitioners to engage in collaborative efforts around sustainability to build long-term competitive advantage for their own company as well as their supply chain.

Limitations and future research opportunities

The selected GT approach for this analysis has provided rich data and meaningful insights into the research question. However, there is a potential limitation of using theoretical sampling. The study did not ask standardized survey questions and has a limited sample size. Thus, the results of this study may not be fully representative of the population. However, findings of GT research can be employed to derive research propositions and make suggestions for further work. Following the examples of Closs et al.

(2010) and Flint et al. (2005), the propositions that emerged from the findings serve as an impetus for follow-up research.

Opportunities also emerge for researchers to empirically analyze sustainability in the supply chain across different industries. Given the wide focus of the article, the analysis did not focus on looking at potential industry differences. Analysis in this direction may prove to be valuable as differences between industry sectors and market types can be expected.

When companies extend their sustainability efforts into their supply chain, the data indicate a "mandated implementation" approach to be prevalent. There were strong indications that this approach may lead to suboptimal results due to misaligned incentives. The research proposition can be employed as starting points for hypotheses examining this idea. Propositions 1 and 2 can be used for a quantitative validation of the mandated implementation of sustainability initiatives. Propositions 3 and 4 provide possibilities to analyze the current misalignment of the incentives in the supply chain as well as develop approaches for collaborative initiatives.

Based on the collected data and in accordance with TCE and ST, collaborative work in sustainability is recommended as described previously and companies are encouraged to press for a fair distribution of benefits, creating win-win situations for themselves and other members of their supply chain. This study provides initial ideas for possible relationships between collaboration and transaction costs that should be further pursued empirically as well as using modeling approaches. Researchers may also want to consider engaging in research around the fundamental question, in what ways intensified collaboration with suppliers as well as customers can enhance the TBL performance of a focal company.

In accordance with general relationship models (e.g., Lambert et al. 2009), companies should carefully evaluate and select their strategically important business partners and approach them with collaborative sustainability opportunities. In terms of potential future research, the need for additional insights into the supply chain dynamics with regard to sustainability emerges. Researchers can provide comprehensive models on how to structure relationships in the supply chain to address the problems of incentive alignment. Partnership models should be expanded to include sustainability issues and provide direction for appropriate ways to allocate benefits and risks across the supply chain.

CONCLUSIONS

Based on the findings and the theoretical and managerial implications, it can be concluded that SSCM implementation is at an early stage of development. Companies have yet to embrace the idea of fully implementing sustainability into their supply chain relationships. The current dominant perspective to focus internally with respect to sustainability cannot produce satisfactory results in terms of TBL performance in the long term. Furthermore, when companies do extend sustainability efforts into the supply chain, they typically take a mandated implementation, which was viewed by several companies as a suboptimal approach. Both from a theoretical point of view and a view supported by the current data, a more collaborative supply chain implementation approach to sustainability, featuring long-term relationships, supplier development, and fair distributions of incurring burdens and benefits promises

enhanced results on all three bottom lines. This conclusion is further supported by the fact that the majority of the respondents indicated that sustainability efforts should not be considered as only a fad or a passing phase, but as a major business trend that will continue to evolve in the years to come. Therefore, companies are encouraged to actively seek out sustainability opportunities and be willing to take risks associated with these efforts. Just like any business trend sustainability requires know-how that can only be acquired through experience.

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SHORT BIOGRAPHIES

Sebastian Brockhaus (Diplom degree University of Hamburg) is a research associate at the Institute of Business Logistics and General Management at the Hamburg University of Technology. His research focuses on sustainability in supply chain management and supply chain relationships.

Wolfgang Kersten (doctoral degree from the University of Passau) is Professor for Logistics and Director of the Institute of Business Logistics and General Management at the Hamburg University of Technology. Prof. Kersten's research focuses on the areas of supply chain risk and complexity management, sustainability in supply chain management, and project management.

His work appears in several anthologies and conference proceedings as well as other international outlets.

A. Michael Knemeyer (PhD University of Maryland at College Park) is an Associate Professor of Logistics at the Fisher College of Business, The Ohio State University. His research focuses on the areas of logistics outsourcing and supply chain relationships. Dr. Knemeyer's work has appeared in the *Harvard Business Review*, *California Management Review*, the *Journal of Business Logistics*, the *International Journal of Logistics Management*, *Transportation Journal*, *Journal of Supply Chain Management*, and *International Journal of Physical Distribution and Logistics Management*.