

Developing sustainability in global supply chains: the role of secondary stakeholders

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DOCTORAL THESIS

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Abstract

Developing sustainability in supply chains is a pressing concern for businesses. To address such concerns buyer firms frequently adopt sustainable supply chain management (SSCM) based on supplier assessment and supplier collaboration. The effectiveness of supplier assessment and supplier collaboration for improving environmental and social outcomes in global supply chains characterized by high geographic distance between buyers and suppliers, however, is increasingly debated. Anecdotal evidence and recent research suggests that secondary stakeholders that are not traditionally considered part of the supply chain, such as NGOs or trade associations, can aid buyer efforts to develop sustainability in their global supply chains (GSCs). The purpose of this research was to explore the development of sustainability in GSCs. To achieve the research goal a systematic literature review focused on the main structural and relational elements that characterize SSCM in GSCs was conducted first. The results of the systematic review suggest that further analysis of geographical distance and of the role of secondary stakeholders is needed for understanding how sustainability can be developed in GSCs. Building on these results, statistical analysis of secondary data from 186 certified B-Corps was then carried out to examine the relationship between geographical distance, secondary stakeholder engagement, and buyer firm adoption of supplier assessment and collaboration for sustainability. Results suggest that buyer adoption of supplier assessment and collaboration is greater in presence of geographic distance, and that secondary stakeholder engagement negatively moderates this relationship. Qualitative research based on a case study of the fresh banana supply chain in Costa Rica was then conducted to explore the role of secondary stakeholders in greater depth. Results suggest that secondary stakeholders play specific roles and operate simultaneously for developing sustainability in the upstream part of the GSC. This research contributes to extending the SSCM literature by highlighting the role of secondary stakeholders for developing sustainability in global supply chains. The research also has implications for managers and policymakers.

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1

Introduction

1.1 Introduction to the Ph.D. dissertation topic

During the past three decades, globalization and increased competition have fuelled a rise in the number of firms that seek to gain competitive advantage by sourcing from competent, low-cost suppliers in countries across the globe. Global supply chains (GSCs) are supply chains managed in a unified and coordinated fashion that transcend a single country's borders for sourcing goods and services (Ferdows, 1997; Mudambi, 2008). While GSCs create economic benefits for both buyer firms and suppliers, they are also linked with increased degradation of the natural environment and exacerbation of social problems such as violations of human rights, low wages, and unsafe working conditions (Gereffi & Lee, 2012; Harrison, 1994). The rise of GSCs thus poses challenges in terms of developing sustainability, which is defined as development that meets the needs of current generations without compromising the ability of future generations to meet their own needs (Brundtland, 1987). Extant supply chain research on development of sustainability in global settings, however, is still scarce. As noted by Quarshie et al. (2015, p. 92) in their review of sustainability and corporate social responsibility in supply chains "surprisingly few studies explicitly aimed to advance our knowledge of the global aspects of sustainable supply chains".

Sustainable supply chain management (SSCM) seeks to develop sustainability in supply chains by incorporating social and environmental goals in addition to the traditional economic goals. Seuring and Muller (2008, p. 1700) define SSCM as the “management of material, information and capital flows as well as cooperation among companies in the supply chain while taking goals from all three dimensions of sustainable development (economic, environmental and social) into account which are derived from customer and stakeholder requirements”. This definition makes it clear that stakeholders play an important role in the development of sustainability in supply chains. The role of traditional supply chain stakeholders in the development of sustainability has been researched. Suppliers, especially those that are closer to the point-of-extraction of raw materials, are the riskiest in terms of negative sustainability outcomes (Villena & Gioia, 2018). Buyer firms adopt SSCM to meet customer expectations regarding sustainability (Gualandris & Kalchschmidt, 2014; Sharma & Henriques, 2005) and improve internal and external sustainability performance (Rao & Holt, 2005; Sancha, Gimenez, et al., 2015). However, the influence of secondary stakeholders that are not traditionally considered members of a supply chain (e.g., NGOs or communities) is also growing. Scholars have highlighted the role of such secondary stakeholders in terms of creating awareness of sustainability issues in GSCs. This was the case in the late 1990s when Nike was the focus of intense activism over the presence of child labour in its extended supply chain (Locke & Romis, 2007), in 2007 when Mattel was forced to recall over \$100 million worth of product due to the presence of lead in paint used by its offshore suppliers (Roloff & Abländer, 2010) or in 2015 when LG and Samsung were targeted by Amnesty International over the sourcing of cobalt mined by child laborers in the Democratic Republic of Congo (Hofmann et al., 2018). Accordingly, extant research recognizes that a multitude of stakeholders exert pressure for firms to develop sustainability and that placating stakeholder sustainability-related pressures is a frequent, but not exclusive, reason for adoption of sustainability practices, including SSCM.

Deploying SSCM to develop sustainability in GSCs, however, is challenging. A GSC can be conceptualized as a set of vertical and horizontal relationships between buyers, suppliers, and secondary stakeholders spanning multiple geographies. Extant studies show that structural characteristics of GSCs such as geographical distance between buyers and suppliers limit the effectiveness of SSCM for developing sustainability in GSCs (Busse et al., 2016), but few studies explicitly examine how supply chain structure influences the development of sustainability in GSCs (Awaysheh & Klassen, 2010).

Recent studies also suggest that in global settings secondary stakeholders may play a role that is more nuanced than purely exerting pressure. For example, global buyers increasingly work with NGOs or participate in multistakeholder initiatives to develop sustainability certifications and provide training to global suppliers (Alvarez et al., 2010; Vellema & Van Wijk, 2015). Such studies provide initial evidence that businesses are increasingly engaging with secondary stakeholders in novel ways to develop sustainability in their GSCs. Nevertheless, the role of secondary stakeholders in developing sustainability in GSCs remains under-researched and the relationship between SSCM, supply chain structural characteristics, and secondary stakeholder engagement has not been extensively investigated.

The overarching goal of this Ph.D. dissertation is to explore how to develop sustainability in global supply chains. Specifically, we consider *i*) the role of structural characteristics of GSCs, and *ii*) the role of secondary stakeholder engagement for developing sustainability. Understanding how structural characteristics of GSCs impact adoption of SSCM and shedding light on the underexplored role of engagement with secondary stakeholders that are not traditionally considered part of a supply chain will inform our goal of furthering understanding of how sustainability can be developed in global settings.

1.2 Structure of the Ph.D. dissertation

This Ph.D. dissertation takes the form of a monograph based on three manuscripts written for publication, but that are not necessarily all published yet. The three manuscripts correspond to the central chapters of this body of research and build on each other to achieve the overarching research goal.

Chapter 2 contains the overarching framework where the central topic of the thesis, which is the study of development of sustainability in GSCs, is established. A literature review focused on the constructs of SSCM and secondary stakeholder engagement is presented, followed by research gaps and research questions to be answered. This chapter also provides an overview of the research design and theoretical perspectives employed to address the research questions.

Chapter 3 presents the main structural and relational aspects of SSCM in GSCs that have been studied in the literature and identifies research gaps that can guide future studies. A systematic literature review focused on SSCM in GSCs was conducted and structured content analysis was applied (Seuring & Gold, 2012). The results suggest that supply chain structure and supply chain governance mechanisms are key elements for developing

sustainability in GSCs. The manuscript is entitled “A systematic review of sustainable supply chain management in global supply chains” and it was written in collaboration with Dr. Annachiara Longoni. The research was presented in the EurOMA Sustainable Operations and Supply Chains Forum in 2017, and the results have been published in the *Journal of Cleaner Production*.

The results obtained in chapter 3 suggest that further exploration of supply chain structure and governance mechanisms is needed for understanding how sustainability can be developed in a global context. Chapter 4 is thus focused on analysing the relationship between geographical distance between buyers and suppliers, buyer engagement with secondary stakeholders, and buyer adoption of supplier assessment and collaboration. Statistical analysis of secondary data is employed to examine the extent to which buyer firms adopt supplier assessment and collaboration in presence of geographic distance as well as consider the moderating role of secondary stakeholder engagement. Results suggest that geographical distance positively impacts buyer firm adoption of supplier assessment and collaboration, and that secondary stakeholder engagement negatively moderates this relationship.

Building on the results attained in chapter 4, chapter 5 is focused on exploring the role of secondary stakeholders in developing sustainability in GSCs in greater depth. Taking a network perspective, a case study with embedded units is used to explore how secondary stakeholders are positioned in the network of information ties regarding social sustainability in a GSC and the mechanisms they adopt to contribute to developing social sustainability in the upstream portion of GSC. The results suggest heterogenous secondary stakeholders operate simultaneously and play specific roles at the node and network levels. This research was presented at the EurOMA conference in 2018 and in the EurOMA Sustainable Operations and Supply Chains Forum in 2019.

Chapter 6 recaps the main results of the Ph.D. dissertation and summarizes the answers to the research questions. This chapter also develops the scholarly and managerial contributions derived from this body of research and ends with the main limitations of this Ph.D. dissertation and avenues for future research derived from its main results. For parsimony, all references are presented in a single section at the end of chapter 6.

2

Overarching framework

2.1 Literature review

This Ph.D. dissertation is anchored in the sustainable supply chain management (SSCM) literature. Given the scope and breadth of SSCM research, this section focuses on reviewing the state-of-the-art of the main constructs of interest, namely global supply chains (GSCs), SSCM in global settings, and the role of secondary stakeholders in developing sustainability in GSCs.

2.1.1 Global supply chains

Global supply chains (GSCs) involve firms that manage all the business functions associated with delivering goods and services to customers in multiple countries in a coordinated fashion (Cohen & Mallik, 1997). Goods and services are created by geographically dispersed suppliers that are responsible for different stages of production. Buyers and suppliers in the GSC are linked through diverse sourcing and contractual arrangements, and large firms that sell branded products are assumed to play a key role in dictating how the supply chain operates (Gibbon et al., 2008). GSCs have been associated with improved economic outcomes for both buyers and suppliers (Brennan et al., 2015; Minten et al., 2009). Buyers capitalize on economies of scale and scope as well as the possibility of sourcing from

competent, low-cost suppliers (Manuj & Mentzer, 2008). Suppliers benefit from integration into global markets and gain opportunities to improve production technology, knowledge, and skills (Meyer, 2004; Raynolds et al., 2004). Production processes in GSCs, however, are also associated with harmful environmental and social outcomes. Negative environmental and social outcomes such as increased consumption of resources and degradation of the natural environment as well as labour issues and exacerbation of local social problems are repeatedly associated with GSCs (Gereffi et al., 2011; Plambeck et al., 2011). Furthermore, mounting evidence suggests that the most severe environmental and social issues take place in the upstream portions of GSCs (Villena & Gioia, 2018).

2.1.2 Sustainable supply chain management in GSCs

Sustainable supply chain management (SSCM) is proposed for incorporating social and environmental goals in addition to the traditional economic goals (Carter & Rogers, 2008). Therefore, SSCM can be defined as the management of material, information, and capital flows as well as cooperation among companies in the supply chain while taking goals from all three dimensions of sustainability (economic, environmental, and social) into account which are derived from customer and stakeholder requirements (Seuring & Muller, 2008). Scholarly interest in SSCM has surged over the past decade, and the literature has gradually coalesced around the view that SSCM is adopted across a firm's external operational processes to improve sustainability outcomes (Carter & Liane Easton, 2011; Pagell & Wu, 2009). More specifically, firms adopt SSCM activities such as supplier assessment and supplier collaboration to reduce the use of hazardous materials, minimize unnecessary packaging and increase the use of recycled/recyclable materials in purchased items and to respect human rights and improve working conditions of supply chain members (Gimenez & Sierra, 2013; Yawar & Seuring, 2017). Through the adoption of SSCM, each supply chain member is expected to improve its own sustainability performance and contribute to developing the same commitment in other members of the supply chain (Gualandris & Kalchschmidt, 2016; Spence & Bourlakis, 2009).

Supplier assessment and collaboration with suppliers for developing sustainability in supply chains are well established in extant literature. Supplier assessment refers to activities that aim to evaluate supplier environmental and social performance. Assessment can be carried out through questionnaires, codes of conduct, or audits (Gualandris et al., 2015; Mamic, 2005). Assessment activities are initiated by the buyer firm and require compliance

by suppliers. Supplier collaboration refers to activities where buyers and suppliers work together over time to plan, execute, and improve supply network sustainability initiatives and outcomes (Krause & Ellram, 1997). Collaboration activities include supplier training, support, and development for fulfilling environmental and social goals. Although this approach is premised on cooperation between buyers and suppliers, the responsibility of managing collaboration activities is assumed to rest with the buyer (Gimenez & Tachizawa, 2012). Extant literature, therefore, currently conceptualizes both approaches as unilateral and buyer-driven; it is the buying firm that dictates and manages assessment and collaboration processes. Developing sustainability in GSCs, however, requires that each member of the supply chain improve its sustainability performance.

The effectiveness of SSCM for improving sustainability outcomes in GSCs, however, is increasingly debated. Several studies find that supplier assessment may improve buyer sustainability outcomes but is ineffective for improving supplier sustainability outcomes in GSCs (Jiang, 2009a; Locke et al., 2007; Yu, 2008). Assessment is ineffective for several reasons. First, although power asymmetry may exist between suppliers located in developing economies and developed-country buyers that operate on a global scale, buyer power to enforce codes of conduct is diluted when suppliers are geographically distant or beyond the first-tier (Grimm et al., 2016). Locke et al. (2009) further suggest that power relations in GSCs are more nuanced and buyers may not be able to enforce compliance. Second, research also shows that assessment is ineffective because suppliers located in developing economies lack the resources needed to adopt the sustainable practices required by their buyers (Achabou et al., 2017; Knudsen, 2013). Finally, there is evidence that opportunistic suppliers can engage in deception and mock compliance. In such cases, suppliers appear to be compliant with the buyer's sustainability requirements but have not adopted sustainability goals or practices in their own operations (Egels-Zandén, 2007; Huq et al., 2014).

Several studies suggest that supplier collaboration is more effective, both individually or combined with assessment, for improving environmental and social outcomes in supply chains (Formentini & Taticchi, 2016; Gimenez & Tachizawa, 2012; Lim & Phillips, 2008; Sancha et al., 2016). Global settings such as GSCs, however, present important barriers to collaboration. The first barrier is related to the investment required to carry out collaboration activities. Collaboration with suppliers for sustainability requires both monetary and managerial commitment (Andersen & Skjoett-Larsen, 2009; Reuter et al., 2010). Brockhaus et al. (2013) note that in GSCs with numerous suppliers scattered across multiple countries, cost considerations for deploying collaboration with more than a few strategic suppliers may

be prohibitive. The geographic dispersion that is inherent in GSCs also generates barriers for effective collaboration in terms of distance. Busse et al. (2016) find that geographic distance between buyers and suppliers reduces the effectiveness of collaboration with suppliers for sustainability because opportunities for interaction between supply chain members are reduced. The same authors also find that even when frequent interactions occur, cultural differences in the operating contexts of buyers and suppliers in GSCs also hinder effective collaboration for sustainability. Firm responses to sustainability requirements are also shaped by contextual elements that vary among countries such as regulation, competitive pressure, and civil society awareness of sustainability issues (Sancha et al., 2015). To summarize, geographic distance between buyers and suppliers is inherent in GSCs, but it also makes the development of sustainability through assessment and collaboration challenging.

Recognizing these challenges, scholars have started to investigate alternative approaches for developing sustainability in GSCs. Tachizawa and Wong (2014) suggest that engagement with secondary stakeholders that are not traditionally considered members of the supply chain (e.g., NGOs, competitors, certification bodies) may overcome some of the challenges for developing sustainability in complex supply chains such as GSCs. Wilhelm et al. (2016b) provide evidence for the relevance of this approach, highlighting that buyers whose supply base is numerous and distant are more likely to engage with secondary stakeholders to develop sustainability in their GSC. Research considering the role of secondary stakeholders, however, remains limited because scholarly attention has been focused on investigating SSCM from the perspective of single firms or buyer-supplier dyads.

2.1.3 Secondary stakeholder engagement in GSCs

Stakeholders are defined as any individual or group which can affect or be affected by a firm's actions (Freeman, 1984). From this broad definition, a distinction can be made between primary stakeholders and secondary stakeholders (Clarkson, 1995). Primary stakeholders are those without whose participation the firm would not survive and include shareholders, employees, suppliers, and customers. Secondary stakeholders are those who affect or are affected by the firm's actions but are not essential to its survival and include media, civil society organizations, and communities.

There is evidence that both primary and secondary stakeholders play a key role in the development of sustainability in supply chains, most notably in terms of holding firms accountable for environmental and social issues in their own operations and in the operations

of their suppliers (Hartmann & Moeller, 2014; Sharma & Henriques, 2005). Zhu et al. (2005) find that firms increased their awareness of sustainability issues due to pressure from primary and secondary stakeholders. Accordingly, stakeholder pressure is identified as a trigger for sustainable supply chain management (Seuring & Muller, 2008). Stakeholder pressure describes the extent to which a firm “is held accountable for its actions and decisions regarding product design, sourcing, production or distribution by stakeholders” (Wolf, 2014, p. 314). Firms must manage stakeholder pressure because dissatisfied stakeholders can threaten the firm’s survival by withholding or limiting access to vital resources (Frooman, 1999). In this regard, firms adopt SSCM to meet stakeholder demands and mollify stakeholder pressures (Tate et al., 2010). Studies by Ageron et al. (2012) and Foerstl et al. (2015) provide evidence that pressure from both primary and secondary stakeholders influences firm adoption of SSCM. Gualandris & Kalchschmidt (Gualandris & Kalchschmidt, 2014) find that pressure from customers influences firm adoption of internal sustainability practices, which in turn enable adoption of external SSCM.

As mentioned above, translating sustainability goals into adoption of sustainability practices in GSCs has proven challenging. Accordingly, attention has moved from understanding how stakeholders coerce firms into addressing sustainability issues through pressure towards exploring stakeholder engagement as an alternative approach for developing sustainability in GSCs, especially upstream. Stakeholder engagement refers to the practice of collaborating with primary and secondary stakeholders for developing sustainability in the supply chain (Greenwood, 2007). As detailed above, engagement between buyers and suppliers (i.e., primary stakeholders) has been previously studied by supply chain scholars. Engagement with secondary stakeholders, many of which are not traditionally considered members of the supply chain (e.g., civil society organizations), has received much less attention in the supply chain literature (Johnson et al., 2018). Although supply chain studies are few, engagement between firms and NGOs has been the most frequently studied. In this regard, Perez-Aleman and Sandilands (2008) highlight the importance of engagement with an international NGO for the development of Starbucks' global SSCM initiative. Alvarez et al. (2010) report similar findings, recognizing the importance of a local NGO in the success of Nespresso’s SSCM initiative in Central America. Lee et al. (2012) detail how global buyers partner with a local NGO to collect information about the environmental performance of Chinese suppliers. Rodríguez et al. (2016b) provide evidence that partnerships between firms and NGOs can be successful for developing suppliers and alleviating poverty. Involving the local community has also been suggested as relevant for developing sustainability in GSCs

(Gold et al., 2013; Hahn & Gold, 2014). Recent studies have also explored engagement with competitors for improving supplier assessment and collaboration efforts in GSCs (Lechler et al., 2019; Lee et al., 2020).

Differently from the supply chain literature, the global value chain literature has considered the role of secondary stakeholders that are not NGOs. Lund-Thomsen and Nadvi (2010) suggest that industry associations are key in the implementation of sustainability initiatives in GSCs. Gereffi and Lee (2014) suggest that local governments, industrial associations, and worker unions play a role in developing sustainability in GSCs. Alexander (2020) highlights the role of multistakeholder initiatives for developing sustainability in GSCs. Taken together, both streams of literature suggest that secondary stakeholders can play an important role in the development of SSCM in complex settings. However, literature has focused mainly on coercive mechanisms (i.e., exerting pressure) while collaborative approaches have received less attention.

2.2 Research gaps and research questions

The literature review allows us to highlight the following gaps in the literature that focuses on sustainability in GSCs. First, few studies explicitly focus on examining how geographic distance between buyers and suppliers (a structural characteristic that is inherent to GSCs) impacts buyer adoption of SSCM. Second, there is little research that explores engagement with secondary stakeholders for developing sustainability in GSCs. Third, there is a need to further explore engagement with secondary stakeholders for developing sustainability in GSCs from a network perspective considering focal actors that are not buyers.

This Ph.D. dissertation aims to fill these research gaps by investigating how to develop sustainability in GSCs, with a focus on studying the impact of geographic distance between buyers and suppliers and secondary stakeholder engagement. Specifically, this Ph.D. dissertation aims to address the following research questions:

- *RQ1: What is the state of the art of research on sustainable supply chain management and sustainability outcomes in global supply chains?*
- *RQ2: How does geographic distance between buyers and suppliers affect buyer adoption of supplier assessment and collaboration?*
- *RQ3: How does secondary stakeholder engagement affect the relationship between geographic distance and buyer adoption of supplier assessment and collaboration?*

- *RQ4: How do secondary stakeholders contribute to developing sustainability in the upstream portion of global supply chains?*

2.3 Research methods

The choice of research design and methods is driven by the research question and subsequent threats to validity (Bono & McNamara, 2011). Addressing the research questions that guide this Ph.D. dissertation thus requires heterogeneity in the research design of the studies that constitute chapters 3, 4, and 5.

Addressing RQ1, chapter 3 aims to shed light on the state of the art of research on SSCM and sustainability outcomes in GSCs. To answer RQ1 a systematic literature review is conducted. A systematic literature review is appropriate for mapping, assessing, and synthesizing disparate pieces of literature to develop the knowledge base within a field (Tranfield et al., 2003). Systematic literature reviews serve to identify research gaps and develop new research agendas. The systematic literature review is anchored in the phenomenon of interest; namely SSCM in GSCs. To mitigate threats to validity of this design, structured content analysis is applied (Seuring & Gold, 2012). Structured content analysis is a method used for systematically evaluating the themes of recorded communication. It is useful for producing sound literature reviews because it allows for understanding the focus of written text in a rule-governed way, thus enhancing replicability. For this chapter, 882 abstracts are assessed, and structured content analysis is applied to the full text of 66 articles.

In light of the research gaps uncovered by addressing RQ1, RQ2 and RQ3 focus on the influence of geographic distance and secondary stakeholder engagement on a focal firm's adoption of supplier assessment and collaboration in GSCs. These research questions are addressed in chapter 4 using a quantitative research design based on statistical analysis of secondary data. Specifically, this chapter uses data from the B Impact Assessment (BIA) survey, which is managed by B Lab. B Lab is a global non-profit that serves a movement of people using business as a force for good. B Lab's initiatives include B Corp Certification, administration of the B Impact Management programs and software, and advocacy for governance structures such as the benefit corporation. The sample consists of 168 firms in the consumer products and services sector based in both developed and emerging markets. We chose this sample for three reasons. First, certified B Corps are increasingly recognized for their environmental, social, and governance practices. Second, these firms are also more

likely to be open to engaging with secondary stakeholders for achieving this aim. Third, although the BIA is a self-administered survey, the information that is contained in the dataset has been validated by B Labs through several steps, increasing reliability. Given the voluntary nature of participating in the BIA, firms that complete the assessment are committed to developing sustainability not only in their internal operations but also across their supply chains and are thus representative of the population of firms that are committed to sustainability. To analyse this dataset hierarchical linear regressions are used.

Building on the answers provided for RQ2 and RQ3, to address RQ4 chapter 5 explores how secondary stakeholders intermediate with buyers and suppliers to develop sustainability in the upstream portion of a GSC. The emphasis is on interpreting the phenomenon of secondary stakeholder engagement for sustainability in GSCs. To answer RQ4 the research design is based on a case study with embedded units (Yin, 2009). The sample includes four key secondary stakeholders embedded in the fresh banana global supply chain. A combination of inductive analysis of qualitative data from interviews and social network analysis of secondary data sources is employed. A qualitative approach was selected because of the nature of the research objective, which is to gain in-depth understanding of a specific phenomenon: engagement among secondary stakeholders, buyers, and suppliers, for developing sustainability in the upstream part of a GSC. Qualitative approaches allow the researcher to study complex phenomena in their natural setting and capture contextual richness that can enhance understanding (Voss et al., 2002). An inductive approach to data analysis is suitable for developing theoretical constructs regarding phenomena that are interesting but under-researched (Eisenhardt, 1989). Inductive analysis of qualitative data is complemented with social network analysis. Social network analysis is a tool for visualizing complex networks of relationships and understanding the importance of individual actors (Borgatti & Li, 2009). Complementing inductive analysis of interview data with SNA provides a more complete picture of the mechanisms that characterize secondary stakeholder engagement for developing sustainability in GSCs. For this chapter secondary stakeholders and suppliers in a global supply chain of fresh fruits are interviewed, and network data are collected from secondary sources. Figure 2.1 describes how the central chapters of this Ph.D. dissertation related to each other.

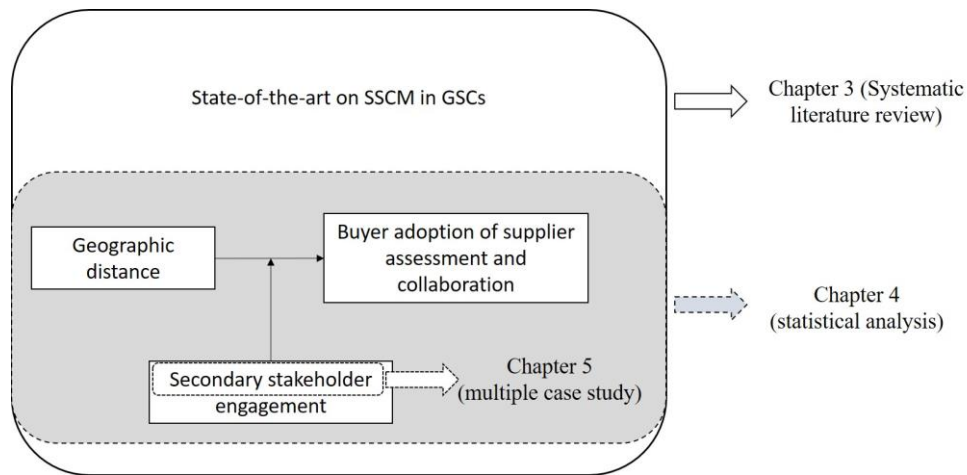


Figure 2.1 Relationship between central chapters

2.4 Theoretical lens

To accomplish the overarching research aim this Ph.D. dissertation adopts the lenses of multi-tier supply chains, information processing theory, and social network theory. A concise overview of each lens is presented below.

2.4.1 Multi-tier supply chains

The multi-tier view of supply chains suggests that describing and analysing supply chain phenomena using constructs grounded in a dyadic logic fails to capture the complexity that characterizes modern supply chains (Mena et al., 2013). Accordingly, this view conceptualizes supply chains not as interlinked dyads of buyers and suppliers, but as systems composed of at least three ties, or triads. The triad is proposed because it allows researchers to study the impact that a third actor has on the relationship between two other organizations (Choi & Wu, 2009a). This view has been used to investigate buyer-supplier-supplier relationships (Choi & Wu, 2009b), disintermediation (Li & Choi, 2009), and power structures in buyer-supplier-supplier triads (Bastl et al., 2013). More recently, the multi-tier view has been applied to theorize about development of sustainability in supply chains (Tachizawa & Wong, 2014; Wilhelm et al., 2016b). These studies suggest that contextual elements such as geographic dispersion or supplier numerosity influence the firm's choice of approach for managing supply chain sustainability. Furthermore, firms may choose to engage with stakeholders to develop sustainability in their supply chains. In this Ph.D. dissertation, the multi-tier view is used to answer RQ1. More specifically, the multi-tier view is used to guide the identification of the key elements of SSCM in GSCs.

2.4.2 Information processing theory

Information processing theory (IPT) was originally developed to explain heterogeneity in organizational forms (Galbraith, 1974). IPT is concerned with two key concepts: information processing needs and information processing capacity. According to Tushman and Nadler (1978), information processing needs arise from organizational and environmental uncertainty, and information processing capacity refers to gathering, interpreting, and using information to improve decision-making. The greater the uncertainty, the greater the firm's information processing needs. Since a firm's information processing needs must always be matched to its information processing capacity, Galbraith (1974) proposes that firms respond to increased information processing needs by either increasing their information processing capacity or reducing their information processing needs. IPT was later extended to the inter-organizational level and has since been applied to explain various supply chain phenomena including supply chain performance (Hult et al., 2004), procurement performance (Premkumar et al., 2005), responses to supply chain disruptions (Bode et al., 2011) and supply chain integration (Wong et al., 2011). In the context of sustainability, Wiengarten et al. (2017) examined the relationship between manufacturing complexity and firm environmental, social, and economic performance using an IPT lens, and Busse et al. (2017) theorize that a firm's supply chain is a source of sustainability-related information processing needs. In this Ph.D. dissertation IPT is used to address RQ2 and RQ3, which seek to explain the effect of geographic distance and secondary stakeholder engagement on buyer firm adoption of supplier assessment and collaboration. Specifically, IPT is used to argue that geographic distance increases the firm's information processing needs, and adoption of supplier assessment and collaboration is proposed as a way of increasing the buyer's information processing capacity. Secondary stakeholder engagement is proposed to reduce the buyer's information processing needs.

2.4.3 Social network theory

A social network perspective views any system as a set of interrelated actors and emphasizes that they are interconnected through a variety of economic and social relationships (Granovetter, 1985). Actors, also called nodes, are not independent, but rather influence each other through their economic or social relationships (Borgatti & Halgin, 2008). A key tenet of social network theory is that resources (e.g., money, information) flow between nodes

through their network relationships. Social network theory explains how a firm’s network relationships influence its opportunities, constraints, and behaviours (Rowley, 1997). Researchers have developed specific metrics to describe and analyse patterns of network relationships (Borgatti & Li, 2009). The most used metric at the node level is centrality, which is used for characterizing the position of an actor with its network (Freeman, 1978). Actors that occupy central positions in their network have greater opportunities for accessing resources from their relationships (Burt, 2004). Social network theory has received increasing attention from supply chain scholars and has recently been used to explain firm performance in terms of innovation (Bellamy et al., 2014) and operational performance (Kim, 2014). Social network theory has also been used to explain how sustainability initiatives spread across supply chains (Nair et al., 2015; Tate et al., 2013). Among different measures, centrality has been suggested as a determinant of sustainability approaches in supply chains (Vurro et al., 2009). More recently, Saunders et al. (2017) take a social network perspective to explore how secondary stakeholders impact the process of development, diffusion, and adoption of sustainability initiatives in supply chains. Their study suggests that secondary stakeholders that are in central positions in the supply chain manage the flow of information between buyers and suppliers. Social network theory is used in this Ph.D. dissertation to address RQ4. Specifically, the theory is used to conceptualize the global supply chains as supply networks, and to specify the ties that join buyers, suppliers, and secondary stakeholders. Additionally, the social network perspective is used to explain how the network position of secondary stakeholders influences the way they engage with buyers and suppliers.

An overview of the three chapters is provided in table 2.1

Chapter & title	Research question(s)	Research design	Analysis	Stage in the publication process
Chapter 3: A systematic review of sustainable supply chain management in global supply chains	RQ1: What is the state of the art of research on sustainable supply chain management and sustainability outcomes in global	Systematic literature review	Structured content analysis	Published in the <i>Journal of Cleaner Production</i>

	supply chains?			
Chapter 4: An information processing perspective on adoption of sustainable supply chain management in global supply chains	<p>RQ2: How does geographic distance between buyers and suppliers affect buyer adoption of supplier assessment and collaboration?</p> <p>RQ3: How does secondary stakeholder engagement affect the relationship between geographic distance and buyer adoption of supplier assessment and collaboration?</p>	Cross-sectional survey	Statistical analysis using hierarchical linear modelling	To be submitted to a leading journal in the field by September 2021
Chapter 5: The role of secondary stakeholders in developing upstream sustainability in global supply networks ¹	RQ4: How do secondary stakeholders contribute to developing sustainability in the upstream portion of global supply chains?	Case study with embedded units	Inductive analysis of interview and archival data and social network analysis of secondary data	To be submitted to the <i>Journal of Business Ethics</i> by July 2021

Table 2.1 Overview of studies

¹ Chapter 5 takes a network perspective. For this reason, throughout chapter 5 we use the term global supply network instead of global supply chain.

3

A systematic review of sustainable supply chain management in global supply chains

This article has been published
in the *Journal of Cleaner Production*.

Reference of the article:

Koberg, E., & Longoni, A. (2019). A systematic review of sustainable supply chain management in global supply chains. *Journal of cleaner production*, 207, 1084-1098. <https://doi.org/10.1016/j.jclepro.2018.10.033>

Latest quality indicators of the Journal of Cleaner Production:

Impact factor (2019): 7.246
Q1 in Business, Economics & Management
Number of citations (June 15th, 2021): 181

3.1 Abstract

Recurring controversies involving supply chain-related sustainability incidents suggest that firms with a global presence struggle to improve environmental, social, and economic outcomes in global supply chains. Sustainable supply chain management has been suggested for improving sustainability outcomes in supply chains, yet global supply chains pose unique challenges. This chapter provides a synthesis of the key elements of sustainable supply chain management in global supply chains. A rigorous systematic literature review of studies focused on sustainable supply chain management in global supply chains is conducted and structured content analysis is applied to 66 articles spanning 15 years of research published in English-language, peer-reviewed journals. The research contributes by identifying configurations and governance mechanisms as key elements characterizing sustainable supply chain management in global supply chains and synthesizing their relationship with sustainability outcomes. Overall configurations characterized by a greater connection between the focal firm and multi-tier suppliers, managed directly or through third parties, are increasing trends suggested to better serve sustainability development and offer several areas for future research. The research also contributes to practice by providing managers of focal firms with global supply chains directions for improving sustainable outcomes in their supply chains.

Keywords: sustainable supply chain management, global supply chains, governance mechanisms, configuration.

3.2 Introduction

Firms are increasingly considered accountable for the environmental, social, and economic outcomes caused by their internal operations and by their suppliers' operations (Hartmann & Moeller, 2014). Over the past two decades, sustainable supply chain management (SSCM), which is concerned with integrating environmental, social, and economic goals across a focal firm's supply chain processes, has emerged as an approach for firms to improve sustainable (i.e., environmental, social, and economic) outcomes in their supply chains (Carter & Rogers, 2008; Seuring & Muller, 2008). Managing sustainability, however, continues to be challenging in Global Supply Chains (GSCs). From Nike struggling with child labour at supplier factories in the 1990s (Lim & Phillips, 2008) to Apple besieged by employee suicides at supplier Foxconn in the early 2000s (Clarke & Boersma, 2017) to pharmaceutical companies coming under pressure for the waste management practices of their Indian

suppliers in 2016 (Marriage, 2016), supply chain-related sustainability scandals are recurring for firms with GSCs.

GSCs are complex, composed of different organizations dispersed across multiple tiers and different geographies (Choi & Hong, 2002). Distance between buyers and suppliers in GSCs poses challenges for managing sustainability. Environmental and social outcomes frequently need to be evaluated at the production site (Grimm et al., 2014), and cultural elements can cause divergent expectations regarding sustainability between buyers and suppliers (Xiao et al., 2019). Moreover, managers may have no visibility of the supply base beyond the first tier of suppliers and of suppliers located in developing economies where environmental and labour laws are lax or, where laws exist, enforcement is dubious (Carter et al., 2015).

To shed some light on how to develop sustainability in GSCs, we systematically analysed the literature on SSCM in GSCs. The need for more research on SSCM in GSCs is evidenced by Giunipero et al.'s (2008) call for research on global supply chain management issues and Quarshie et al.'s (2015) call for research into managing sustainability in global supply chains. We heed these calls for research by addressing the first of the four research questions of this Ph.D. dissertation:

RQ1. What is the state of the art of research on sustainable supply chain management and sustainability outcomes in global supply chains?

To answer this research question, we conducted a systematic literature review focused on SSCM in GSCs. Systematic literature reviews are appropriate for mapping, assessing, and synthesizing disparate pieces of literature to develop the knowledge base within a field (Tranfield et al., 2003). Furthermore, literature reviews offer the possibility of identifying gaps in research to aid in developing new research agendas. We assessed 882 abstracts and selected 66 articles for in-depth review.

We contribute to the academic debate on sustainability by consolidating and synthesizing the findings of disparate pieces of literature that consider sustainable outcomes in global supply chains. We identified two crucial elements of SSCM in GSCs as a result of our literature review: the structural dimension of the GSC –namely SSCM configurations, and the relational dimension of the GSC –namely SSCM governance mechanisms. Specifically, studies focused on SSCM configurations investigate the network of actors that compose the global supply chain and the links between these actors to manage sustainability (Parmigiani et al., 2011; Vurro et al., 2009). Studies focused on SSCM governance investigate the relational mechanisms used by focal firms to manage relationships with

supply chain members and stakeholders with the objective of implementing SSCM (Formentini & Taticchi, 2016; Sancha et al., 2016). We identify gaps related to both SSCM configurations and SSCM governance mechanisms and propose avenues for future studies to fill these gaps.

3.3 Sustainable supply chain management in global supply chains

GSCs are supply chains that extend beyond a single country's boundaries. GSCs are thus characterized by focal firms that distribute across multiple countries, locate production facilities abroad, or source from offshore suppliers (Caniato et al., 2013). Globalization has led to a rapid rise in the latter, as focal firms seek to secure competitive advantage by employing competent, low-cost suppliers located around the world (Gereffi & Lee, 2012). The distance separating a focal firm and its suppliers is thus greater, as is the number of tiers in the supply chain. Often, focal firms in GSCs are large, well-known organizations that are highly visible to end consumers and scrutinized by stakeholders for whom sustainability outcomes along environmental, social, and economic dimensions are a key concern (Seuring & Gold, 2013; Wolf, 2014).

SSCM has been proposed for integrating stakeholder concerns for profit with concerns regarding the impact of a focal firm's internal and supply management operations on ecological and social systems (Pagell & Shevchenko, 2014). Seuring and Muller (2008, p. 1700) define SSCM as "the management of material, information and capital flows as well as cooperation among companies in the supply chain while taking goals from all three dimensions of sustainable development (environmental, social and economic) into account which are derived from customer and stakeholder requirements".

Sustainability outcomes encompass the adoption of environmentally and socially responsible practices as well as the achievement of environmental, social, or economic performance. Environmental practices include investments in pollution control and prevention, adoption of environmental management systems, and achievement of environmental certifications such as ISO14001 (Awaysheh & Klassen, 2010; Delmas & Montiel, 2009). Socially responsible practices include compliance with local labour laws and adoption of social standards such as ISO26000 (Castka & Balzarova, 2008).

Performance is generally defined as the successful execution or outcome of work. Environmental performance considers efficiency in resource utilization, recycling, and reduction of pollution, waste, and emissions (Rao & Holt, 2005). Social performance

considers human rights, labour practices, and impact on local communities (Yawar & Seuring, 2017). Economic performance can be operationalized in terms of market, operational or accounting-based metrics (Golicic & Smith, 2013).

Preventing negative environmental and social outcomes and improving sustainability performance in GSCs, nonetheless, is challenging. Managerial visibility into the supply base is reduced (Carter et al., 2015), focal firm power is diluted across multiple tiers (Hoejmose et al., 2013) and sustainability expectations can diverge across geographies (Xiao et al., 2019).

3.4 Methodology

This chapter aims to systematically analyse the state-of-the-art on SSCM in GSCs identifying its key elements and the relationships studied until now. We accomplish this aim by conducting a systematic literature review based on structured content analysis. Tranfield et al. (2003) advise that systematic literature reviews serve two purposes: consolidating research findings in a specific area by mapping, assessing, and synthesizing disparate pieces of literature and identifying research gaps that can guide future research. A systematic literature review also allows for the collection and analysis of a significant amount of evidence in a manner that is transparent, reliable, and replicable. To further enhance the rigor of our literature review, we apply structured content analysis as suggested by Seuring and Gold (2012). Structured content analysis is a method used for systematically evaluating the themes of recorded communication. It is useful for producing sound literature reviews because it allows for understanding the focus of written text in a rule-governed way, thus enhancing replicability.

Seuring and Gold (2012) recommend a four-step process for conducting literature reviews based on structured content analysis. The four steps are 1) material collection, 2) descriptive analysis, 3) category identification, and 4) material evaluation. We describe each of the four steps in detail below and present the results of the material collection step. The results of the category identification, descriptive analysis, and material evaluation are presented in section 4.

3.4.1 Material collection

In this step the material to be analysed is delimited and the unit of analysis is defined. To ensure that only rigorous studies were captured in our review, we delimited our search to articles published in English-language impact factor journals. We further delimited our

search by employing keywords based on the key constructs that inform our research questions: GSCs, SSCM, and later, when specific categories of key SSCM elements in GSCs were identified, SSCM configurations and SSCM governance mechanisms. In the search we targeted papers published in the period ranging from 2003 to June 2018. This starting point was selected based on the publication dates of seminal articles on sustainability in GSCs (Frenkel & Scott, 2002; Klassen & Vachon, 2003). The search was performed on multiple databases including Scopus, ScienceDirect, JSTOR Archival Journals, PLoS, Proquest, Emerald Journals, Arts and Humanities Citation Index, Business Source Premier, Dialnet Plus, Science Citation Index, and Social Sciences Citation Index using the following keyword strings:

1. (“global supply chain*” OR “global value chain*” OR “global supply network*”) AND (“sustainable*” OR “green*” OR “social*”)
2. ("sustainable supply chain management*" OR "green supply chain management*" OR "social supply chain management*") AND ("global*")
3. ("sustainable supply chain management*" OR "green supply chain management*" OR "social supply chain management*") AND ("governance*" OR "configuration*")

A total of 2,230 articles resulted from the keyword search. After removing duplicates and filtering for peer-reviewed impact factor publications, 882 articles remained for evaluation.

We then proceeded to review the abstracts of these 882 articles to assess if they fit our research question. Accordingly, only articles with a management focus that addressed sustainability in the context of GSCs were considered relevant for further analysis. Modelling papers were also excluded from further analysis. This reduced the article dataset from 882 to 96 articles considered for further review. The full text of these 96 articles was reviewed in depth by the first author. To enhance the comprehensiveness of our review, we also used references from these 96 articles to locate additional papers relevant to our review. To illustrate how references were used to identify additional articles, we take the article by Huq et al. (2014) as an example. This article was identified through our keyword search. After reading the full article, we identified Jiang (2009a) as a potentially relevant article that was not captured by our keyword search. We acquired and evaluated Jiang (2009a) to assess if it fits our research question. In this manner we identified 13 additional articles that were considered relevant for our review of SSCM in GSCs. The material collection step thus yielded a dataset composed of 109 articles, all of which were analysed in-depth.

Subsequently, 43 articles were excluded from the dataset because they did not sufficiently fit our research question. Therefore, the final article set considered for analysis is composed of 66 articles. Figure 3.1 summarizes the search, evaluation, and inclusion process.

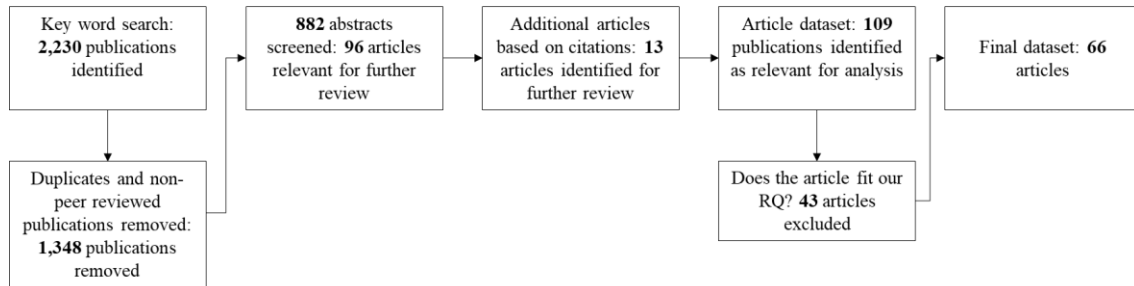


Figure 3.1 Article search, evaluation, and exclusion process

3.4.2 Descriptive analysis

In the descriptive analysis step the formal characteristics of the articles collected are assessed to provide background for the subsequent evaluation of each article's content. The formal characteristics assessed for each article included in our review were: publication date, publication outlet, methodology, data analysis technique, and theoretical perspective brought to bear.

3.4.3 Category identification

In this step the analytic categories that allow for classifying the reviewed material are identified. As suggested by Seuring and Gold (2012), we followed a two-step process combining deductive and inductive approaches for identifying analytic categories. First, we deductively established base analytic categories drawing from Tachizawa and Wong's (2014) framework for SSCM in multi-tier supply chains. This framework, which well represents GSCs, proposes that focal firms follow different approaches to manage sustainability outcomes in multi-tier supply chains. The approaches are composed of supply chain structures, supply chain relational mechanisms, and sustainability outcomes. These three elements were thus established as base analytic categories. Subsequently, the base categories of supply chain structure (i.e., SSCM configurations), supply chain relational mechanisms (i.e., SSCM governance mechanisms), and sustainability outcomes were inductively and iteratively refined during the analysis of the 66 articles.

3.4.4 Material evaluation

In the material evaluation step all articles were coded against the categories identified in the previous step. Sustainability outcome dimensions were coded to reflect the focus of each article on either the environmental, social, or economic dimensions. We also considered combinations of the three sustainability outcome dimensions (e.g. all three dimensions may be considered in a single study).

Once all articles had been coded for sustainability outcomes we identified key elements of SSCM in GSCs and analyzed how literature related them to sustainability outcomes and to each other. To this end, each article was coded to reflect the structure of the supply chain (i.e. SSCM configuration) and the relational mechanisms used by the focal firm to manage sustainability outcomes (i.e. SSCM governance mechanisms). We also identified gaps in extant research that can guide future studies.

3.5 Results

This section contains the results of the descriptive analysis, category identification, and material evaluation steps. The results of the descriptive analysis present bibliographic data and research design for each article and serve to contextualize the results of the category identification and material evaluation steps. Key elements of SSCM in GSCs (i.e., configurations and governance mechanisms) are identified as a result of the category identification step. Within the material evaluation step we analyse the content of the 66 articles and synthesize the state-of-the-art on these key elements.

3.5.1 Descriptive analysis

We analysed the trend in publication dates to gain information about the evolution of SSCM research in GSCs across time. All articles were published between September 2003 and January 2018. Rising scholarly interest in sustainability in GSCs is reflected by 61% of the articles published after 2010. Figure 3.2 depicts the distribution of articles across the reviewed time period.

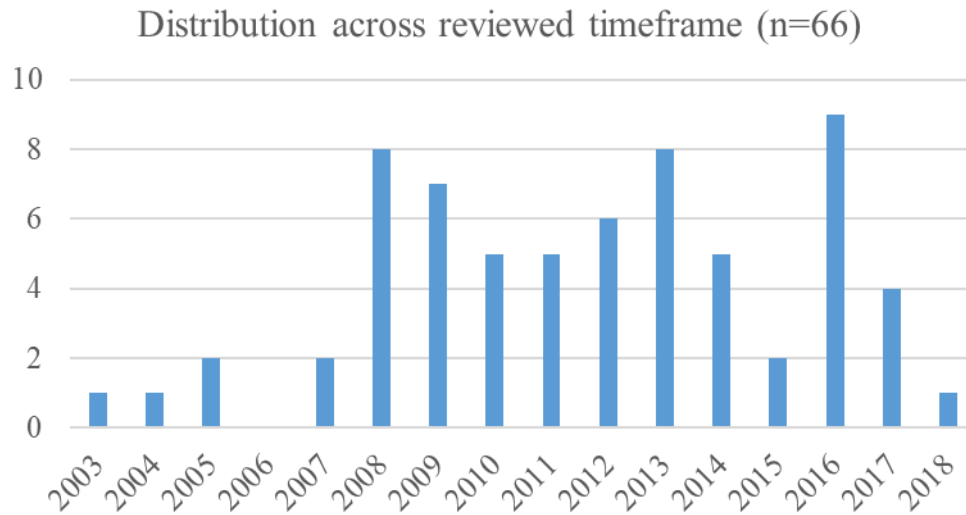


Figure 3.2 Article distribution across the reviewed timeframe

We analysed the outlets for the articles in our dataset to understand the extent to which SSCM in GSCs has been considered by researchers in operations management as well as researchers in other fields of management. The 66 articles considered for our review are distributed across 27 journals in multiple research domains. The presence of SSCM research in journals outside the operations management domain may reflect the increasing importance of supply chains in relation to competitive advantage (Cooper et al., 1997) as well as increasing recognition by scholars in different fields of the possibilities that supply chain management presents for addressing sustainability concerns (Quarshie et al., 2015). Table 3.1 presents the journals considered in our dataset.

Journal Title	Articles (n=66)
Journal of Business Ethics	13
Business Strategy and the Environment	7
Supply Chain Management: An International Journal	6
Journal of Cleaner Production	6
International Journal of Operations & Production Management	4
Journal of Operations Management	4
Journal of Supply Chain Management	3
International Journal of Production Economics	3
Journal of Business Logistics	2
Corporate Social Responsibility and Environmental Management	1
International Journal of Physical Distribution & Logistics Management	1
Production and Operations Management	1
Journal of Purchasing and Supply Management	1
International Journal of Production Research	1

Journal of Economic Geography	1
Journal of Economics and Management Strategy	1
Journal of Engineering and Technology Management	1
Journal of International Development	1
Ecological Economics	1
European Management Journal	1
International Business Review	1
Organization Studies	1
Production Planning & Control	1
Third World Quarterly	1
Regulation and Governance	1
California Management Review	1
Asia Pacific Business Review	1

Table 3.1 Reviewed paper distribution across journals

Regarding methodology, consistent with previous reviews, we classified articles as conceptual, qualitative, quantitative, or mixed methods. Articles that employ quantitative, qualitative, or mixed methods for analysing empirical data are the most prevalent in the reviewed literature and account for 85% of the total. The remaining 15% are conceptual articles. Table 3.2 presents a summary of the research methodologies present in our dataset.

Research method	# of articles (n=66)
Conceptual	10
Qualitative	37
Quantitative	17
Mixed methods	2

Table 3.2 Research methods

We also analysed the empirical articles in terms of data collection and analysis techniques. Qualitative articles are based on multiple case studies (22 articles), single case studies (11 articles), grounded theory (2 articles), and content analysis (2 articles). Interviews are the main source of data for articles that use case studies and grounded theory, while articles that use content analysis draw data from firm CSR and sustainability reports.

Among the articles that employed quantitative techniques, most relied on survey data (15), one relied on secondary data, one is a meta-analysis. Finally, the two articles classified as mixed methods combined interview and survey data.

We analysed the theoretical lens brought to bear in each article to understand the different vantage points from which the phenomenon of SSCM in GSCs has been studied thus far. Over half the articles lack a clear theoretical basis (40 articles). The remaining 26

articles draw from a wide range of theories and are split between those that draw from multiple theories simultaneously (10 articles) and those based on a single theoretical perspective (16 articles). The most common theoretical lens are transaction cost economics, the resource-based view, and institutional theory.

3.5.2 Category identification

To structure our analysis of the literature we followed the conceptual framework proposed by Tachizawa and Wong (2014) and established supply chain structure, supply chain relational mechanisms, and sustainability outcomes as initial analytic categories. These initial categories were then inductively refined throughout the material evaluation step. The final analytic categories used to synthesize the content of the reviewed articles were thus abductively developed during the process of completing the literature review. As a result, SSCM configurations and SSCM governance mechanisms emerged from our review of the literature as key elements of SSCM in GSCs. Each category is described in Table 3.3.

Category	Description	References
Sustainability outcomes	Describes adoption of environmentally and socially responsible practices and/or improvement of environmental, social, or economic performance.	Foerstl et al. (2015); Golicic and Smith (2013); Yawar and Seuring (2015)
SSCM configurations	Describe the structural arrangement of supply chain actors and the linkages among them.	Mena et al. (2013); Tachizawa and Wong (2014)
SSCM governance mechanisms	Describe the relational mechanisms through which focal firms coordinate sustainability initiatives in their supply chains.	Formentini and Taticchi (2016); Gimenez and Sierra (2013); Gimenez and Tachizawa (2012)

Table 3.3 Category overview and description

All articles were thus coded to reflect the structure of the supply chain (i.e. SSCM configurations) and the relational mechanisms used by the focal firm to manage sustainability outcomes (i.e. SSCM governance mechanisms). Supply chain structure was coded to reflect the existence (or absence) of a link between *i*) a buyer and its direct suppliers, *ii*) a buyer and its sub-suppliers and, *iii*) a buyer and secondary stakeholders other than suppliers. Relational mechanisms were coded according to the specific practices used by focal firms to coordinate upstream sustainability initiatives.

SSCM configurations

Consistent with Tachizawa and Wong's (2014) conceptual framework, different types of supply chain configurations emerged during our review. We defined SSCM configurations based on the structural arrangement of supply chain actors and the linkages among them in a multi-tier supply chain.

The most prevalent configuration, coded in 45 articles, represents the traditional supply chain, where the buyer has a link only with first-tier suppliers and no direct link to sub-suppliers. Following Mena et al. (2013), who proposed that different supply chain management configurations characterize multi-tier supply chains, we term this SSCM configuration "open". In open SSCM configurations, focal firms make efforts to extend sustainability to their first-tier suppliers (Gimenez and Tachizawa, 2012). First-tier suppliers, in turn, may be tasked with extending sustainability to their own suppliers (Wilhelm et al., 2016a).

The second configuration that emerged during our review is characterized by the inclusion of secondary stakeholders within the supply chain. Following Tachizawa and Wong (2014), we term this configuration "third party". Coded in 28 articles, in this configuration the buying firm may collaborate with secondary stakeholders such as NGOs to provide suppliers with training and assistance aimed at improving sustainable outcomes or delegate the assessment of suppliers to standardization organizations.

The third configuration that emerged during our review, termed "closed", is characterized by buyers that establish formal links with both first-tier suppliers as well as sub-suppliers. Coded in only 6 articles, this configuration has only recently been the object of studies (e.g. Grimm et al., 2014; Wilhelm et al., 2016b). The limited evidence available suggests that in closed SSCM configurations, the buyer establishes direct contact with its sub-suppliers and attempts to manage the relationship through formal or informal means to improve upstream sustainability outcomes (Grimm et al., 2016). The three SSCM configurations identified in our review are summarized in Table 3.4.

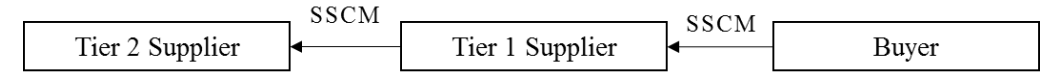
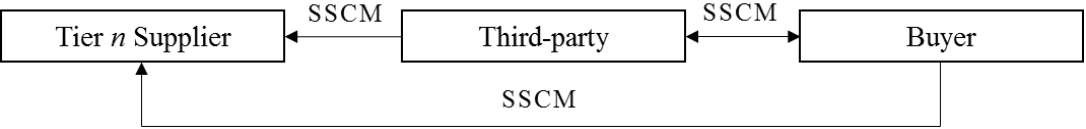
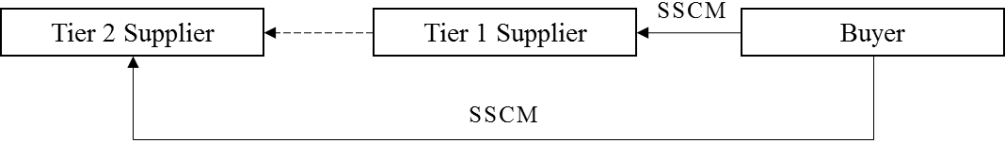
Selected References	SSCM Configurations	
Rao et al. (2005); De Marchi et al. (2013); Golicic and Smith (2013); Huq et al. (2014); Turker and Altuntas (2014); Busse et al. (2016); Wilhelm et al. (2016a)	Open	 <pre> graph RL Buyer[Buyer] -- SSCM --> T1[Tier 1 Supplier] T1 -- SSCM --> T2[Tier 2 Supplier] </pre>
Alvarez et al. (2010); De Marchi et al. (2012); Gold et al. (2013); Vellema and Van Wijk (2015); Wilhelm et al. (2016b); Liu et al. (2018)	Third-party	 <pre> graph RL Buyer[Buyer] -- SSCM --> TP[Third-party] TP -- SSCM --> Tn[Tier n Supplier] Buyer -- SSCM --> Tn </pre>
MacCarthy and Jayarathne (2012); Gold et al. (2013); Grimm et al. (2014); Grimm et al. (2016); Wilhelm et al. (2016a); Wilhelm et al. (2016b)	Closed	 <pre> graph RL Buyer[Buyer] -- SSCM --> T1[Tier 1 Supplier] T1 -.-> T2[Tier 2 Supplier] Buyer -- SSCM --> T2 </pre>

Table 3.4 SSCM configurations identification

SSCM governance mechanisms

Besides multiple SSCM configurations, a wide range of SSCM governance mechanisms emerged from our review. The most prevalent SSCM governance mechanism, coded in 62 articles, is characterized by the focal firm gathering of information to monitor and evaluate supplier environmental and social performance (Gualandris et al., 2015) as well as adherence to focal firm's codes of conduct (Jiang, 2009a; Mamic, 2005; Yu, 2008) and private standards (Macdonald, 2007). This mechanism has been labelled supplier assessment.

The second most frequent SSCM governance mechanism, coded in 40 articles, is characterized by communication, knowledge sharing, training, and support provided by the focal firm to improve supplier capabilities or performance related to environmental, social, or economic goals; and it has been labelled supplier collaboration (Andersen and Skjoett-Larsen, 2009; Busse et al., 2016; Gimenez and Sierra, 2013; Sancha et al., 2016). An additional SSCM governance mechanism adopted by focal firms, coded in 7 articles, is to collaborate with other corporations, civil society organizations, and other actors such as government, academia, or unions to improve supply chain environmental, social, or economic outcomes; and it has been labelled multi-stakeholder initiative (Fransen & Kolk, 2007).

Furthermore, our review suggests that focal firms also rely on SSCM governance mechanisms developed by secondary stakeholders to manage sustainability outcomes in GSCs. Such SSCM governance mechanisms can be industry-specific, such as the Forest Stewardship Council (Mueller et al., 2009; Reinecke et al., 2012). Differently, SSCM governance mechanisms developed by secondary stakeholders such as ISO26000, SA8000, or Fair Trade are applicable in multiple industries (Castka and Balzarova, 2008; Ciliberti et al., 2009; Mueller et al., 2009).

SSCM governance mechanisms to achieve sustainability outcomes in GSCs have thus been grouped into direct and indirect mechanisms (Gimenez and Sierra, 2013). Direct SSCM governance mechanisms require that the focal firm invest time and resources on managing relationships with suppliers (Klassen & Vachon, 2003). Differently, indirect SSCM governance mechanisms are based on third-party standards and do not require that the focal firm invest time and resources on managing its suppliers' sustainability outcomes (Gereffi et al., 2005). Both direct and indirect SSCM governance mechanisms are represented in our review: 55 articles consider direct governance mechanisms and 11 articles consider indirect governance mechanisms.

SSCM governance mechanisms, therefore, can be defined as practices and initiatives used by the focal firm to manage relationships with supply chain members and stakeholders

with the aim of improving sustainability outcomes (Formentini and Taticchi, 2016). Table 3.5 summarizes the SSCM governance mechanisms identified in our review.

Selected References	SSCM Governance mechanisms	
Mamic (2005); Yu (2008); Jiang (2009a); MacDonald (2007); Awaysheh and Klassen (2010); Seuring (2011); Gualandris et al. (2015); Sancha et al. (2016); Formentini and Taticchi (2016); Achabou et al. (2017)	Supplier assessment, codes of conduct, and private firm standards.	Direct
Andersen and Skjoett-Larsen (2009); Gold et al. (2013); Gimenez and Sierra (2013); Sancha et al. (2016); Formentini and Taticchi (2016)	Supplier collaboration (e.g., training, financial support)	
Von Geibler (2013); Gereffi and Lee (2014); Vellema and Van Wijk (2015); Liu et al. (2018)	Multi-stake holder initiatives (e.g., Roundtable for Sustainable Palm Oil)	
Mueller et al. (2009); Manning et al. (2012); Reinecke et al. (2012)	Third-party industry-specific certifications (e.g., FSC).	Indirect
Raynolds (2004); Nadvi (2008); Castka and Balzarova (2008); Ciliberti et al. (2009); Delmas and Montiel (2009); Mueller et al. (2009); Simpson et al. (2012); Vermeulen (2013); Kauppi and Hannibal (2017)	Third-party multi-industry certifications (e.g., ISO14001, SA8000, ETI, FLA).	

Table 3.5 SSCM governance mechanisms identification

Sustainability outcomes

We also analysed the frequency with which sustainability outcomes were considered along the environmental, social, and economic dimensions. The majority of articles reviewed focus on all three dimensions of sustainability (29%) or the environmental and social dimensions jointly (27%). Fewer articles focus on environmental and economic dimensions jointly (9%) or economic and social dimensions jointly (1%). SSCM studies that consider a single dimension of sustainability in GSCs have focused more on the social dimension (21%) than on the environmental dimension (12%).

The frequency of each of these 3 constructs (SSCM configurations, SSCM governance mechanisms, and sustainability outcomes along environmental, social, and economic dimensions) in our literature review is summarized in Table 3.6.

Sustainability outcome dimension (n=66)	
Environmental, social, and economic	19
Environmental and social	18
Environmental and economic	6
Environmental and economic	1
Social	14
Environmental	8
SSCM configuration (n=79)	
Open	45
Third party	28
Closed	6
SSCM governance mechanisms (n=66)	
Direct	55
Indirect	11

Table 3.6 Frequency analysis²

3.5.3 Material evaluation

This section presents a summary of the findings on the state of the art of literature on SSCM in GSCs. We have organized the information according to the key elements identified in section 4.3 (SSCM configurations and SSCM governance mechanisms). We first analyse how each element relates to sustainability outcomes, and then analyse how the elements relate to each other. This analysis provides the foundation for our discussion of the state-of-the-art of SSCM in GSCs and reveals important gaps in the literature which enable us to propose future research directions.

Content analysis: SSCM configurations and sustainability outcome dimensions

The different types of SSCM configurations have been related to different sustainability outcomes dimensions with different frequencies and different results as shown in Table 3.7.

² The total number SSCM configurations coded (79) is greater than the number of articles (66) because a single article could be coded for two different configurations. For example, MacCarthy and Jayarathne's (2012) multiple case study explores a supermarket's supply chain and a retailer's supply chain. The supermarket's supply chain is coded for an open configuration and the major retailer's supply chain is coded for a closed configuration.

Specifically, GSCs that display open configurations are characterized by focal firms that engage only first-tier suppliers in sustainability efforts and have no direct contact with sub-suppliers. Of the 45 articles that consider open configurations, 24% focus on all three dimensions of sustainability, 38% focus on sustainability considering 2 of the 3 dimensions, and 38% focus on a single dimension.

MacCarthy and Jayarathne (2012) find that open configurations are used in GSCs with a higher rate of supplier turnover, which hinders the effectiveness of SSCM efforts. Thus, Wilhelm et al. (2016b) suggest that open configurations are appropriate when buyers have few tier suppliers, and when these suppliers exhibit strong sustainability management capabilities. Accordingly, Wilhelm et al. (2016a) emphasize the role of first-tier suppliers in disseminating sustainability to sub-suppliers and identify both internal and contextual variables that influence first-tier suppliers' successfully disseminating customer sustainability requirements to sub-suppliers. Wilhelm et al. (2016b) further suggest that, out of the three dimensions of sustainability, open configurations are more appropriate for managing outcomes in the environmental dimension, because supplier non-compliance with environmental practices is easier to trace (non-compliance with environmental practices can often be detected in end products, for example). Differently, supplier non-compliance with social practices is harder to trace, usually requiring on-site verification. Higher traceability thus makes it easier for the buyer to rely on first-tier suppliers for managing sub-supplier sustainability outcomes.

GSCs that display third-party configurations are characterized by the presence of secondary stakeholders such as NGOs or governmental organizations as part of the supply chain. In these GSCs, the buyer firm either delegates or collaborates with secondary stakeholders for managing upstream sustainability outcomes. Of the 28 articles that consider third-party configurations, 46% focus on all three dimensions of sustainability, while 29% of articles consider 2 of the 3 dimensions and 25% of articles consider a single dimension. Research considering the third-party configuration has thus concentrated on sustainability outcomes in all three sustainability dimensions, with fewer papers studying outcomes associated with a single dimension.

The findings in this group of papers are consistent, suggesting that managing supplier sustainability along all three dimensions of sustainability in GSCs requires that buyer firms interact with secondary stakeholders. The third parties present in our review are NGOs (e.g. Perez-Aleman and Sandilands, 2008), independent auditors (Grimm et al., 2016), independent certifying organizations (Castka and Balzarova, 2008; Ciliberti et al., 2009), and

local industry associations (Kauppi and Hannibal, 2017; Lund-Thomsen and Nadvi, 2010; Manning et al., 2012). The most frequently studied third-party configuration considers buyer collaboration with NGOs. For example, Alvarez et al. (2010) highlight the importance of a local NGO in the success of Nespresso's SSCM initiative in Central America, while Perez-Aleman and Sandilands (2008) focus on the role of Conservation International in Starbucks' successful SSCM initiative. Third-party configurations considering other actors have only recently begun to be explored. Manning et al. (2012), for example, recognize the importance of buyer pressure for supplier adoption of sustainable practices, yet emphasize the importance of local institutions such as producer associations.

Direct focal firm sustainability engagement with sub-suppliers (second-tier suppliers, for example) characterizes GSCs that display closed configurations. Of the 6 articles that consider closed configurations, 46% focus on all three dimensions of sustainability and 50% of articles consider 2 of the 3 dimensions. No articles considering closed configurations are focused on a single dimension.

Closed configurations are used in more structurally stable GSCs than open configurations (MacCarthy and Jayarathne, 2012). Given that supplier non-compliance with socially responsible practices is hard to trace and may require on-site verification, buyers in GSCs use closed configurations to overcome challenges that are specific to managing sub-supplier sustainability outcomes in the social dimension (Grimm et al., 2014; Wilhelm et al., 2016b).

Overall, the open configuration has been proposed to be effective for environmental outcomes and to be less effective when considering multiple sustainability dimensions jointly. The third-party configuration has been suggested to be effective for multiple sustainability outcomes jointly, and the closed configuration has been suggested to be effective for social outcomes. It might be that, differently than environmental outcomes, which are often traceable and can be observed in end products (Foerstl et al., 2015), social aspects and complex situations addressing multiple sustainability outcomes require supply chain structural approaches that facilitate either *i*) a stronger connection between multiple-tier suppliers and buyers (i.e., closed configuration) or *ii*) the support of other stakeholders (i.e., third party configuration).

	Open SSCM configuration		Third-party SSCM configuration		Closed SSCM configuration	
	Article	Results	Article	Results	Article	Results
TBL	Andersen and Skjoett-Larsen (2009); Reuter et al. (2010); Seuring (2011); MacCarthy and Jayarathne (2012); Brockhaus et al. (2013); Huq et al. (2014); Turker and Altuntas (2014); Busse et al. (2016); Lee (2016); Formentini and Taticchi (2016); Wilhelm et al. (2016b)	Open configurations are less structurally stable, used by buyers with fewer first-tier suppliers, and display less emphasis on environmental outcomes.	Raynolds (2004); Matos & Hall (2007); MacDonald (2007); Perez-Aleman and Sandilands (2008); Alvarez et al. (2010); Reuter et al. (2010); Tate et al. (2010); Seuring (2011); Manning et al. (2012); Huq et al. (2014); Formentini and Taticchi (2016); Wilhelm et al. (2016b); Liu et al. (2018)	Buyer collaboration with secondary stakeholders facilitates successful implementation of SSCM.	Alvarez et al. (2010); MacCarthy and Jayarathne (2012); Wilhelm et al. (2016b)	Closed configurations are structurally stable and display an emphasis on social and TBL outcomes.
Environmental and Economic	Rao et al. (2005); Kim and Rhee (2011); De Marchi et al. (2012); Zhu et al. (2012); Golicic and Smith (2013); Zhu et al. (2017)	The use of open configurations to extend environmental business practices to suppliers benefits buyer environmental and economic performance.	De Marchi et al. (2012)	Buyers with a high number of suppliers are more likely to use a third-party configuration.		
Environmental and Social	Jiang (2009b); Vurro et al. (2009); Mueller et al. (2009); Wolf (2011); Parmigiani et al. (2011); Vermeulen (2013); Gualandris et al. (2014); Distelhorst et al. (2015); Wilhelm et al. (2016a); Clarke and Boersma (2017)	Buyers using open configurations often rely on first-tier suppliers for extending environmental and social practices upstream.	Nadvi (2008); Simpson et al. (2012); Reinecke et al. (2012); Gold et al. (2013); Von Geibler (2013); Vellema and Van Wijk (2015); Distelhorst et al. (2015)	Buyer engagement with secondary stakeholders facilitates implementation of SSCM.	Gold et al. (2013); Grimm et al. (2014); Grimm et al. (2016)	Closed configurations are used to manage sub-supplier environmental and social outcomes.
Social and Economic			Gereffi and Lee (2014)	Improving social and economic outcomes increasingly implies interaction with multiple stakeholders.		
Environmental	Klassen and Vachon (2003); Darnall et al. (2008); Gonzalez et al. (2008); Delmas and Montiel (2009); Tate et al. (2011); Gimenez and Sierra (2013); Caniels et al. (2013); Ahabou et al. (2017)	Open configurations are associated with supplier investment in environmental practices.				

Social	Mamic (2005); Lim and Phillips (2008); Yu (2008); Keating et al. (2008); Jiang (2009a); Awayshah and Klassen (2010); Knudsen (2013); Soundararajan and Brown (2016); Sancha et al. (2016); Mzembe et al. (2016)	Open configurations limit a buyer's capacity for addressing social issues in supplier sites.	Castka and Balzarova (2008); Ciliberti et al. (2009); Lund-Thomsen and Nadvi (2010); Knudsen (2013); Soundararajan and Brown (2016); Kauppi and Hannibal (2017)	Secondary stakeholders exert coercive pressure for buyer and supplier adoption of socially SSCM.		
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Table 3.7 SSCM configurations and sustainability outcome dimensions

Content analysis: SSCM governance mechanisms and sustainability outcome dimensions

The direct and indirect governance mechanisms have been associated with different sustainability outcomes dimensions with different frequencies and different results as shown in Table 3.8.

Direct SSCM governance mechanisms are the most widely studied in the context of SSCM in GSCs. Of the 55 articles that consider direct governance mechanisms, 31% focus on the environmental, social, and economic dimensions jointly, 36% consider 2 of the 3 dimensions, and 33% consider a single dimension.

The literature agrees that direct SSCM governance mechanisms for achieving outcomes across the three dimensions of sustainability consist of supplier assessment and supplier collaboration (e.g. Gimenez and Sierra, 2013; Reuter et al., 2010). Several studies have attempted to differentiate the implications of assessment and collaboration on sustainability outcomes. Mamic (2005) finds that implementation of codes of conduct needs to be complemented by collaboration with suppliers. Yu (2008) and Jiang (2009b) find that supplier assessment is ineffective for achieving supplier compliance with codes of conduct and note the importance of complementing assessment with production incentives to achieve supplier compliance. Lim and Phillips (2008) highlight that collaboration is more effective in achieving supplier compliance with codes of conduct. This work can be linked to Knudsen (2013), who notes that limited resources and a lack of buyer assistance impede suppliers from adopting sustainable practices. Achabou et al. (2017) also find that absence of buyer technical and financial assistance limits the extent to which developing country suppliers improve environmental outcomes. Busse et al. (2016) identify additional contextual barriers that impede collaboration with suppliers for sustainability in global settings and suggest collaboration as a means for overcoming such barriers. Formentini and Taticchi (2016) also find that buyers focused on improving sustainability outcomes along all three dimensions rely on supplier collaboration rather than assessment. Recently, research has also considered buyer firm participation in multi-stakeholder initiatives as a specific type of collaboration. Multi-stakeholder initiatives are characterized by collaboration among a wide range of stakeholders including buyers, suppliers, governments, and civil society organizations. Vellema and Van Wijk (2015) find that buyer and supplier participation in multi-stakeholder initiatives improves the effectiveness of international standards. Liu et al. (2018) propose that buyer participation in multi-stakeholder initiatives is important for supporting successful supplier collaboration initiatives.

When considering implementation of direct SSCM governance mechanisms, however, the literature shows that assessment is more frequently used by buyers in GSCs. Brockhaus et al. (2013) find that collaborative governance mechanisms are rare. Instead, firms frequently rely on power to impose assessment on suppliers. Turker and Altuntas (2014) also find that supplier assessment is the most frequently employed governance mechanism for improving sustainability outcomes in textile supply chains.

Regarding the implications of direct SSCM governance mechanisms on sustainability outcomes, literature has considered the relationship with buyer performance and more recently with supplier performance. Rao et al. (2005) propose that assessment and collaboration are positively related to buyer environmental and economic performance. Gimenez and Sierra (2013) find evidence that both assessment and collaboration are associated with buyer firm environmental, and economic performance, but that assessment alone is not enough. Gualandris et al. (2014) find that firms that source globally leverage collaboration practices to manage their GSCs more effectively and improve environmental and social performance.

The effects of assessment and collaboration on supplier performance are less clear. Sancha et al. (2016) find that supplier assessment is positively related to buyer social reputation, but not to supplier social performance, and collaboration is positively related to supplier social performance but not to buyer social performance.

Indirect SSCM governance mechanisms have received less attention. Of the 11 articles that consider indirect governance mechanisms, 18% focus on the environmental, social, and economic dimensions jointly, 45% operationalize sustainability considering 2 of the 3 dimensions, and 36% operationalize sustainability considering a single dimension.

Raynolds et al. (2004) highlight the benefits for suppliers of complying with third-party multi-industry standards. Castka and Balzarova (2008) suggest that firms whose customers value credence attributes and firms in long-term relationships with their buyers adopt indirect governance mechanisms. Similarly, Delmas and Montiel (2009) find that suppliers that have close relationships with their customers and young suppliers located far from their customers adopt third-party multi-industry standards. Ciliberti et al. (2009) propose that third-party multi-industry standards facilitate coordination in a supply chain by improving the information flows through the supply chain, reducing information asymmetries, and building trust between buyers and suppliers. Yet Mueller et al. (2009) – echoing most of the papers reviewed on indirect SSCM governance mechanisms- offer a sharp critique of indirect governance mechanisms, noting that third-party multi-industry and

third-party industry-specific standards suffer from transparency and legitimacy issues that limit their effectiveness for governing sustainable supply chains. In line with this view, Vermeulen (2013) notes that the effectiveness of third-party standards for improving environmental and social outcomes is limited to supplier compliance.

Overall, papers on SSCM direct governance mechanisms positively associated them with multiple sustainability outcomes, distinguishing between supplier assessment and collaboration and proposing that the first one is the most frequently adopted, especially in GSCs, but the latter is needed for improving sustainability outcomes. Recent work suggests that multi-stakeholder initiatives may facilitate collaboration between supply chain partners, and secondary stakeholders for sustainability outcomes. Differently, the literature on SSCM indirect governance mechanisms is more critical on their effectiveness.

	Direct SSCM Governance Mechanisms		Indirect SSCM Governance Mechanisms	
	Article	Results	Article	Results
TBL	Matos and Hall (2007); MacDonald (2007); Perez-Aleman and Sandilands (2008); Andersen and Skjoett-Larsen (2009); Alvarez et al. (2010); Reuter et al. (2010); Tate et al. (2011); Seuring (2011); MacCarthy and Jayarathne (2012); Brockhaus et al. (2013); Huq et al. (2014); Turker and Altuntas (2014); Busse et al. (2016); Lee (2016); Formentini and Taticchi (2016); Wilhelm et al. (2016b); Liu et al. (2018)	SSCM consists of supplier assessment and collaboration. Supplier collaboration has a positive influence on supplier adoption of sustainable business practices. Improving TBL performance requires collaboration between the buying firm and third parties.	Raynolds et al. (2004); Manning et al. (2012)	Firms obtain financial and capacity-building benefits from third-party standards.
Environmental and Economic	Rao et al. (2005); Kim and Rhee (2011); De Marchi et al. (2012); Zhu et al. (2012); Golicic and Smith (2013); Zhu et al. (2017)	Environmental supplier assessment and collaboration are positively related to buyer firm economic performance.		
Environmental and social	Jiang (2009b); Vurro et al. (2009); Wolf (2011); Parmigiani et al. (2011); Gold et al. (2013); Von Geibler (2013); Grimm et al. (2014); Gualandris et al. (2014); Distelhorst et al. (2015); Vellema and Van Wijk (2015); Grimm et al. (2016); Wilhelm et al. (2016a); Clarke and Boersma (2017)	Supplier assessment is insufficient for solving social and environmental issues in supplier production sites. Supplier collaboration is required for enabling suppliers to remedy shortcomings in environmental and social outcomes. Interaction between buyers, suppliers, and third-parties firms improves supplier adoption of environmental and social practices.	Nadvi (2008); Mueller et al. (2009); Simpson et al. (2012); Reinecke et al. (2012); Vermeulen (2013)	Third-party multi-industry and third-party industry-specific standards suffer from transparency and legitimacy issues that limit their effectiveness for governing sustainable supply chains.
Social and Economic	Gereffi and Lee (2014)	Supplier assessment and collaboration must be complemented with stakeholder interaction for improving social and economic outcomes in supply chains.		
Environmental	Klassen and Vachon (2003); Darnall et al. (2008); Gonzalez et al. (2008); Tate et al. (2011); Gimenez and Sierra (2013); Caniels et al. (2013); Achabou et al. (2017)	Supplier assessment and collaboration both have a positive effect on buyer environmental performance. Assessment is an enabler of collaboration.	Delmas and Montiel (2009)	Third-party multi-industry standards are adopted by suppliers in close relationships with their customers and by young suppliers located far from their customers.

Social	<p>Mamic (2005); Lim and Phillips (2008); Yu (2008); Keating et al. (2008); Jiang (2009a); Lund-Thomsen and Nadvi (2008); Awaysheh and Klassen (2010); Knudsen (2013); Soundararajan and Brown (2014); Sancha et al. (2016); Mzembe et al. (2016)</p>	<p>Suppliers prioritize achieving operational performance over social performance.</p> <p>Training for buyer and supplier employees is critical for the successful development and adoption of socially responsible practices in supply chains.</p> <p>Limited resources and lack of buyer assistance impede SME suppliers from participating in multi-stakeholder initiatives.</p>	<p>Castka and Balzarova (2008); Ciliberti et al. (2009); Kauppi and Hannibal (2017)</p>	<p>Third-party multi-industry standards facilitate coordination for improving social outcomes in GSCs.</p>
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Table 3.8 SSCM governance mechanisms and sustainability outcome dimensions

Content analysis: SSCM configurations and SSCM governance mechanisms

After understanding the relationship between SSCM configurations and SSCM governance mechanisms with sustainability outcome dimensions respectively, we reviewed the selected papers to understand how SSCM configurations relate to SSCM governance mechanisms, and if there is any frequent combination. Table 3.9 illustrates the results of this analysis.

We find that open and closed configurations are most frequently associated with direct SSCM governance mechanisms. More specifically, open configurations are most often associated with both supplier assessment and supplier collaboration, while closed configurations are most often associated specifically with supplier collaboration. Awaysheh and Klassen (2010) suggest that buyers using open configurations are more likely to use supplier assessment to manage social outcomes in GSCs. Gimenez and Sierra (2013) suggest that both assessment and collaboration are used and that assessment is an enabler of collaboration. Therefore, it seems that both these direct SSCM governance mechanisms are combined with open configurations to manage sustainability outcomes in GSCs.

Differently, third-party configurations have been associated with both direct and indirect SSCM governance mechanisms. When third-party configurations are associated with direct SSCM governance mechanisms buyer-NGO partnerships and buyer participation in multi-stakeholder initiatives are the prevalent SSCM governance mechanisms (Liu et al., 2018). When associated with indirect SSCM governance mechanisms, buyer reliance on third-party multi-industry or third-party industry-specific standards is common (Ciliberti et al., 2009).

Thus, there might be a fit between different SSCM configurations and SSCM governance mechanisms that makes their combination more effective in a synergistic way. However, we are not aware of studies taking a configurational approach for understanding the effectiveness of different combinations on sustainability outcomes.

	Articles	Main results
Open and direct	Klassen and Vachon (2003); Rao et al. (2005); Mamic (2005); Darnall et al. (2008); Gonzalez et al. (2008); Lim and Phillips (2008); Yu (2008); Keating et al. (2008); Andersen and Skjoett-Larsen (2009); Jiang (2009a); Jiang (2009b); Vurro et al. (2009); Awaysheh and Klassen (2010); Reuter et al. (2010); Wolf (2011); Kim and Rhee (2011); Tate et al. (2011); Parmigiani et al. (2011); Seuring (2011); De Marchi et al. (2013); MacCarthy and Jayarathne (2012); Zhu et al. (2012); Brockhaus et al. (2013); Gimenez and Sierra (2013); Caniels et al. (2013); Golicic and Smith (2013); Knudsen (2013); Turker and Altuntas (2014); Huq et al. (2014); Gualandris et al. (2014); Distelhorst et al. (2015); Busse et al. (2016a); Formentini and Taticchi (2016); Soundararajan and Brown (2016); Lee (2016); Wilhelm et al. (2016a); Wilhelm et al. (2016b); Sancha et al. (2016); Mzembe et al. (2016); Achabou et al. (2017); Clarke and Boersma (2017); Zhu et al. (2017)	Direct SSCM governance mechanisms associated with open configurations are supplier assessment and supplier collaboration.
Open and indirect	Mueller et al. (2009); Delmas and Montiel (2009); Vermeulen (2013)	Indirect SSCM governance mechanisms associated with open configurations are third-party multi-industry standards.
Third-party and direct	Matos and Hall (2007); MacDonald (2007); Perez-Aleman and Sandilands (2008); Lund-Thomsen and Nadvi (2010); Alvarez et al. (2010); Reuter et al. (2010); Tate et al. (2010); Seuring (2011); De Marchi et al. (2013); Gold et al. (2013); Knudsen (2013); Von Geibler (2013); Gereffi and Lee (2014); Huq et al. (2014); Vellema and Van Wijk (2015); Distelhorst et al. (2015); Formentini and Taticchi (2016); Soundararajan and Brown (2016); Wilhelm et al. (2016b); Liu et al. (2018)	Direct SSCM governance mechanisms associated with third-party configurations are buyer collaboration with NGOs and buyer participation in multi-stakeholder initiatives.
Third-party and indirect	Raynolds (2004); Castka and Balzarova (2008); Nadvi (2008); Ciliberti et al. (2009); Simpson et al. (2012); Reinecke et al. (2012); Manning et al. (2012); Kauppi and Hannibal (2017)	Indirect SSCM governance mechanisms associated with closed configurations are third-party multi-industry standards and third-party industry-specific standards.
Closed and direct	Alvarez et al. (2010); MacCarthy and Jayarathne (2012); Gold et al. (2013); Grimm et al. (2014); Grimm et al. (2016); Wilhelm et al. (2016b)	The direct SSCM governance mechanism associated with closed configurations is supplier collaboration.

Table 3.9 SSCM configurations and SSCM governance

We thus propose a conceptual framework for SSCM in GSCs. As illustrated in Figure 3.3, our framework relates SSCM configurations and SSCM governance mechanisms to sustainability outcomes.

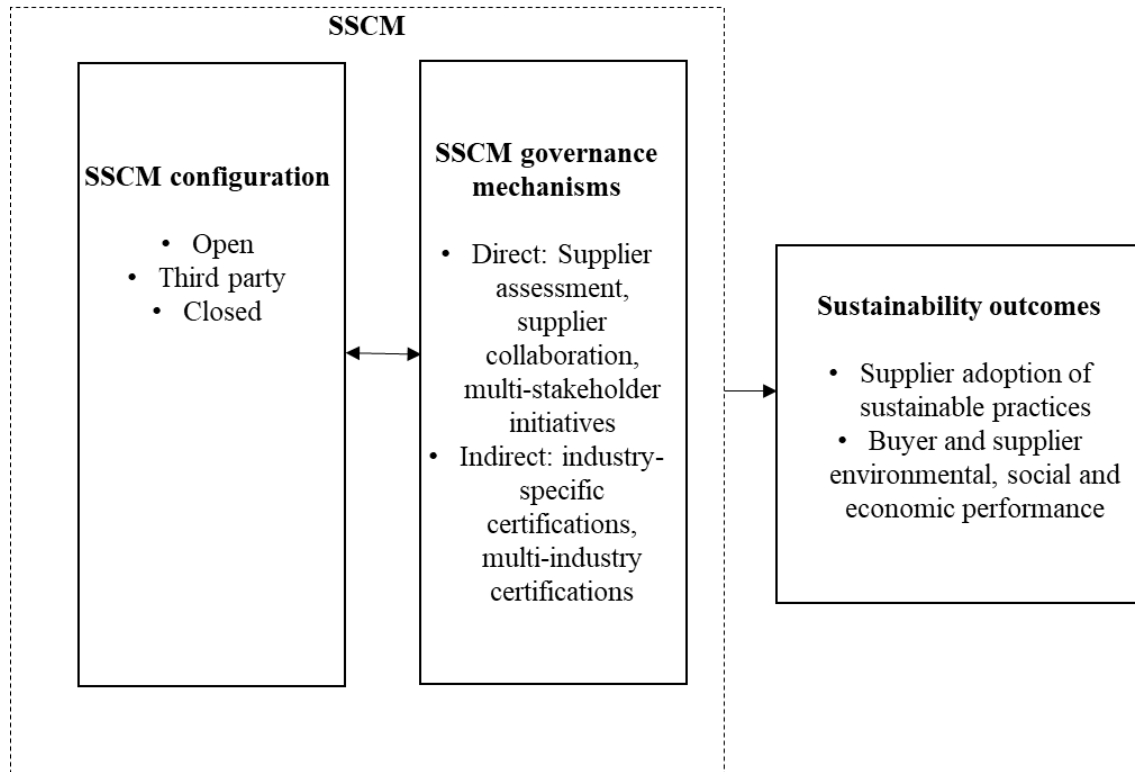


Figure 3.3 Conceptual framework of SSCM in GSCs

3.6 Discussion and future research directions

This review aimed to identify key elements of SSCM in GSCs, to shed light on the state of research on the development of sustainability in GSCs, and to guide future research. We conducted a systematic literature review of 66 articles and performed structured content analysis to address the first research question of this Ph.D. dissertation: *RQ1. What is the state of the art of research on sustainable supply chain management and sustainability outcomes in global supply chains?* Given that no previous reviews have considered SSCM in GSCs, this chapter contributes to the SSCM literature by identifying key elements characterizing sustainability development in GSCs: SSCM configuration and SSCM governance mechanisms. Our analysis also offers valuable insights into the areas that have been covered by extant literature and those

that have not. We discuss these areas in the following paragraphs referring to each element of our conceptual framework, identifying gaps in the literature, and suggesting future research directions that may contribute towards filling these gaps. We this section with a discussion of the managerial implications of our research.

3.6.1 SSCM configurations and sustainability outcomes

To answer RQ1 our review identifies SSCM configurations, which reflect the structural arrangement of actors that form the GSC, to be key elements of SSCM in GSCs. Focal firms increasingly need to engage with suppliers across multiple tiers to improve sustainability outcomes in GSCs (Awaysheh and Klassen, 2010). SSCM configurations affect SSCM by allowing focal firms to engage with sub-suppliers and secondary stakeholders during the development and adoption of initiatives aimed at improving sustainability outcomes in GSCs in different ways. Furthermore, focal firm engagement with different types of actors is associated with specific environmental and social capabilities, which impact focal firm environmental and social performance (Parmigiani et al., 2011).

Different SSCM configurations have been unevenly studied by extant SSCM literature in GSCs, with a larger focus on open configurations and environmental outcomes. Yet the “ideal” SSCM configuration for achieving sustainability in GSCs remains elusive, with different configurations having been associated with different outcomes. Despite this, recent literature seems to point towards both third-party and closed configurations for the joint improvement of multiple sustainability outcome dimensions.

Pagell and Wu (2009) have previously suggested that improving sustainability outcomes in supply chains requires that firms re-conceptualize the actors that are part of the chain. Our review proposes third-party configurations as a way for focal firms in GSCs to incorporate secondary stakeholders, such as NGOs or governmental organizations, into the supply chain. We find that buyer interaction with secondary stakeholders such as NGOs or local trade associations is positive for improving sustainability outcomes in GSCs. Busse et al. (2016) highlight limited cross-cultural understanding as a contextual barrier to sustainability management in GSCs. By involving a secondary stakeholder that is familiar with the supplier’s local conditions, third-party configurations may foster cross-contextual understanding between the focal firm and suppliers,

facilitating the success of the adoption of sustainable practices and improving sustainability outcomes.

Differently, in closed configurations, suppliers benefit from knowledge and technology transfer directly from global buyers, which facilitates their adoption of sustainable practices. On the other side, buyers benefit by obtaining localized knowledge from their suppliers' context, which facilitates alignment of environmental and social goals (Wilhelm et al., 2016b). Only a few articles consider closed configurations in relation to sustainability outcomes in GSCs. These studies have focused mainly on exploring the drivers, enablers, and barriers associated with closed configurations in GSCs (Grimm et al., 2014).

As an answer to RQ1 in relation to SSCM configurations, we suggest future research to further investigate closed and third-party configurations characterized by the presence of secondary stakeholders. Focusing specifically on third-party configurations unveils questions regarding the characteristics and impacts of secondary stakeholders on supply chain sustainability outcomes. For instance, what secondary stakeholders currently collaborate with firms in managing supply chain sustainability? As mentioned above, research has begun to explore collaborations with NGOs. Yet in the context of supplier collaboration initiatives, Liu et al. (2018) underscore the importance of collaborating with different types of secondary stakeholders at different stages of the supplier collaboration initiative, given that the most successful supplier collaboration initiatives are those where such collaborations take place. Thus, future research can consider secondary stakeholders such as government institutions, producer associations, chambers of commerce, social enterprises, or non-profit financial organizations.

Another avenue of research can explore the goals of secondary stakeholders in SSCM configurations and the opportunities/challenges that collaboration entails for SSCM. Future studies along these lines can build on the work of Rodríguez et al. (2016a), which suggests that achieving inter-organizational fit in third-party configurations is key to the creation of social and economic value in the supply chain.

Regarding closed configurations, we highlight that all the studies conducted thus far recognize that global buyers must increasingly manage sub-supplier sustainability outcomes (Grimm et al., 2014). Yet very little is known regarding the implications of closed configurations for sustainability outcomes. While extant research assumes that sustainability outcomes will be positive, this may not always be the case. In a study of the effects of different supply chain

structures on supplier economic sustainability, Cho and Lim (2016) found that closed configurations prevent suppliers from upgrading to higher value-added activities. Whether this result may be paralleled in terms of sustainability outcomes is an open question that can be tackled by future research (e.g., do closed configurations prevent suppliers from engaging in environmental or social innovations?). We thus suggest that future research explore the implications of closed configurations on buyer and supplier sustainability outcomes.

3.6.2 SSCM governance mechanisms and sustainability outcomes

Also answering RQ1, this review identifies SSCM governance mechanisms, which encompass the practices and initiatives used by the focal firm to manage relationships with supply chain stakeholders for improving sustainability outcomes, as key elements of SSCM (Formentini and Taticchi, 2016). Engaging suppliers across multiple tiers requires specific governance mechanisms, yet different SSCM governance mechanisms have different implications for sustainability outcomes in GSCs.

Our analysis shows that direct SSCM governance mechanisms have been extensively studied both in terms of supplier assessment and supplier collaboration and related to multiple sustainability dimensions. Differently, multi-stakeholder initiatives have received less attention. We find agreement in the literature regarding the need for buyers to complement supplier assessment with collaboration to improve sustainability outcomes. Formentini and Taticchi (2016) find that buyers that strive to improve environmental, social, and economic sustainability outcomes use collaborative governance to relate to their suppliers. Yet we also find evidence that suggests that collaboration is not prevalent; buyers most frequently rely on assessment to manage sustainability outcomes in GSCs (Turker and Altuntas, 2014). Recent research proposes that buyer firm participation in multi-stakeholder initiatives can ease the burden of collaboration and support supplier adoption of environmental and social practices (Vellema and Van Wijk, 2015). Few studies, however, have focused on multi-stakeholder initiatives.

We also find that there is tension in the literature regarding direct SSCM governance mechanisms and sustainability outcomes. While the implications of direct SSCM governance mechanisms for buyer firm sustainability performance are clear, the implications for supplier performance are debated (Sancha et al., 2016).

Differently, we find that indirect SSCM governance mechanisms have received much less attention in SSCM research in GSCs. A benefit of indirect governance mechanisms based on certifications is that suppliers avoid having to conform to multiple, possibly conflicting or overlapping, private standards or codes of conduct (Reinecke et al., 2012). Yet our review shows that indirect governance mechanisms are seldom associated with improved sustainability outcomes in GSCs. There is consistent agreement in the literature that relying on standards alone fails to produce evidence of performance improvement (Vermeulen, 2013). Furthermore, the standards themselves have been called into question. Mueller et al. (2009) find that voluntary management standards (ISO14001, SA8000) lack supply chain transparency and legitimacy, as they do not require firms to take responsibility for the environmental or social conditions in their suppliers. Industry-specific and multi-industry certifications work better, requiring that at least a percentage of the supply chain be monitored. So, relying on standards to govern GSCs seems risky for focal firms, given that standards may cover only a portion of the supply chain or a fraction of the potential sustainability issues.

Therefore, to answer RQ1 in relation to SSCM governance mechanisms we note that more research is needed to shed light on buyer firm participation in multi-stakeholder initiatives. Multi-stakeholder initiatives can facilitate collaboration initiatives, which in turn have been proposed as key for achieving sustainability outcomes in GSCs. Future research can explore when and why focal firms engage in multi-stakeholder initiatives to manage supply chain sustainability and the mechanisms through which participation in such initiatives facilitates collaboration. Also, we suggest future research to investigate if indirect SSCM governance mechanisms can complement direct SSCM governance mechanisms.

3.6.3 SSCM configurations and governance mechanisms

Finally, to answer RQ1 we also investigated the state of the art regarding the relationship between the two crucial elements of SSCM in GSCs identified in our literature review. Previous literature shows that any potential combinations of these two elements can be pursued, however, we highlighted more frequent combinations such as the associations between open configurations and supplier assessment and collaboration, closed configurations and supplier collaboration, and third-party configurations with supplier assessment or indirect SSCM governance mechanisms.

This finding might suggest that there might be a better fit between some SSCM configurations and SSCM governance mechanisms. However, our review also shows that the effectiveness of these combinations is relatively under-investigated compared to the effectiveness of these elements separately. Thus, future studies might investigate the effectiveness of the different combinations highlighted in the literature review and their equifinality. It might be that the different combinations are similarly effective but better answer to different organizational contexts. Research taking a configurational perspective (Misangyi et al., 2016) may help uncover the complex causal relationships between SSCM configurations, SSCM governance mechanisms, and sustainability outcomes.

3.6.4 Implications for practice

Our review also yields several valuable implications for the professional community and managers. Focal firms with GSCs are increasingly beset by supply chain-related sustainability issues. Our review shows that SSCM configurations and SSCM governance mechanisms should be extremely relevant for buyer firms seeking to improve sustainability outcomes in their suppliers' operations, especially when the suppliers are located in distant countries.

Specifically, open configurations and supplier assessment might not be sufficient to deal with complex sustainability issues related to multiple sustainability outcomes in GSCs. Alternative combinations of SSCM configurations and governance mechanisms might be more effective.

Supply chain managers must find ways to directly engage with multi-tier suppliers and collaborate with them through supply chain configurations and governance mechanisms. However, managerial attention appears to be focused on supplier assessment and indirect management of suppliers beyond the first tier. A recent report by Dutch consultancy VBDO based on 40 European firms considered sustainability leaders found that 90% use assessment of suppliers as the prevalent SSCM governance mechanism (VBDO, 2014). Our review suggests that managers should consider SSCM more broadly, composed not only of assessment but as a strategic initiative that involves collaboration with suppliers. Thus, firms might adopt closed configurations and direct SSCM governance mechanisms such as collaboration with their multi-tier suppliers.

However, if the complexity of their GSC is high due to supplier numerosity, geographical and cultural distance, firms might consider partnering with secondary stakeholders in their GSCs, such as NGOs, to support them in the development of sustainability initiatives. These secondary stakeholders might be part of their GSC and constitute a third-party configuration adopting both direct and indirect governance mechanisms enacted by secondary stakeholders. Managers thus far have frequently viewed NGOs and other non-profit actors as enemies. Our review suggests that managers should instead collaborate with non-profits and other secondary stakeholders, as this will facilitate the achievement of sustainability outcomes in their GSCs.

3.7 Conclusion

Firms in GSCs are under pressure to achieve positive outcomes along the environmental, social, and economic dimensions. Establishing SSCM to manage sustainability in GSCs, however, remains elusive. This review takes a step towards addressing this challenge by identifying key elements of SSCM specific in GSCs and providing avenues for future research to further develop the field. Our systematic literature review of 66 articles reveals that SSCM configurations and SSCM governance mechanisms are key elements for achieving sustainable outcomes in GSCs.

We contribute to the discourse on sustainability in GSCs by consolidating and synthesizing literature focused on these elements in GSCs. We contribute to the supply chain management literature by highlighting that SSCM configurations and SSCM governance mechanisms are key elements of SSCM in GSCs. We also contribute to the field of SSCM by identifying shortcomings in our current understanding of SSCM and suggesting avenues for future research and prospective research questions to address these gaps.

This chapter has limitations that must be considered. The review was based on a keyword search, which limits the results to combinations of keywords. A second limitation is that the selection of articles for review might be subject to researcher biases. Although the criteria for article selection were explicit, the final selection remains subjective. Structured content analysis of papers was also subject to the same subjectivity. Although the analysis criteria were explicitly developed ex-ante and are grounded in extant research, validity threats associated with a single coder remain. Furthermore, this study only considers published articles in a subset of peer-reviewed journals as sources of literature. Other sources of relevant literature such as industry reports, Ph.D. theses, and non-English publications were not considered. Finally, being most of

the current SSCM literature focused on focal firms or buyer-supplier dyads rather than multi-tier supply chains, it might be that the larger presence of open configuration studies in our review is because few studies focused on the interaction between the buyer and sub-suppliers, despite the possible presence of a relationship between the buyer or the first-tier supplier with second and third-tier suppliers in the case analysed. However, this further confirms the need to engage in future studies investigating more complex supply chain approaches, especially approaches considering the involvement of secondary stakeholders such as NGOs or local trade associations for developing sustainability in GSCs. Nonetheless, and considering these limitations, we believe this review is thorough and contributes towards advancing knowledge of GSC sustainability.

4

An information processing perspective on adoption of supplier assessment and collaboration in global supply chains

4.1 Abstract

Buyer firms that source from geographically distant suppliers are increasingly required to develop sustainability across their global supply chains (GSCs). Geographical distance hinders the development of sustainability in GSCs, yet few studies have considered how geographical distance between buyers and suppliers positively influences the extent to which buyers adopt supplier assessment and collaboration for developing sustainability in global settings. In addition, recent research suggests that buyers are increasingly willing to engage with secondary stakeholders for developing sustainability in GSCs. In this chapter, we draw from information processing theory and use secondary data and hierarchical regression to analyse how geographic distance between buyers and suppliers influences buyer adoption of supplier assessment and collaboration, and how buyer engagement with secondary stakeholders moderates the relationship between geographic distance and adoption of supplier assessment and collaboration.

Results show that geographic distance is positively related to firm adoption of supplier assessment and collaboration, and secondary stakeholder engagement negatively moderates this relationship. We contribute by shedding light on the relationship between geographical distance in GSCs, buyer adoption of practices aimed at developing sustainability, and engagement with secondary stakeholders.

Keywords: global supply chain, sustainability, information processing, stakeholder engagement

4.2. Introduction

The previous chapter reviewed extant literature focused on the development of sustainability in global supply chains (GSCs). Guided by the research gaps uncovered in the systematic literature review, this chapter focuses on analysing specific mechanisms for developing sustainable supply chains in a global context.

Developing sustainability in GSCs is a pressing concern for businesses and society. GSCs, which are characterized by firms that source beyond a single country's borders, have been associated with negative environmental and social outcomes including pollution, biodiversity loss, dangerous working conditions, and violation of human rights (ILO, 2019; Meijaard et al., 2018; Surroca et al., 2013). Although such negative impacts frequently happen in the upstream tiers of GSCs (closer to the point-of-extraction of raw materials), focal firms that sell branded products are held responsible (Hartmann & Moeller, 2014; Villena & Gioia, 2018). Firms with GSCs are therefore under pressure to develop sustainability in the operations of their global suppliers (Andersen & Skjoett-Larsen, 2009).

As reviewed in chapter 3, sustainable supply chain management (SSCM), which aims to integrate environmental and social goals in addition to traditional economic goals in a firm's supply chain processes, has been suggested for developing sustainability across supply chains (Carter & Rogers, 2008). Extant research recognizes supplier assessment and supplier collaboration as SSCM activities for developing sustainability across a supply chain (Gimenez & Tachizawa, 2012). Although supplier assessment and supplier collaboration are increasingly adopted, well-known firms such as Adidas (Frenkel & Scott, 2002), Nike (Locke et al., 2007), and Hewlett-Packard (Distelhorst et al., 2015) have struggled to improve environmental and social outcomes in their GSCs, and smaller, less well-known firms experience similar struggles (Lee & Klassen, 2008).

The difficulties associated with developing sustainability in GSCs stem, at least partially, from the structural characteristics of GSCs such as geographic distance between buyers and suppliers. Global sourcing provides buyers with advantages in terms of access to skilled, inexpensive suppliers, but increases in geographic distance between supply chain members also influence the structural complexity of the supply chain (Choi & Hong, 2002). There is some evidence that geographic distance influences the development of sustainability in GSCs by hindering the exchange of information between buyers and suppliers. Specifically, geographic distance influences the extent to which buyers adopt supplier assessment and collaboration (Ageron et al., 2012) as well as its effectiveness (Busse et al., 2016). Gereffi and Lee (2012, p. 25) note that GSCs “have been a familiar part of the international business landscape for decades”, but the persistent difficulties for developing sustainability in the presence of geographic distance suggest that further research focused on this element of GSCs is needed.

GSCs also draw attention from primary and secondary stakeholders (Clarkson, 1995). Primary stakeholders are those without which a firm cannot survive and include employees and customers. Secondary stakeholders are those who affect and are affected by the organization but are not engaged in transactions with it and are not essential for its survival and include communities and civil society organizations. There is evidence that secondary stakeholders play a role in generating pressure for firms to develop sustainability in supply chains (Gualandris et al., 2015; Schmidt et al., 2016; Wolf, 2014). Recent studies also suggest that firms increasingly engage with secondary stakeholders with the aim of developing sustainability in global settings (Sodhi & Tang, 2018). These studies suggest that buyers may delegate some responsibilities, such as elaborating sustainability standards or monitoring supplier sustainability performance, to secondary stakeholders. The relationship between secondary stakeholder engagement, which is understood as the extent to which a firm proactively interacts with secondary stakeholders, and firm adoption of supplier assessment and collaboration, however, has not been analysed in the presence of high geographic distance.

This chapter analyses the relationship between geographic distance, secondary stakeholder engagement, and buyer adoption of supplier assessment and collaboration to answer the second and third research questions of this Ph.D. dissertation:

RQ2: How does geographic distance between buyers and suppliers affect buyer adoption of supplier assessment and collaboration?

RQ3: How does secondary stakeholder engagement affect the relationship between geographic distance and buyer adoption of supplier assessment and collaboration?

We take an information processing perspective to analyse the impact of geographic distance on adoption of supplier assessment and collaboration in GSCs. Extant research suggests that the geographic distance that characterizes GSCs poses a problem for firms that attempt to develop sustainability in the operations of their suppliers (Grimm et al., 2016; Huq et al., 2014). Specifically, as geographic distance between buyers and suppliers increases, the buyer's information processing needs also increase because the buyer firm needs to collect and process information regarding the process by which goods are produced, but opportunities for interaction with distant suppliers are reduced (Busse et al., 2016). Information processing theory posits that information processing needs and information processing capacity are always matched, so firms must cope with increased information processing needs either by reducing the amount of information to be processed or by increasing information processing capacity (Galbraith, 1974). Busse et al. (2017) recently proposed that developing sustainability in GSCs is associated with increased information processing needs and that buyers take specific actions such as vertical integration, supply base rationalization, re-shoring, and nearshoring to cope with such needs. Building on this work, we examine adoption of supplier assessment and collaboration in the presence of geographic distance as a way for buyers to cope with increased information processing needs that does not require modifying the supply chain. Specifically, we advance that supplier assessment and collaboration contributes to increasing the buyer firm's information processing capacity because sustainability-related information is collected through supplier assessment and supplier collaboration activities.

Regarding the role of secondary stakeholder engagement, we build on recent research that suggests secondary stakeholders can help a firm to become aware of sustainability issues in its GSC and develop shared goals to address them (Meixell & Luoma, 2015). From an information processing perspective, we posit that secondary stakeholder engagement reduces information processing needs that arise in GSCs and so negatively moderates the relationship between geographic distance and buyer adoption of SSCM.

This chapter contributes to understanding how sustainability can be developed in global settings. First, we focus on adoption of supplier assessment and collaboration as a response to increases in geographic distance between buyers and suppliers, which has been repeatedly

associated with difficulties for developing sustainability in GSCs but has thus far received little attention from scholars. We highlight the increased information processing needs associated with increased geographic distance. In this regard, we empirically respond to the call for further research focused explicitly on the global aspects of sustainable supply chains (Quarshie et al., 2015). Second, we contribute by analysing the role of secondary stakeholder engagement in the presence of high geographic distance between buyers and suppliers as a way for reducing the buyer's information processing needs in GSCs and providing evidence that it negatively moderates buyer adoption of supplier assessment and collaboration. In this sense, we contribute to the emerging literature that considers secondary stakeholder engagement for sustainability (Johnson et al., 2018).

4.3 Literature review and hypotheses development

4.3.1 Development of sustainability in global supply chains

GSCs consist of multiple independent organizations located in different geographies that work together to deliver value to end consumers. GSCs are ubiquitous because buyer firms increasingly seek to source from competent, low-cost suppliers around the world as a way of maintaining competitive advantage (Gereffi & Lee, 2012). Buyer firms in GSCs are under pressure to develop sustainability, understood as managing outcomes along environmental, social, and economic dimensions (Elkington, 1998). Such buyers face the need to develop sustainability in the operations of their suppliers because they are held accountable for negative environmental and social outcomes that occur at any point of the supply chain (Hartmann & Moeller, 2014). To develop sustainability, buyers increasingly adopt SSCM. Seuring and Muller (2008, p. 1700) define SSCM as “the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development into account which are derived from customer and stakeholder requirements”. Following extant literature, we consider supplier assessment and supplier collaboration as two key activities that reflect SSCM (Gimenez and Tachizawa, 2012). Supplier assessment activities aim to collect information and evaluate supplier environmental and social outcomes and supplier collaboration involves activities where buyers and suppliers

work together over time to plan and execute initiatives aimed at improving sustainability outcomes (Gualandris & Kalchschmidt, 2016; Sancha et al., 2016).

4.3.2 Adoption of supplier assessment and collaboration in the presence of geographic distance

Buyer firm adoption of practices aimed at developing sustainability in its supply chain is influenced by the structural characteristics of the supply chain (Tachizawa & Wong, 2015). Geographic distance between buyers and suppliers is a structural characteristic of GSCs, where buyers source from suppliers located in multiple places, some of which may be highly distant from the buyer's location. Previous studies suggest that geographic distance between buyers and suppliers is a key element that needs to be considered for understanding how sustainability can be developed in GSCs (Awaysheh & Klassen, 2010; Hoejmose et al., 2013). Nevertheless, studies that consider the effect of geographic distance on buyer firm adoption of supplier assessment and collaboration are still few (Carter et al., 2016).

In the context of developing sustainability Busse et al. (2017) propose that sustainability-related information processing needs arise from a firm's supply chain. As geographic distance increases between a buyer and its suppliers, the buyer's sustainability-related information processing needs also increase. Specifically, developing sustainability requires that the buyer manage information regarding the processes by which a specific good was produced, which are not necessarily apparent in the end-product. For example, pollution or poor working conditions in supplier sites cannot be detected in the end-product and instead require on-site verification. Geographic distance also influences the sustainability-related information processing needs that arise from cultural and socio-economic differences between the buyer and distant suppliers because managers that are based in different cultural contexts may interpret sustainability goals differently (Busse et al., 2016).

We draw from information processing theory (IPT) to analyse the role of geographic distance in the development of sustainability in GSCs. IPT was developed to analyse organizational design problems and subsequently expanded to the inter-organizational level (Premkumar et al., 2005; Tushman & Nadler, 1978). IPT suggests that firms develop can cope with complexity by reducing the information that needs to be processed or by increasing information processing capacity (Galbraith, 1974). IPT has been used to analyse various supply

chain phenomena including firm responses to supply chain disruptions (Bode et al., 2011), supply chain integration (Wong et al., 2011), supply chain finance (Jia et al., 2020), knowledge development and supply chain performance (Hult et al., 2004) and manufacturing complexity and sustainability performance (Wiengarten et al., 2017).

IPT posits that a firm's information processing needs and its information processing capacity are always matched (Galbraith, 1974). When faced with increased sustainability-related information processing needs that arise from geographic distance in GSCs firms can respond by adopting supplier assessment and collaboration. Adoption of activities aimed at assessing supplier environmental and social outcomes allows collecting and processing sustainability-related information and transmitting it along the supply chain (Mamic, 2005). Adoption of activities where buyers and suppliers collaborate allows them to exchange sustainability-related information to develop a common understanding of sustainability goals (Busse et al., 2016). Following an information processing perspective, supplier assessment and collaboration provides guidelines that decision-makers within the firm use to make decisions when faced with increased sustainability-related information processing needs (Wu & Pagell, 2011). Adoption of supplier assessment and collaboration thus provides a way for the firm to cope with geographic distance by increasing sustainability-related information processing capability. Therefore, considering IPT, we posit that:

H1: As geographic distance between buyers and suppliers increases, the buyer's adoption of supplier assessment and collaboration increases.

4.3.3 Secondary stakeholder engagement

H1 posits that firms adopt SSCM as a response to sustainability-related information processing needs that arise in GSCs. There is increasing evidence, however, that supplier assessment and collaboration may not be effective for developing sustainability in GSCs in the presence of geographic distance between buyers and suppliers. Supplier assessment activities may not prevent opportunistic behaviour by distant suppliers that choose to engage in mock compliance that is hard to detect by the buyer (Huq et al., 2014). Geographic distance also dilutes the buyer's capacity for enforcing assessment activities such as codes of conduct (Grimm et al., 2016). Supplier collaboration activities that require cooperation between buyers and suppliers are costly, and when suppliers are distant the cost considerations may be prohibitive (Brockhaus et al.,

2013). Geographic distance also limits the frequency with which buyers and suppliers can interact, reducing the effectiveness of collaborative activities aimed at developing sustainability (Busse et al., 2016).

IPT posits that firms can cope with complexity by reducing information processing needs or modifying information processing capacity. Engaging with secondary stakeholders such as communities and regulators reduces the buyer’s sustainability-related information needs that emerge from the supply chain because secondary stakeholders support buyers in gathering information about sustainability issues in their GSCs. Matos and Hall (2007) find that secondary stakeholders assist buyers in identifying possible environmental and social problems across their extended supply chain that may otherwise be overlooked. In a global context, Hahn and Gold (2014) suggest that secondary stakeholders frequently occupy an information-rich position in the supplier’s local socio-economic network and provide buyers with information regarding the supplier’s local context. Engaging with secondary stakeholders also allows buyers to delegate activities aimed at managing supplier sustainability issues. Rodríguez et al. (2016b) find that engagement with secondary stakeholders strengthens ties between buyers and global suppliers, reduces the cost of exchanging information, and reduces the risk of opportunistic behaviour in the buyer-supplier relationship. Secondary stakeholder engagement thus decreases the need for buyer adoption of supplier assessment and collaboration aimed at directly developing information processing capabilities. Therefore, we hypothesize that:

H2: Secondary stakeholder engagement negatively moderates the impact of geographic distance on buyer adoption of supplier assessment and collaboration.

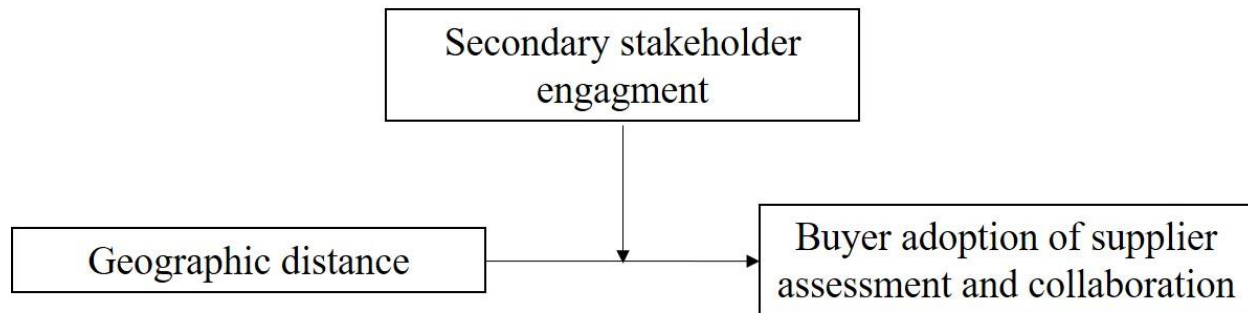


Figure 4.1 Conceptual model

4.4 Methods

We used secondary data drawn from the B Impact Assessment (BIA) dataset to test our model, which is summarized in figure 4.1. The BIA is a self-administered online survey designed to evaluate a firm's governance, environmental, and social policies, and practices (www.bimpactassessment.net). The BIA yields a numerical score based on a respondent's answers to approximately 200 questions³. Surveys are completed online by a representative of the organization. Respondents start with zero points and earn points incrementally for each indicator of a positive outcome or best practice. The BIA is the basis for B Corp certification and is administered by B Lab, a non-profit that serves a global movement of people using business as a force for good. B Lab's initiatives include B Corp Certification, administration of the B Impact Management programs and software, and advocacy for governance structures such as the benefit corporation. Although the BIA is freely available and can be used by any firm to assess its environmental and social impact, B Labs only makes publicly available the data for firms that completed the B Corp certification process. The publicly available data thus corresponds to firms that *i*) achieved the minimum score and *ii*) met other requirements needed to be certified as B Corps.

A research design based on statistical analysis of secondary data is adequate for answering the research questions presented in this chapter because our aim is not to interpret the phenomenon of adoption of supplier assessment and collaboration in GSCs, but instead to understand how other variables, namely geographic distance, and secondary stakeholder engagement, impact the extent to which buyers adopt supplier assessment and collaboration to develop sustainability in their GSCs.

4.4.1 Sample

The sample consists of firms that completed the BIA between 2016 and 2018. This sample is adequate for achieving our research goals for three reasons. First, certified B Corps are increasingly recognized for their environmental, social, and governance practices (Gehman et al., 2019). B Corp certification has been growing steadily with 3.900 firms in 75 countries certified as B Corps as of 2021 (www.bcorporation.net/directory). Furthermore, because participation in

³ The exact number of questions displayed may vary according to the respondent's profile. Additional details regarding the calculation of numerical scores are provided in Appendix 4.1.

the BIA is voluntary, firms that completed the BIA signal their commitment to developing sustainability not only in their internal operations but also across their supply chain. Second, certified B Corps vary in size ranging from large multinationals such as Danone to small firms with less than 10 employees. Third, because BIA results are made publicly available firms that complete the BIA are more likely to be willing to engage with their stakeholders to develop sustainability. For these three reasons we believe that the sample is representative of the population of firms that are committed to sustainability.

In terms of reliability, although the BIA is a self-administered survey, responses for certified firms undergo additional verification processes to ensure reliability of the answers. The verification process includes reviewing supporting documentation for a random sample of questions related to the firm's operations and an assessment review carried out by a B Labs representative where questions and responses are reviewed. B Labs may also request additional documentation to ensure that the responses are reliable. Firms are also subject to background checks conducted by B Labs. Finally, 10% of firms that hold the certification for more than 3 years are randomly selected for a site review. The additional verification carried out by B Labs increases the reliability of the information contained in the dataset.

The BIA is updated every three years, and survey items may be modified in each update. Therefore, different BIA versions are not fully comparable. The 2016-2018 period corresponds to version 5 of the BIA. It is also the latest full period for which data is available. Given the extent of the BIA (over 200 questions), observations that did not provide information for all the variables of interest for our study were dropped. We also restricted our analysis to a single industry category, which is consumer products. This industry category is relevant for analysing adoption of SSCM and secondary stakeholder engagement for two reasons. First, supply chain management is a central activity for consumer goods firms (Brandenburg and Seuring, 2011). Second, firms that sell branded products to end-consumers must increasingly manage end-consumer concerns about the way those products were manufactured, including environmental and social impacts. The resulting sample consists of 186 firms. The data for each firm corresponds to the most recent year the firm completed the BIA. Table 4.1 provides descriptive information in terms of size, sector, and industry for the sample.

Buyer geographical location⁴	N	%	Size	N	%	Sector	N	%	Industry	N	%
Developed	158	84.94	1-9	49	26.34	Agriculture/Growers	12	6.45	Apparel, Footwear & Accessories	31	16.67
Emerging	28	15.05	10-49	81	43.55	Manufacturing	79	42.47	Electronics	3	1.61
			50-249	40	21.51	Wholesale/Retail	95	51.08	Food & Beverage	114	61.29
			250-999	10	5.38	<i>Total</i>	<i>186</i>	<i>100</i>	Home & Personal Care	19	10.22
			More than 1000	6	3.23				Housewares, Home Furnishings, & Accessories	12	6.45
			<i>Total</i>	<i>186</i>	<i>100</i>				Jewellery	5	2.69
									Sports equipment, toys & accessories	1	0.54
									Other	1	0.54
									<i>Total</i>	<i>186</i>	<i>100</i>

Table 4.1 Sample descriptive statistics

⁴ The BIA categorizes countries as developed or emerging. Detailed information regarding the countries considered developed and emerging is provided in Appendix 4.2

4.4.2 Measures

Independent variables: Our two independent variables, which are geographic distance and secondary stakeholder engagement, are measured in different sections of the BIA. Geographic distance is measured in a section that assesses the extent to which the firm sources from significant suppliers that are either *i)* defined as local in the firm's purchasing policy, or *ii)* located within the borders of the country where the company's headquarters or largest facility is located. In the BIA, firms that purchase a greater percentage from significant suppliers defined as local or located within the borders of their home country receive higher scores. This is an index measure with a range between 0 and 15 in the dataset. This measure was reverse coded to operationalize high geographic distance (i.e., firms that source a greater percentage from significant suppliers that are either not defined as local in the firm's purchasing policy receive a higher score or outside their home country's borders, as the geographic distance separating them from their suppliers is greater).

Secondary stakeholder engagement is measured in a section that assesses how the firm works with stakeholders to improve behaviour or performance on social or environmental issues. This section considers the extent to which the firm works with competitors, and policy makers to address environmental and social outcomes. It also considers the extent to which the firm participates in its community through membership or partnership with business and trade associations, cooperatives, or academic institutions. This is an index measure with a range between 0 and 12 in the dataset. The index considers the sum of points received by the company in the B-corp certification for conducting engagement activities. Given the relevance of the supply chain in the consumer goods industry category, we consider that the extent to which the firm participates in its community and works with competitors, regulators, and policy makers to improve performance on social or environmental issues, even if carried out without a deliberate focus on supplier environmental and social performance, will impact the firm's approach towards managing sustainability in its supply chain.

Dependent variable: Adoption of supplier assessment and collaboration is measured in a section that assesses the extent to which the firm has conducts supplier assessment and supplier collaboration activities. Regarding supplier assessment, activities for evaluating environmental and social performance of significant suppliers as well as practices for tracking the environmental and social issues in first-tier significant suppliers are considered. Regarding

supplier collaboration, activities for exchanging feedback with suppliers regarding environmental and social outcomes are considered. This is an index measure with a range between 0 and 13.5 in the dataset. This index is also a sum of the points received by the company in the B-corp certification for conducting supplier assessment and collaboration activities.

Control variables: We included firm size, supply chain position, and business model as control variables in the analysis. Prior studies suggest that firm size is associated with a firm's approach to supply chain sustainability (Ayuso et al., 2013; Gonzalez et al., 2008). Firm size is reported in the BIA as a categorical variable with 5 values based on the number of employees. Prior research also suggests that a firm's position in the supply chain is also associated with variance in supply chain sustainability practices (Lo, 2013; Schmidt et al., 2016). We used the sector data provided in the BIA to determine a firm's position in the supply chain relative to end-consumers and generated a dummy variable that reflects upstream (agriculture/growers and manufacturing) or downstream (distributors/retailers) position in the supply chain.

Given B Corp's mission to promote business as a source of benefits for all stakeholders (not just shareholders), there is variance in the extent to which certified B Corps prioritize social goals. While some B Corps are traditional for-profit firms that prioritize commercial goals, others seek to achieve a social goal through commercial activities. Recent research suggests that firms that prioritize social goals over commercial goals manage their supply chains differently from for-profit firms (Longoni et al., 2019) and deploy business models characterized by a focus on social impact (Battilana and Dorado, 2010). To account for this variance we controlled for the extent to which firms explicitly aim to achieve social goals through social impact supply chain management (Pullman et al., 2018). We operationalized social impact supply chain management using a section in the BIA measuring activities realized by the firm to reduce poverty through trade terms, positive labour conditions, and support for underserved suppliers. This is an index measure with a range between 0 and 30 in the dataset which considers the sum of social impact supply chain management activities reported by the firm.

Table 4.2 contains the correlation matrix for our variables, and specific items and ranges for each variable are provided in Appendix 4.1.

	Geographic distance	Secondary stakeholder engagement	SSCM	Firm size	Upstream	Social impact supply chain management
Geographic distance	1					
Secondary stakeholder engagement	0.158	1				
SSCM	-0.107	0.120	1			
Firm size	-0.257	-0.186	-0.168	1		
Upstream	0.064	-0.231	-0.150	0.205	1	
Social impact supply chain management	-0.243	-0.028	0.386	-0.269	0.105	1

Table 4.2 Correlation matrix

4.5 Results

We used hierarchical regression to test our hypotheses. The results of the hierarchical regression analyses are shown in table 4.3.

	Adoption of supplier assessment and collaboration					
	Model 1 (only control variables)		Model 2 (main effects)		Model 3 (interaction effect)	
	<i>Coefficient</i>	<i>Significance</i>	<i>Coefficient</i>	<i>Significance</i>	<i>Coefficient</i>	<i>Significance</i>
Intercept	-0.178	0.383	-0.038	0.857	-0.175	0.393
<i>Control variables</i>						
Firm size	-0.087	0.168	-0.137**	0.036	-0.101	0.112
Upstream	-0.167	0.169	-0.101	0.405	-0.121	0.302
Social impact supply chain management	0.256***	0.000	0.217***	0.000	0.222***	0.000
<i>Hypotheses</i>						
Geographic distance			0.200***	0.006	0.210***	0.002
Secondary stakeholder engagement			0.084	0.223	0.110*	0.098
Secondary stakeholder engagement*geographic distance					-0.247***	0.000
P value	0.000		0.000		0.000	
Adjusted R ²	0.1957		0.2209		0.2794	

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.3 Hierarchical regression analysis results

As a first step prior to running the analysis we standardized all variables. We then checked for multicollinearity in the independent variables by examining the Variance Inflation Factor (VIF). Multicollinearity is a concern in any multiple regression because its presence can cause biased estimators (Hair et al., 2010). As shown in table 4.4, results show that the highest VIF score is 1.26, which is well below the suggested threshold of 10. Multicollinearity, therefore, does not pose a threat to the interpretation of our results.

Variable	VIF
Firm size	1.21
Upstream	1.10
Social impact supply chain management	1.23
Geographic distance	1.26
Secondary stakeholder engagement	1.10
<i>Mean VIF</i>	<i>1.18</i>

Table 4. 4 Variance Inflation Factor Test

We then performed the hierarchical regression in three steps. In the first step we ran the linear regression including only the control variables (Model 1). In this model, the only statistically significant control variable is social impact supply chain management. This result is aligned with prior literature that suggests that firms that prioritize improving environmental and social outcomes over economic outcomes are more likely to adopt supplier assessment and collaboration (Croom et al., 2018; Marshall et al., 2015). As a next step we estimated the linear regression including the control and independent variables (Model 2). The results show that the relationship between geographic distance and buyer adoption of supplier assessment and collaboration is statistically significant and positive. H1 is thus supported. In the third and final step we included the interaction term between geographic distance and secondary stakeholder engagement (Model 3). The interaction between geographic distance and secondary stakeholder engagement is statistically significant and negative, which indicates that the impact of geographic distance on firm adoption of supplier assessment and collaboration is lower when secondary stakeholder engagement is higher. In other words, the positive relationship between geographic distance and adoption of supplier assessment and collaboration is weaker in the presence of secondary stakeholder engagement. Therefore, H2 is also supported. A visual representation of the moderation effect is provided in Figure 4.2.

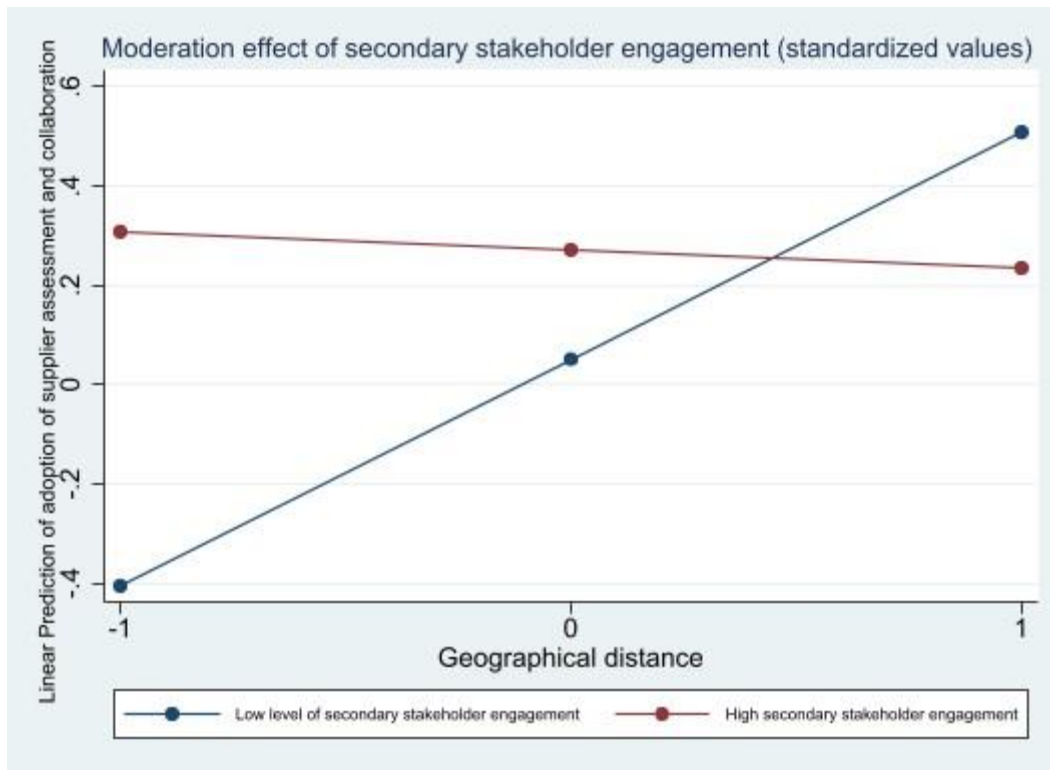


Figure 4.2 Moderation analysis

4.6 Discussion

This chapter aimed to analyse geographic distance, secondary stakeholder engagement, and buyer firm adoption of supplier assessment and collaboration. Our results provide evidence that when faced with greater geographic distance between buyers and suppliers, buyer adoption of supplier assessment and collaboration increases. Our results also show that secondary stakeholder engagement weakens the relationship between geographic distance and buyer adoption of supplier assessment and collaboration.

Our finding that geographic distance is positively associated with adoption of supplier assessment and collaboration is aligned with previous studies that have highlighted the importance of supply chain structure for firm adoption of supplier assessment and collaboration. Our results are aligned with findings by Awaysheh and Klassen (2010), who provided initial evidence that firms adopt a greater variety of supplier socially responsible practices when distance in the supply chain increases. Given that prior research emphasizes that geographical distance poses a challenge for managing supplier sustainability outcomes, our results are in line with previous research that suggests supplier assessment and collaboration for managing sustainability risks that arise from the supply chain (Seuring & Muller, 2008; Villena & Gioia,

2018). From an information processing perspective, supplier assessment and collaboration increases the firm's information processing capacity. In this regard, our findings complement Busse et al.'s (2017) suggestion that buyers take specific actions to manage increasing sustainability-related information processing needs by modifying the structure of their supply chains. Our results suggest that supplier assessment and collaboration is an alternative way of coping with increased information processing needs that does not require altering the structural characteristics of the supply chain.

Given increasing evidence that supplier assessment and collaboration may not be fully effective for developing sustainability in settings such as GSCs we also considered the role of secondary stakeholder engagement. Previous studies have considered the role of stakeholders in terms of creating pressure for firms to develop sustainability in their supply chains (Buysse & Verbeke, 2003; Wolf, 2014). We take a different perspective and consider the role of buyer firm engagement with secondary stakeholders. Our results suggest that in presence of high geographical distance, high levels of secondary stakeholder engagement may allow buyer firms to delegate some of the tasks that are required for managing upstream sustainability. From an information processing perspective, this result indicates that secondary stakeholder engagement allows firms to reduce the need to directly increase sustainability-related information processing capability. This finding is aligned with previous research that suggests buyer firms can delegate some activities, especially activities associated with gathering information about the sustainability performance of distant suppliers, to secondary stakeholders (Lee et al., 2012). Specifically, our results support previous studies that suggest secondary stakeholders provide the firm with information that is useful for managing environmental and social outcomes in their supply chains (Liu et al., 2018; Matos & Silvestre, 2013). Our results also resonate with research that suggests engagement with secondary stakeholders facilitates the formation of trust and enables learning (Cundy et al., 2013). Overall, our results are aligned with Pagell and Wu's (2009, p. 50) suggestion that developing sustainability in supply chains may require reconceptualizing "who is in the chain".

This chapter also has relevant implications for practice. Our results regarding geographic distance indicate that managers can adopt supplier assessment and collaboration when faced with uncertainty about environmental and social outcomes of distant suppliers. However, as geographic distance increases, managers may need to look beyond supplier assessment and

collaboration, given the challenges associated with collecting information and collaborating with distant suppliers. In this sense, this chapter suggests that secondary stakeholders, such as NGOs and local civil society organizations, are not adversaries whose demands need to be managed (Frooman, 1999). Instead, when faced with the need to develop sustainability in global settings, secondary stakeholders can be a source of useful information for managers. Engaging with secondary stakeholders, however, may be initially challenging for managers because communication between the firms and secondary stakeholders is frequently one-way, from the firm to the secondary stakeholder (Sharma, 2008). Engagement requires that managers facilitate bi-directional communication that allows the firm to receive useful information secondary stakeholders (Davila et al., 2013). Our study also suggests that engagement with secondary stakeholders may allow managers to discontinue supplier assessment and collaboration activities that are ineffective in GSCs. Besides managers, our results also have implications for decision-makers in organizations considered as secondary stakeholders. Our study suggests that sustainability-committed firms are increasingly open to collaborating with the aim of developing sustainability in their supply chains. In this sense, decision-makers in secondary stakeholder organizations may have increasing opportunities to directly influence environmental and social outcomes by working with firms to develop sustainable supply chains.

4.7 Conclusion

Although adoption of supplier assessment and collaboration is increasingly widespread developing sustainability in GSCs continues to be challenging. Given that GSCs are growing in importance within the economic landscape and stakeholder demands for sustainability are increasing, studying how structural supply chain characteristics influence firm adoption of practices aimed at developing sustainability is important. We contribute to the sustainable supply chain management literature by providing empirical evidence that increases in geographic distance between buyers and suppliers are related to increased buyer adoption of supplier assessment and collaboration. We also contribute by highlighting that engagement with secondary stakeholders can reduce a buyer's information processing needs.

Although this chapter has valuable implications for research and practice, it is not without limitations. First and foremost, our sample is drawn from the universe of firms that completed the BIA. Because the BIA is a voluntary assessment, firms that participate are likely to have high

levels of commitment to developing sustainability. Additionally, although large firms such as Patagonia and Danone are increasingly becoming certified B Corps, currently most certified B Corps are small or medium-sized firms. In this sense, our findings may not be fully generalizable beyond firms that are aligned with the B Corp movement. Future research should be conducted on firms that are not aligned with the B Corp movement. Our study is also limited by the use of secondary data. Although the BIA is an assessment tool specifically developed to measure sustainability practices, the measurements were not developed specifically for this study. In this sense, our results could be enriched by differentiating between specific supplier assessment and collaboration activities as well as specific secondary stakeholders (e.g., communities, regulators, competitors), which the current not possible with publicly available BIA data. Additionally, our measure of geographic distance is based on the extent to which buyers source from suppliers that are not defined as local. Future research can improve on this measure by considering the spatial distance in terms of physical distance between a buyer and its suppliers. Regarding secondary stakeholder engagement, future research can further explore how different levels of secondary stakeholder engagement affect buyer adoption of SSCM. In this regard, the framework offered by Bowen et al. (2010) may be a useful starting point for differentiating between different levels of secondary stakeholder engagement. Furthermore, future qualitative research can explore secondary stakeholder engagement focused on impacting suppliers, given that the extant literature defines secondary stakeholder engagement in broader terms. Such studies could explore how secondary stakeholder engagement activities can be integrated with existing SSCM activities. Finally, this chapter is limited to analysing adoption of supplier assessment and collaboration; we did not analyse the effectiveness of such activities or secondary stakeholder engagement in the presence of high geographic distance between buyers and suppliers. Future research can explore the effectiveness of both supplier assessment and collaboration and secondary stakeholder engagement for developing sustainability in GSCs. These limitations notwithstanding, we believe our study makes valuable contributions that advance knowledge about developing sustainability in GSCs.

Appendix 4.1 Measures items and range⁵

Variable	Points range in dataset	Items	Answer options and % of points allocated
Geographic distance	0-15	What % of your company's expenses was spent with Significant Suppliers that meet the company's definition of "local" as defined in its local purchasing policy?	0%; (0% of allocated) 1-9%; (25% of points allocated) 10-19%; (50% of points allocated) 20-29%; (75% of points allocated) 30%+; (100% of points allocated) N/A (selected if company does not have a local purchasing policy or stated local definition) (0% of points allocated)
		What % of your company's purchases (excluding labour expenses) was spent with Significant Suppliers within the borders of the country where the company's headquarters (or largest facility) is located in the last FY?	0%; (0% of points allocated) 1-4%; (0% of points allocated) 5-9%; (33.33% of points allocated) 15-19%; (66.67% of points allocated) 20%+ (100% of points allocated)
Secondary stakeholder engagement	0-12	How has your company worked with its stakeholders (including competitors) to improve behaviour or performance on social or environmental issues in the past two years?	We have worked with other industry players on a cooperative initiative on relevant social and environmental standards for our industry; (50% of points allocated) We have provided data or contributed to academic research on social or environmental topics; (50% of points allocated) We participate in panel presentations or other public

⁵ The range of each variable is determined by B-Lab and represents the maximum possible points that can be obtained by a respondent. To determine the points score for each variable, B-Lab first calculates a numerical score for each item using the % of points assigned to each answer option. The numerical score for the items is added to determine the points score for each variable. The specific distribution of points within a variable (i.e., the weighting of each item), unfortunately, is not publicly available data.

			<p>forums on social or environmental topics; (50% of points allocated)</p> <p>We provide public resources for other businesses or stakeholders on improving social or environmental performance; (100% of points allocated)</p> <p>Other - please describe; (10% of points allocated)</p> <p>None of the above (0% of points allocated)</p>
		<p>Has your company worked with policymakers to develop or advocate for policy changes explicitly designed to improve social or environmental outcomes in the past two years?</p>	<p>Yes, the company has directly introduced, testified, made recommendations, or provided expertise to advance standards; (50% of points allocated)</p> <p>Yes, the company has provided active staff time or financial support; (25% of points allocated)</p> <p>Yes, and efforts resulted in a specific institutional, industry, or regulatory reform; (100% of points allocated)</p> <p>Yes, the company has offered support in name and/or signed petitions; (25% of points allocated)</p> <p>None of the above; (0% of points allocated)</p> <p>Other - please describe (25% of points allocated)</p>
		<p>How does your company take part in civic engagement?</p>	<p>Partnerships with charitable organizations or membership with community organizations; (20% of points allocated)</p> <p>Community or pro-bono service; (30% of points allocated)</p> <p>Advocacy for adopting improved social or environmental policies or performance; (30% of points allocated)</p> <p>Free use of company facilities to host community events; (20% of points allocated)</p>

			<p>None of the above; (0% of points allocated)</p> <p>Other - please describe (10% of points allocated)</p>
		<p>Does your company have a membership or a civic partnership with any of the following types of organizations?</p>	<p>Business or trade association; (33.34% of points allocated)</p> <p>Chamber of commerce; (33.34% of points allocated)</p> <p>Cooperative; (33.34% of points allocated)</p> <p>Governmental institution; (33.34% of points allocated)</p> <p>Local academic institution; (33.34% of points allocated)</p> <p>None of the above; (0% of points allocated)</p> <p>Other - please describe (25% of points allocated)</p>
Supplier assessment and collaboration	0-13.5	<p>When evaluating the social and environmental performance of Significant Suppliers, which of the following apply:</p>	<p>Specific environmental criteria required; (50% of points allocated)</p> <p>Documented policy to visit a majority of suppliers every year to review social and environmental performance; (25% of points allocated)</p> <p>Specific social criteria required; (50% of points allocated)</p> <p>None of the above; (0% of points allocated)</p> <p>Other (please describe) (25% of points allocated)</p>
		<p>Is the payment of a fair wage to workers for a majority of Significant Suppliers verified or certified?</p>	<p>Neither verified nor certified; (0% of points allocated)</p> <p>Verified by the company; (50% of points allocated)</p> <p>Certified as part of a product or production process certification or certified by another third-party; (100% of points allocated)</p> <p>Other (describe) (25% of points allocated)</p>
		<p>Does your company have a tracking system in place for all products to manage quality assurance issues?</p>	<p>Yes; (100% of points allocated)</p> <p>No; (0% of points allocated)</p> <p>NA (0% of points allocated)</p>
		<p>Which suppliers are assessed for Supplier Code of Conduct compliance at least every other year?</p>	<p>All sub-contractors responsible for the majority of an order; (25% of points allocated)</p>

			<p>All primary suppliers of core products or principal raw materials; (50% of points allocated)</p> <p>All primary suppliers of non-core products; (25% of points allocated)</p> <p>No formal supplier monitoring and evaluation process; (0% of points allocated)</p> <p>N/A - No Supplier Code of Conduct; (0% of points allocated)</p> <p>None (0% of points allocated)</p>
		<p>In the cases where suppliers were not yet adhering to the Supplier Code of Conduct, which of the following remediation practices have been implemented before determining whether to terminate the relationship?</p>	<p>Breaches reported to senior management; (33.34% of points allocated)</p> <p>The company formulated a corrective action plan with suppliers with goals and a timeline for improvement; (33.34% of points allocated)</p> <p>The company has fully disclosed to the public any material breaches of conduct by suppliers that have occurred in the past 5 years; (33.34% of points allocated)</p> <p>The company provided training and education to address non-compliance and poor performance; (33.34% of points allocated)</p> <p>The company required a time period for suppliers to make changes to adhere to code of conduct or otherwise terminated contract; (33.34% of points allocated)</p> <p>N/A - No Supplier Code of Conduct; (0% of points allocated)</p> <p>N/A - Company's Suppliers have not had a breach in the last 10 years; (100% of points allocated)</p> <p>N/A - No remediation policy; (0% of points allocated)</p> <p>Others (please describe) (25% of points allocated)</p>

		<p>Does the company have a tracking system in place and map information from Tier 1 Significant Suppliers on any of the following?</p>	<p>Environmental issues/violations; (33.34% of points allocated) Flow of materials and information; (33.34% of points allocated) Labour issues/violations; (33.34% of points allocated) Major product and service categories; (33.34% of points allocated) Potential Human Rights issues/violations; (33.34% of points allocated) The company also tracks the above for Tier 2 Significant Suppliers; (33.34% of points allocated) None of the above (0% of points allocated)</p>
		<p>Are the following mechanisms in place to solicit feedback from suppliers?</p>	<p>The company has a formal grievance mechanism to methodically address complaints and resolve disputes along its supply chain; (100% of points allocated) A formal mechanism in place for suppliers to provide feedback (e.g., supplier satisfaction surveys); (50% of points allocated) None of the above; (0% of points allocated) Other (please describe) (25% of points allocated)</p>
		<p>What % of your suppliers are verified for compliance with the Supplier Code of Conduct at least annually?</p>	<p>0%; (0% of points allocated) 1-24%; (20% of points allocated) 25-49%; (40% of points allocated) 50-74%; (60% of points allocated) 75-99%; (80% of points allocated) 100%; (100% of points allocated) Don't know (0% of points allocated)</p>

Social impact supply chain management	0-30	Does the company provide or participate in support services for underserved suppliers?	Capacity building to improve the efficiency of operations for the supplier; (75% of points allocated) Capacity building to improve the social or environmental practices of the supplier; (75% of points allocated) We do not purchase directly from underserved suppliers, or we do not provide capacity building services; (0% of points allocated) Support and training to improve quality and maintain quality assurance for the supplier (50% of points allocated)
		Does your company track the impact of your work with small-scale suppliers on the lives of suppliers' employees?	Yes; (100% of points allocated) No (0% of points allocated)
		Are any of the following trade terms provided to underserved suppliers?	Input materials come from a relationship where the contract price was partially or fully paid in advance to significant suppliers (including loans through a partner organization); (50% of points allocated) Input materials come from a relationship where contracts are signed and executed for the next year; (75% of points allocated) On-site visits are made to suppliers on at least an annual basis; (25% of points allocated) A premium is paid beyond market price for community support and development; (75% of points allocated) Pricing of the product is determined collaboratively with suppliers; (25% of points allocated) None of the above (0% of points allocated)
		Do you purchase directly from underserved suppliers	Yes, I purchase directly from underserved suppliers;

		in low-income, poor, or very poor markets?	(100% of points allocated) No, I purchase from brokers or other companies that are verified to be purchasing from and supporting underserved suppliers (0% of points allocated)
		What types of suppliers from underserved markets are in your supply chain?	Fair Wage/ Labour Certified Plantation/Estate Farms in Underserved Markets; (33.34% of points allocated) Micro-entrepreneurs/artisans in underserved markets; (33.34% of points allocated) Small-scale Factories in Underserved Markets; (33.34% of points allocated) Small-Holder Small Scale Farms/Suppliers in Underserved Markets (less than 50 employees); (33.34% of points allocated) Worker or Producer-Owned Cooperatives(33.34% of points allocated)

Appendix 4.2 BIA country classification

Per the BIA, countries are classified as either Developed or Emerging according to a methodology based on third party development indices, including the human development index, gross national income (GNI) per capita, private capital to GNI availability, gender empowerment index, and the World Bank's Doing Business Report ranking. Specific country classifications are displayed below.

Developed Market Country Classifications				
United States	Denmark	Iceland	Luxembourg	Singapore
Andorra	Estonia	Ireland	Monaco	Slovenia
Australia	Finland	Israel	Netherlands	Spain
Austria	France	Italy	New Zealand	Sweden
Belgium	Germany	Japan	Norway	Switzerland
Bermuda	Greece	Korea (Republic of)	Portugal	Taiwan
Canada	Hong Kong	Liechtenstein	San Marino	United Kingdom
Cyprus				

Emerging Market Country Classifications				
Afghanistan	Comoros	Iran	Mozambique	Slovakia
Albania	Congo (Democratic Republic of the)	Iraq	Myanmar	Solomon Islands
Algeria	Congo (Republic of)	Jamaica	Namibia	Somalia
Angola	Cook Islands	Jordan	Nauru	South Africa
Anguilla	Costa Rica	Kazakhstan	Nepal	Sri Lanka
Antigua and Barbuda	Côte d'Ivoire	Kenya	Netherlands Antilles	Sudan
Argentina	Croatia	Kiribati	Nicaragua	Suriname
Armenia	Cuba	Kosovo	Niger	Swaziland
Aruba	Czech Republic	Kuwait	Nigeria	Syria
Azerbaijan	Djibouti	Kyrgyzstan	Oman	Tajikistan
Bahamas	Dominica	Laos	Pakistan	Tanzania
Bahrain	Dominican Republic	Latvia	Palau	Thailand
Bangladesh	Ecuador	Lebanon	Panama	Timor-Leste
Barbados	Egypt	Lesotho	Papua New Guinea	Togo
Belarus	El Salvador	Liberia	Paraguay	Tonga
Belize	Equatorial Guinea	Libya	Peru	Trinidad and Tobago
Benin	Eritrea	Lithuania	Philippines	Tunisia
Bhutan	Ethiopia	Macedonia	Poland	Turkey

Bolivia	Fiji	Madagascar	Puerto Rico	Turkmenistan
Bosnia and Herzegovina	French Guiana	Malawi	Qatar	Turks & Caicos
Botswana	Gabon	Malaysia	Romania	Tuvalu
Brazil	Gambia	Maldives	Russian Federation	Uganda
Brunei	Georgia	Mali	Rwanda	Ukraine
Bulgaria	Ghana	Malta	Saint Kitts and Nevis	United Arab Emirates
Burkina Faso	Grenada	Marshall Islands	Saint Lucia	Uruguay
Burundi	Guatemala	Mauritania	Saint Vincent and the Grenadines	Uzbekistan
Cambodia	Guinea	Mauritius	Samoa	Vanuatu
Cameroon	Guinea-Bissau	Mexico	Sao Tome and Principe	Venezuela
Cape Verde	Guyana	Micronesia	Saudi Arabia	Viet Nam
Central African Republic	Haiti	Moldova	Senegal	West Bank and Gaza
Chad	Honduras	Mongolia	Serbia	Yemen
Chile	Hungary	Montenegro	Seychelles	Zambia
China	India	Morocco	Sierra Leone	Zimbabwe
Colombia	Indonesia			

5

The role of secondary stakeholders in developing upstream sustainability in global supply networks

5.1 Abstract

Secondary stakeholders such as NGOs and certifiers are acquiring an increasingly relevant role in the governance of global supply networks to address issues such as developing sustainability in upstream suppliers. Previous research on sustainability in global supply chains focused on buyers and defined it as indirect governance. In this chapter, we employ social network theory to focus on secondary stakeholders and their interactions with buyers and suppliers in a global supply network. We conducted inductive research on four secondary stakeholders in the global banana supply network to explore the development of sustainability in upstream suppliers in Costa Rica. We collected data through interviews with representatives of the secondary stakeholders and a subset of four banana suppliers and complemented that information with secondary data. The findings show the relevance of the secondary stakeholder's position in the

supply network to exchange sustainability-related information, and governance mechanisms adopted to influence buyers and suppliers for developing sustainability. Based on this evidence, three secondary stakeholder roles are identified: gatekeeper, liaison, and coordinator. We contribute to the literature by showing the nuanced contributions of secondary stakeholders in the development of sustainability in the upstream portion of global supply networks.

Keywords: sustainability, supply network, secondary stakeholders, governance

5.2 Introduction

The previous chapter suggests secondary stakeholder engagement as a mechanism for buyers to manage the development of sustainability in global settings. Building on these results, this chapter is focused on exploring how secondary stakeholders contribute to developing sustainability in global settings in greater depth.

A multitude of stakeholders are increasingly concerned over sustainability in global supply networks (GSNs)⁶ (Meixell & Luoma, 2015). The concern is especially acute in the upstream portion of GSNs, given that firms located closer to the point-of-extraction of raw materials are frequently at the greatest risk of suffering from negative sustainability outcomes such as pollution, low wages, unsafe working environments, and precarious employment conditions (Villena & Gioia, 2018).

Extant research on the development of sustainability in GSNs has focused on the role of buyers in disseminating sustainability practices to upstream suppliers and identified direct and indirect governance models (Gimenez & Sierra, 2013; Ponte & Gibbon, 2015). Mechanisms that characterize buyer direct governance are monitoring through assessment and supplier codes of conduct, and collaboration through training and incentives (Andersen & Skjoett-Larsen, 2009; Awaysheh & Klassen, 2010; Jiang, 2009a; Sancha et al., 2016). However, such direct governance models are frequently ineffective in GSNs due to geographical and cultural distance between buyers and suppliers, dilution of buyer power, and the elevated managerial and financial resources required for implementation (Brockhaus et al., 2013; Busse et al., 2016; Grimm et al.,

⁶ Throughout this chapter the term global supply network (GSN) is used instead of global supply chain (GSC). The reason is this chapter takes a network perspective. The chapter is focused on development of sustainability in global settings, but we use the term “global supply network” for the sake of consistency within the chapter.

2014). Such concerns are especially acute when suppliers lie in the invisible zone that is beyond the buyer's visible horizon (Sancha et al., 2019).

Given these difficulties, buyers in GSNs are increasingly adopting indirect governance models characterized by intermediation of secondary stakeholders such as international NGOs, certifiers, and multilateral organizations (Tachizawa & Wong, 2014). Starbucks, for example, has worked with Conservation International to reduce pollution, improve wages, and improve working conditions in coffee and tea suppliers (Perez-Aleman & Sandilands, 2008). Multi-stakeholder initiatives such as the Round Table for Sustainable Palm Oil or the Aquaculture Stewardship Council are also gaining relevance for developing sustainability in GSNs (Scherer & Palazzo, 2011; Vellema & Van Wijk, 2015; Von Geibler, 2013). The mechanisms that characterize indirect governance models, however, remain relatively unexplored. Governance mechanisms are understood as the practices and initiatives used by the secondary stakeholders to manage relationships with buyers and suppliers with the aim of improving sustainability outcomes (Formentini & Taticchi, 2016). Furthermore, extant research largely considers development of sustainability from the buyer firm's perspective, with little attention paid to the perspective of other stakeholders (Soundararajan & Brown, 2016). Given the increasing prevalence of the indirect governance model, considering the perspective of secondary stakeholders as focal actors is needed for developing a deeper understanding of how they contribute to developing sustainability in GSNs.

Extant research on governance for sustainability in GSNs is also characterized by a focus on single firms or buyer-supplier dyads as the unit of analysis (Gimenez & Tachizawa, 2012). GSNs, however, are composed of multiple inter-connected actors. Unpacking the mechanisms through which secondary stakeholders engage buyers and suppliers to develop sustainability in GSNs, therefore, requires analysis at a network level. A network perspective makes it possible to go beyond the conceptualization of sustainability in GSNs as developed purely by buyers and extended to suppliers, towards a conceptualization of development of sustainability based on the interaction of buyers, suppliers, and secondary stakeholders that aim to achieve a common goal (Gao & Bansal, 2013; Matthews et al., 2016). The paucity of studies that take a network perspective, however, limits the extent to which the complex set of ties between buyers, suppliers, and secondary stakeholders have been considered in the context of developing sustainability in global settings (Miemczyk et al., 2012).

Social network theory, which is primarily concerned with the interdependence of actors and how network ties influence their opportunities, constraints, and behaviours, provides a useful lens for investigating the indirect governance model for development of sustainability in GSNs (Rowley, 1997). Secondary stakeholders are not connected to buyers or suppliers by material supply ties, but they are connected by information ties based on open-ended relationships (such as co-membership in certification initiatives or multilateral organizations). Social network theory suggests that such ties can provide secondary stakeholders with a pathway for engaging buyers and suppliers in GSNs through the exchange of information (Borgatti & Halgin, 2008). Accordingly, secondary stakeholders can be central actors in sustainability-related information networks in GSNs. In the context of supply networks, Kim et al. (2011) suggest that centrality affects influence scope, understood as the extent to which an organization can impact the behaviour of others in the network. There is little empirical research, however, that examines how embeddedness of secondary stakeholders affects development of sustainability in the upstream portion of GSNs.

To fill these gaps in the literature and further explore the role of secondary stakeholder in the development of sustainability in GSCs, in this chapter we investigate the fourth research question of this Ph.D. dissertation:

RQ4: How do secondary stakeholders contribute to developing sustainability in the upstream portion of global supply networks (GSNs)?

To answer our research question, we consider how secondary stakeholders are positioned in the network of information ties regarding sustainability in a GSN and the governance mechanisms they adopt to intermediate with buyers and suppliers for developing sustainability upstream.

Addressing our research question contributes to deepening understanding of sustainability in GSNs in several ways. First, by focusing on secondary stakeholders we explore the role of an increasingly prevalent but currently under-researched actor involved in developing sustainability in the upstream portion of GSNs. By taking a network perspective focused on information ties we extend prior studies that examine governance for sustainability in GSNs, which usually analyse supply networks based on material supply ties (MacCarthy & Jayarathne, 2013; Van Bommel, 2011). Building on social network theory, we identify network position, influence scope, and governance mechanisms as relevant elements for understanding the nuanced roles

played by secondary stakeholders for developing sustainability upstream in GSNs. Specifically, we highlight that the structural position in the information network enables secondary stakeholders with specific influence scopes that, combined with governance mechanisms, affect the flow of information between buyers and suppliers to develop sustainability upstream. We also analyse how secondary stakeholders play heterogenous roles and interact with each other to simultaneously develop sustainability in the upstream portion of the GSN.

5.3 Theoretical background

5.3.1 Sustainability governance in global supply networks

GSNs increasingly extend into developing countries, as buyers seeking competitive advantage shift production to low-cost areas and liberalized international trading systems provide suppliers access to global markets (Gereffi & Lee, 2012). Concurrently, greater participation of developing country suppliers in GSNs is often linked with sustainability concerns (Donaghey et al., 2014). More specifically, concerns over pollution, low wages, unsafe working conditions, and little respect for labour rights have led a multitude of stakeholders to focus on developing sustainability in GSNs (Barrientos et al., 2016; Marshall et al., 2016).

Suppliers in many developing countries face little regulatory oversight over environmental outcomes and social outcomes, so developing sustainability is often demanded to global buyers' governance (Alexander, 2020; Gereffi & Lee, 2014). However, the effectiveness of direct governance models based on assessment and collaboration for developing sustainability in GSNs is limited. Table 5.1 summarizes previous key studies on governance for sustainability in GSNs highlighting the challenges associated with buyer direct governance models.

References	Governance mechanism	Challenges	Unit of analysis
Mamic (2005); Lim & Phillips (2008); Mzembe et al. (2016)	Assessment	Supplier adoption and compliance with codes of conduct requires buyer financial and managerial assistance	Buyer-supplier dyad
Locke (2009)	Assessment	Buyer firms lack power for enforcing codes of conduct in GSNs.	Buyer-supplier dyad
Yu (2008); Jiang (Jiang, 2009a); Jiang (2009b)	Assessment	Support from local regulators and adaptation of codes to local context is required for supplier compliance	Single firm (supplier)
Awaysheh & Klassen (Awaysheh & Klassen, 2010)	Assessment	Geographical distance between buyers and suppliers reduces buyer likelihood of establishing supplier codes of conduct.	Single firm (buyer)

Huq et al. (Huq et al., 2014)	Assessment	Lack of buyer financial support and cultural distance between buyers and suppliers are barriers to supplier adoption of sustainability practices.	Single firm (supplier)
Grimm et al. (Grimm et al., 2014)	Assessment & Collaboration	Geographic and cultural distance limit the effectiveness of assessment and collaboration in GSNs	Buyer-supplier-supplier triad
Busse et al. (Busse et al., 2016)	Collaboration	Linguistic, cultural, and spatial distance between buyers and suppliers are barriers to collaboration for social sustainability.	Buyer-supplier dyad
Sancha et al. (2016)	Assessment & Collaboration	Assessment alone does not improve supplier social performance, collaboration is required.	Buyer-supplier dyad
Soundararajan & Brown (2016)	Assessment	Buyer capacity to enforce codes of conduct and standards is reduced in the upstream part of GSNs where buyers are separated from suppliers by several tiers.	Single firm (supplier)

Table 5.1 Direct governance for sustainability in GSNs

Given these challenges for governing the development of sustainability in GSNs, academic attention has been increasingly shifting from global buyers’ direct governance to indirect governance based on engagement with secondary stakeholders (Tachizawa & Wong, 2014; Wilhelm et al., 2016b). The secondary stakeholders considered in indirect governance are not connected to buyers or suppliers by material supply ties but interact with buyers and/or suppliers to achieve a common goal.

Participation of secondary stakeholders is proposed to be beneficial for the development of sustainability in GSNs because they facilitate buyer access to knowledge from diverse stakeholders, which improves the fit between initiatives for developing sustainability and the supplier’s context (Matos & Silvestre, 2013). Secondary stakeholders can also provide buyers and suppliers with a distinct set of resources, such as localized knowledge, that facilitate development of sustainability in GSNs (Rodríguez et al., 2016b). Secondary stakeholders can also reduce the challenges associated with geographical distance between buyers and suppliers by being co-localized and recognized as legitimate actors by suppliers (Hahn & Gold, 2014).

Indirect governance relying on secondary stakeholders also presents challenges. Rodríguez et al. (2016a) find that secondary stakeholders that are non-business actors, such as NGOs, are often unfamiliar with relational patterns characterizing buyers’ and suppliers’ relationships. Hannibal and Kauppi (2018) note the difficulties in communication between secondary stakeholders and buyers and suppliers. Table 5.2 summarizes prior research that considers secondary stakeholders in the context of developing sustainability in GSNs.

References	Type of secondary stakeholder	Key findings	Unit of analysis
Lund-Thomsen & Nadvi (2010)	Trade association	Involvement of local actors required for supplier adoption	Single firm (supplier)
Matos & Silvestre (2013)	Civil society organizations, local governments	Participation of secondary stakeholders provides opportunities for learning and developing innovative solutions for improving sustainability	Sustainability initiative
Alvarez et al. (2010)	NGO	NGO participation was key throughout the development of Nespresso's sustainability initiative.	Supply network
Hahn & Gold (2014)	Civil society organization	Secondary stakeholders provide local knowledge, a central position in the local socio-economic network, and social capital in partnerships with buyers	Sustainability initiative
Rodríguez et al. (2016a)	NGO	Alignment between primary and secondary stakeholders is an antecedent for the creation of value.	Buyer-NGO dyad
Rodríguez et al. (2016b)	NGO	NGOs provide resources, such as local knowledge, that improve supplier development for social sustainability	Social sustainability initiative
Saunders et al. (2017)	NGO, trade association	Involvement of multiple types of secondary stakeholders required for supplier adoption	Supply network
Hannibal & Kauppi (2018)	Certifier	Certifiers design measurement systems to monitor and assess the social performance and match buyers and suppliers in GSNs	Supply chain
Liu et al. (2018)	Multiple types	Secondary stakeholders influence the coverage of sustainability initiatives and influence supplier performance	Supply chain
Gong et al. (2018)	Multiple types	Secondary stakeholders can provide buyers with relevant knowledge or assist the buyer in disseminating knowledge through the supply network.	Sustainability initiative
Lee et al. (2020)	Peer buyer	The involvement of peer buyers improves supplier compliance and knowledge-sharing for social sustainability among buyers.	Supply chain

Table 5.2 Secondary stakeholders and sustainability in GSNs

We identified two main gaps in previous literature. First, except a few recent studies taking a supply network perspective, most previous literature investigated GSN governance models for developing sustainability primarily considering single firms or buyer-supplier dyads as the unit of analysis, and sustainability requirements as flowing from the buyer to upstream suppliers. While some previous studies consider ties between buyers, suppliers and secondary stakeholders in triadic contexts (e.g. Rodriguez et al., 2016b), only the studies by (Alvarez et al., 2010) and (Saunders et al. 2017), consider the overall network as the unit of analysis and the complex set of ties between multiple buyers, multiple suppliers, and multiple secondary stakeholders. Second, scholars have not delved deeply into understanding the specific governance mechanisms related to indirect governance to develop sustainability in the upstream part of GSNs. Previous studies

mainly focused on compliance or collaboration in the context of sustainability standards (e.g., Hannibal & Kauppi, 2018; Lee et al., 2019) but, with the exception of Liu et al. (2018), did not dig into the role of NGOs, trade associations, or multi-stakeholder initiatives.

5.3.2 Social network theory and information flows

To fill these gaps in the literature and better understand the role of secondary stakeholders in developing sustainability in GSNs we draw from social network theory. Social network theory allows for analysing sets of dyadic interactions, capturing the influence of multiple interdependent relationships on organizations' behaviour (Borgatti & Foster, 2003). A key premise of social network theory is that resources such as materials, money, information, or knowledge, flow from one node to another through network ties (Granovetter, 1973). Ties are defined based on the type of relationship between nodes, which can be either continuous (such as shared membership in a group) or discrete (such as exchanging goods) (Borgatti & Halgin, 2008). Individual nodes derive benefits such as influence or control from access to resources, including information and knowledge, available through their network ties (Burt, 2004; Provan et al., 2007).

Extant supply network studies usually define nodes as individual organizations (i.e., buyers or suppliers). Ties between nodes are typically defined considering relationships between buyers and suppliers that reflect material goods flows and the associated financial flows (e.g. Bellamy et al., 2014; Kim et al., 2011). Secondary stakeholders involved in development of sustainability, however, are not connected to buyers or suppliers through material supply ties. Instead, they are frequently connected to buyers and suppliers through information ties based on shared membership in specific groups (Gould & Fernandez, 1989). For example, trade associations exchange information with their member organizations regarding environmental and social outcomes (Lund-Thomsen & Nadvi, 2010). NGOs and certifiers exchange compliance information with both suppliers and buyers and thus have ties to both the upstream and the downstream portions of the network (Vellema & Van Wijk, 2015). Multilateral organizations dedicated to promoting sustainability offer forums where buyers, suppliers, and other secondary stakeholders can meet and discuss pressing environmental and social issues affecting the GSN (Dentoni et al., 2018).

Considering social network theory, we propose that information ties offer a pathway for secondary stakeholders to intermediate with buyers and suppliers in GSNs to develop sustainability in upstream suppliers. Specifically, focusing on information ties, social network theory proposes that nodes holding a central position in networks have greater opportunity for gathering information and knowledge from other nodes (Granovetter, 1973). An individual node's position in the network relative to others is known as centrality and can be measured based on the number of direct ties a node has with others in the network (Freeman, 1978). Central nodes can also leverage their high number of direct ties to access a greater amount of information and knowledge from different parts of the network, which allows greater opportunities for influencing the behaviour of other nodes (Rowley, 1997).

Social network theory suggests that in environments where information is poorly distributed, such as GSNs, central actors are needed to manage information flows (Kwon et al., 2020). Recent research in the context of GSNs suggests that secondary stakeholders that are central nodes in sustainability-related information networks influence the development of sustainability in the supply network (Saunders et al., 2017). Centrality provides opportunities for influencing other nodes, but central actors need to enact specific mechanisms to exploit this opportunity (Obstfeld et al., 2014; Zaheer & Bell, 2005). In the context of developing sustainability in GSNs, Vurro et al. (2009) propose that central actors require mechanisms for monitoring others, enforcing rules, and orchestrating the exchange of resources. For example, central actors can influence the coverage of sustainability initiatives in GSNs through monitoring (Liu et al., 2018). Central actors can also establish knowledge-sharing mechanisms to orchestrate the flow of knowledge between GSN stakeholders (Gong et al., 2018). However, there is little empirical research that examines secondary stakeholders as central actors in GSNs or the governance mechanisms enacted by them for developing sustainability in the upstream portion of GSNs.

5.4 Methods

We address our research question using an inductive case study approach with embedded units where the case is defined as a network of global buyers, suppliers from a developing country, and secondary stakeholders, and embedded units are four secondary stakeholders (Yin, 2009). Addressing our research question through an inductive case study approach is aligned with our

aim of exploring how sustainability can be developed in the upstream portion of GSNs through indirect governance. Specifically, we achieve this goal through a combination of data analysis and coding on primary data sources (i.e., semi-structured interviews) and social network analysis (SNA) on secondary data sources.

5.4.1 Research sample

Our research focuses on four key secondary stakeholders that participate in the development of sustainability in the upstream part of the fresh banana supply chain involving suppliers in Costa Rica and their buyers in the United States and Europe. We focus specifically on the development of social sustainability in terms of worker wages and working conditions, and development of environmental sustainability in terms of the use of agrochemicals and waste reduction. These issues reflect current sustainability concerns in the banana GSN.

We chose to conduct our research in this GSN for several reasons. First, Costa Rica consistently ranks among the top 5 banana exporting countries in the world and over 85% of bananas exported from Costa Rica are sold in developed markets (e.g., North America and Europe) which indicates that the suppliers are part of GSN (Make Fruit Fair, 2015). An additional advantage is that Costa Rican suppliers are medium-sized firms that sell directly to distributors and retailers, which means that, unlike other banana producing countries where suppliers are smaller and organized in cooperatives, the GSN in Costa Rica is composed of relatively few tiers which facilitates mapping and analysis of ties between actors (Choi & Hong, 2002). Second, banana farming is highly labour intensive, requiring an average of one worker per hectare, and historically reliant on high usage of pesticides (CORBANA, 2017). Third, secondary stakeholders have been active in the banana GSN in Costa Rica since the late 1990's, when the Chiquita Brands International worked with the Rainforest Alliance to develop the Better Banana certification program. Under pressure from organizations such as BananaLink and FairTrade, which have highlighted negative environmental and social outcomes associated with the global banana supply network (c.f. Make Fruit Fair, 2015), other global buyers increasingly work with secondary stakeholders to develop sustainability in the upstream portion of the network (i.e., in the operations of banana suppliers in Costa Rica) (Taylor & Scharlin, 2004). Significant progress has been made towards developing sustainability in Costa Rican banana suppliers. Most suppliers comply with local regulations regarding pesticide applications,

minimum wages, and provision of social security benefits to all workers (CORBANA, 2017). Worker health and safety have improved with reductions in the use of toxic agrochemicals (Wesseling et al., 2001). During our fieldwork, however, we noted that there are still challenges such as the implementation of Living Wage initiatives, which refers to paying average wages 20% higher than minimum wages in Costa Rican plantations. During the time this research was being conducted secondary stakeholders were mediating negotiations between buyers and suppliers for implementing Living Wage.

Using archival data we identified four secondary stakeholders as the most relevant for developing sustainability in the GSN. The first secondary stakeholder is *Alpha*, an NGO that has been working on developing certifications for banana plantations for over 25 years. The second is *Beta*, an international multi-stakeholder initiative (MSI) that certifies producers of a wide variety of food products including bananas. The third is *Gamma*, a local trade association that groups all Costa Rican banana producers that sell their fruit to international buyers. The fourth is *Delta*, also an international MSI dedicated to promoting best practices for sustainability in the global banana network. The relevance of these four secondary stakeholders as the key organizations that interact with buyers and suppliers for developing sustainability in the GSN was confirmed by our interview respondents.

5.4.2 Data collection

We collected data between January 2018 and May 2019. We began by collecting secondary data about global banana production to map the GSN and identify buyers, suppliers, and the most relevant secondary stakeholders. Then we conducted a series of semi-structured interviews with secondary stakeholders and suppliers to understand the governance mechanism in the banana GSN.

Banana GSN mapping and identification of key secondary stakeholders

We consulted 52 documents specific to the banana GSN including reports compiled by regulators and NGOs, specialized industry publications, books, and sustainability reports from banana producers, distributors, and retailers, statistical compendiums, market review reports, and sustainability reports specific to the banana industry compiled by the United Nations Food and Agriculture Organization (FAO). We used this data to map buyers and suppliers in the GSN and

identify the four secondary stakeholders that are the most relevant for developing upstream sustainability in the Costa Rica banana GSN.

To determine where sustainability-related information ties exist between global buyers, Costa Rican suppliers, and secondary stakeholders we consulted three different databases. The first database is managed by *Gamma* and provides information regarding supplier attributes and sales. We used this information to establish that there are 51 independent suppliers of fresh bananas in Costa Rica, which account for 100% of the bananas exported by independent suppliers to global markets. This database also allowed us to determine that most bananas farmed by independent suppliers in Costa Rica are sold to eight major buyers: four global distributors that together account for 40% of global banana purchases and have historically been the major buyers of Costa Rican bananas, and four top retailers that source bananas directly from Costa Rican suppliers (Make Fruit Fair, 2015). Although not exhaustive of the entire market, these eight buyers account for the majority of purchases of Costa Rican bananas. The second and third databases are managed by *Alpha* and *Beta* and provide information regarding buyer and supplier membership in their certification initiatives. We established that sustainability-related information ties exist between *Beta* and 40 suppliers. We also established that sustainability-related information ties exist between *Alpha* and 31 suppliers.

We then contacted three local experts in the banana supply chain in Costa Rica to help us validate the reliability of the banana GSN we mapped through secondary data and the relevance of the four secondary stakeholders. The first expert is a consultant with 25 years of experience in the banana industry. The second and third interviewees are the director of operations and the senior account manager for agricultural commodities of a non-profit applied research organization focused on sustainability in agricultural supply networks in Costa Rica. They confirmed that the four secondary stakeholders we previously identified through archival data analysis are the most relevant for developing upstream sustainability in the GSN and the accuracy of the suppliers and buyers we identified. To identify suppliers for interviews, we relied on recommendations from the local experts as well as from the producer association (*Gamma*).

Primary interviews on the embedded key secondary stakeholders

Our unit of analysis is each embedded secondary stakeholder. To collect data about them and their role in developing sustainability in the upstream banana GSN, we conducted interviews

with each of the secondary stakeholders and four suppliers. Concerning secondary stakeholders, we interviewed informants knowledgeable about interaction with buyers and suppliers such as director of sustainable agriculture, sustainability coordinator, key account manager, working group coordinator, and banana commodity lead. Concerning banana suppliers, we conducted interviews in four organizations. In each of these suppliers, we interviewed those that were deemed most likely to be knowledgeable about sustainability initiatives in the GSN such as general managers and operations managers. Table 5.3 summarizes our primary data sources.

Type of actor	Name	Description	Data sources	Interview Informants
Secondary stakeholder	<i>Alpha</i>	International non-profit organization dedicated to conserving biodiversity and ensuring sustainable livelihoods. Founded in 1987, it currently operates in over 70 countries. This secondary stakeholder has sustainability-related information ties with 31 suppliers in Costa Rica and 6 global buyers.	Interviews (3) Annual reports (7) Certification database (1)	Global Director for Sustainable Agriculture Costa Rica Banana Commodity Lead
	<i>Beta</i>	Multistakeholder initiative established in 1997 to promote safe, sustainable Beta worldwide. It currently operates in more than 135 countries. This secondary stakeholder has sustainability-related information ties with 40 suppliers in Costa Rica and 7 global buyers.	Interviews (1) Annual reports (10) Certification database (1)	Central America Key Account Manager
	<i>Gamma</i>	Trade association established in 1971 with the mission of promoting the development of the banana industry in Costa Rica. Currently, all banana producers in Costa Rica are members, and the organization has an annual budget of approximately 5.5 million USD. This secondary stakeholder has sustainability related information ties with 51 suppliers in Costa Rica and 3 global buyers.	Interviews (2) Annual reports (5) Membership database (1)	Sustainability Director
	<i>Delta</i>	Multi-stakeholder initiative established in 2009 to provide a space where the main stakeholders of the global banana supply chain work together to achieve consensus on best practices for sustainable production and trade. This secondary stakeholder has sustainability-related information ties with 1 supplier in Costa Rica and 4 global buyers.	Interviews (1) Annual reports (5)	Working Group Coordinator
Supplier	<i>Supplier A</i>	Founded in 1981 this supplier operates 4 plantations that combined measure 706 hectares and sells directly to retailers in Europe. This supplier has sustainability-related information ties with <i>Alpha</i> , <i>Beta</i> , and <i>Gamma</i> .	Interviews (2)	General Manager
	<i>Supplier B</i>	Founded in 1987 this supplier operates 2 plantations that combined measure 203 hectares and sells to global distributors. This supplier has sustainability-related information ties to <i>Alpha</i> , <i>Beta</i> and <i>Gamma</i> .	Interviews (2)	General Manager
	<i>Supplier C</i>	Founded in 1990 this supplier operates one plantation that measures 400 hectares and sells directly to a retailer in the United States This supplier has sustainability-related information ties to <i>Alpha</i> , <i>Beta</i> , <i>Gamma</i> and <i>Delta</i> .	Interviews (2)	Commercial Manager
	<i>Supplier D</i>	Founded in 1992 this supplier operates one plantation that measures 300 hectares and sells to a global distributor. This supplier has sustainability-related information ties to <i>Alpha</i> , <i>Beta</i> and <i>Gamma</i> .	Interviews (2)	Administrative Manager
Local expert	Applied research organization	Non-profit research organization established in 2003 to improve the livelihoods of smallholder farmers throughout Latin America through evidence-based research and strategic advice to the private, public, and NGO sectors.	Interviews (2)	Operations Director Account manager
	Agribusiness consultant	Ph.D. in plant physiology & Nutrition with 20 years of experience in the banana industry.	Interviews (1)	Director

Buyer	<p>Secondary data was used to collect information about the 8 global buyers:</p> <p>Buyer A- Global distributor with 20.000 employees based in Switzerland</p> <p>Buyer B- Global distributor with 34.500 employees based in the United States</p> <p>Buyer C- Global distributor with 45.000 employees based in the United States</p> <p>Buyer D- Global distributor with 2.730 employees based in Ireland</p> <p>Buyer E- Retailer that operates 6.800 stores, based in the United Kingdom</p> <p>Buyer F- Retailer that operates 631 stores, based in the United Kingdom</p> <p>Buyer G- Retailer that operates 500 stores, based in the United States</p> <p>Buyer H- Retailer that operates 1.415 stores, based in the United Kingdom</p>	<p>NGO reports (19)</p> <p>Annual reports (3)</p> <p>Regulator reports (2)</p> <p>Books (1)</p>
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Table 5.3 Data sources

We used semi-structured interview protocols to guide primary data collection because it allows for flexibility to explore perceptions on complex issues, as well as clarify ambiguous answers (Yin, 2009). The interview protocol was updated as new or interesting insights arose from the data. To understand how secondary stakeholders intermediate buyers and suppliers in the GSN, we asked secondary stakeholders and suppliers about initiatives for promoting sustainability, distribution of value between buyers and suppliers, and relationships with other actors in the GSN. The full semi-structured interview protocols can be found in Appendix 5.1. We ensured anonymity to all respondents to reduce social desirability bias and facilitate open and frank discussion of sensitive social or relationship issues (Creswell, 2013). All interviews were conducted by the lead author either in person or via Skype video conference in the respondent's native language. The duration of individual interviews ranged from 30 to 90 minutes. With the respondent's permission, all interviews were recorded and then transcribed. Whenever possible, we used the 52 secondary data sources to triangulate interview data.

We created a case study database using NVivo 12 software to facilitate retrieval of primary and secondary data during the collection and analysis stages and facilitate data triangulation.

5.4.3 Data analysis

We carried out the data analysis process in two steps. In the first step we used SNA techniques to calculate network centrality measures and in the second step we applied an inductive approach to identify and interpret key themes present in our primary data.

Step 1: Social network analysis

Social network theory proposes that structural position in the GSN can be crucial for influencing other nodes (Rowley, 1997), and suggests centrality measures to describe it (Freeman, 1978). To identify the position of secondary stakeholders in the GSN we followed the analytic process recommended by Borgatti and Li (2009) for conducting social network analysis (SNA) in a supply network context. We delimited the network to include fresh banana suppliers in Costa Rica (51), their global buyers (8), and the four secondary stakeholders that we identified as the most relevant for developing upstream sustainability in the GSN. We define each organization as a node in the network and consider sustainability-related information ties based on active membership in the trade association, the multi-stakeholder initiative, and certification initiatives

managed by Alpha and Beta. In this way *Alpha* has ties to the 31 suppliers and 6 buyers, *Beta* has ties 40 suppliers and 7 buyers, *Gamma* has ties to 1 supplier and 4 buyers, and *Delta* has ties to 1 supplier and 4 buyers. We created a binary adjacency matrix where nodes are represented in both rows and columns. Ties between nodes are represented in the cells. Cell (i,j) will be equal to “1” if actors i and j are linked by an information tie, and “0” otherwise. Because information ties are bidirectional, the matrix is symmetrical and composed of 63 nodes (4 secondary stakeholders, 51 suppliers, and 8 buyers) and 322 information ties between nodes.

We then imported the adjacency matrix into UCINET 6 (Borgatti et al., 2002) as the main input for SNA. UCINET is a widely used software package for analysing network data that has been used in previous supply network studies (Bellamy et al., 2014; Y. Kim et al., 2011; Marques et al., 2019). We measured each secondary stakeholder’s influence scope using degree centrality, distinguishing between upstream and downstream scope, and relational mediation using betweenness centrality as described in Table 5.4. Whenever possible, we triangulated our centrality measurements using interview data.

SNA Measurement*	Definition	Construct	Exemplary quotes
Degree centrality: Total # of ties divided by maximum possible # of ties. (Kim et al., 2011).	Describes the extent to which an actor has an impact on the decisions or strategic behaviour of other network actors.	Influence scope (Kim et al., 2011)	NA
Upstream degree centrality: # of ties to upstream actors divided by maximum # of possible ties with upstream actors.	Describes the extent to which an actor has an impact on the decisions or strategic behaviour of upstream network actors.	Upstream influence scope	<i>Producers listen to Gamma and share information with them.</i> (Operations director, Applied research organization)
Downstream degree centrality: # of ties to downstream actors divided by maximum # of possible ties with downstream actors.	Describes the extent to which an actor has an impact on the decisions or strategic behaviour of downstream network actors.	Downstream influence scope	<i>Many global buyers are under pressure to show they are taking specific actions for developing sustainability, so they are interested in working with us.</i> (Working group coordinator, Delta).
Betweenness centrality: measures how often a node lies on the shortest path between combinations of pairs of other nodes.	Describes the extent to which an actor can intervene or control interactions among others in the network.	Relational mediation (Kim et al., 2011)	NA

Table 5.4 Centrality measurement⁷

⁷ Measurement details are provided in Appendix 5.2

Step 2: Data coding

The next stage started with the open coding of the interviews by grouping phrases, sentences, or paragraphs into codes and categories focusing on the embedded unit of analysis. In this step we followed an inductive approach to identify a set of constructs that emerged as relevant from our interviews. These constructs relate to governance mechanisms used by secondary stakeholders to intermediate and influence buyers and suppliers with the aim of developing sustainability in the upstream portion of the GSN.

We followed the coding process suggested by Strauss and Corbin (1990). We developed first-order codes by identifying all instances in which informants mentioned practices or initiatives for improving social outcomes in the GSN. We performed multiple iterations to refine our first-order codes until we were able to identify 14 different practices or initiatives used by secondary stakeholders to influence the development sustainability in the upstream portion of the GSN. We then carried out axial coding to converge first-order codes into second-order themes. These themes represent secondary stakeholder governance mechanisms. We identified five different governance mechanisms specifically enacted by secondary stakeholders to develop sustainability in the upstream portion of the GSN. Data was coded by the first author, and the coding scheme was periodically reviewed in meetings with the second author. Any coding definitions on which there was disagreement were discussed and clarified. The resulting data structure is presented in Table 5.5.

Exemplar quotes	First-order codes	Second-order themes
<i>“What we require [from plantations] is 100% compliance with local legislation and 85% compliance with what we call industry best practices” (Sustainability director, Gamma)</i>	Evaluating supplier social performance	Assessing supplier compliance with sustainability requirements
<i>“Gamma assesses wastewater pollution, for example, so we send them the information they ask for” (General Manager, Supplier A)</i>	Evaluating supplier environmental performance	
<i>“The process we follow is to conduct a diagnosis in three parts: one in the operations of the farm itself, second on the packing plant, and third on all the administrative, managerial part of the farm” (Banana commodity lead, Alpha)</i>	Diagnosing supplier economic performance	
<i>“We try to go beyond good practices, especially with smaller producers, we need to add a managerial component to our interventions. To help them get access to financing, help them to understand their cash flow so that they can run their operations in a better way in financial terms” (Banana commodity lead, Alpha)</i>	Providing managerial knowledge to suppliers	Training suppliers to facilitate adoption of sustainability practices
<i>“Within the structure of Beta, we have the figure of the Farm Assurer. This is a person who is already knowledgeable about Beta’s standards and can assist producers that are applying for certification or even re-certification.” (Account manager, Beta)</i>	Conducting mock audits	
<i>“Our function towards suppliers has to do with technical assistance, training and helping with issues that arise during the implementation of the standard” (Banana commodity lead, Alpha)</i>	Providing technical support to suppliers	
<i>“When suppliers are in very poor conditions Gamma can intervene and take over the administration of the plantation” (Sustainability director, Gamma)</i>	Intervening poorly performing suppliers	Penalizing not-compliant producers
<i>“When producers consistently struggle with sustainability requirements, we talk to the buyers, to let them know” (Sustainability director, Gamma)</i>	Informing buyers of poor supplier working conditions/low wages	

<p><i>“A German retailer, for example, that is associated with us, we have a direct relationship with them and they are part of the technical committees. They inform us “OK, we need this [new requirement], or our consumer is demanding that [new requirement] from the product”.</i></p> <p>(Key account manager, Beta)</p>	Gathering end-consumer expectations of sustainability standards	Transmitting expectations of downstream stakeholders upstream
<p><i>“End-consumers now want to know the conditions under which the product that is on his table was produced. This led us to consider social responsibility, so we began to adopt new assessment tools that allow us to give the end-consumer this transparency regarding the way the food was produced”</i> (Key account manager, Beta)</p>	Updating standards to reflect end-consumer concerns	
<p><i>“I work a lot to change the chip, the [supplier’s] mindset. Many of them see certification as just a market requirement. I really try to create consciousness, to inform suppliers about the context and the end consumers”</i> (Key account manager, Beta)</p>	Providing suppliers with information about end-consumer expectations	
<p><i>“What we try to do is get people to sit at the negotiation table, mediate and help them reach agreements”</i> (Director for sustainable Beta, Alpha)</p>	Mediating sustainability discussions between buyers and suppliers	Facilitating joint initiatives to promote development of sustainability upstream
<p><i>“One of our projects, called good practices in the banana industry, was about building a platform for publishing best practices for social performance, for certifications, for standards”</i> (Working group coordinator, Delta)</p>	Identifying best practices for developing sustainability upstream	
<p><i>“What we do is bring different actors together so that they can collaborate on a specific initiative. And this coordination is immensely valuable”</i> (Working group coordinator, Delta)</p>	Connecting buyers, suppliers, and other secondary stakeholders for developing sustainability	

Table 5.5 Data structure for secondary stakeholder governance mechanisms

Given that we employed an embedded design, we treated each embedded unit (i.e., each secondary stakeholder) as a case, and carried out within-case and cross-case analysis (Yin, 2009). Within-case analysis consisted of examining the ties of each secondary stakeholder with buyers and suppliers in the GSN to assess its centrality in the information network and identify governance mechanisms. The cross-case analysis consisted of assessing the resulting configurations of network position and governance mechanisms to characterize different roles played by each secondary stakeholder. We then analysed how secondary stakeholder roles interact with each other at the network level and developed propositions that characterize how secondary stakeholders contribute to developing sustainability in the upstream portion of the network both at the node and network levels.

5.5 Results

5.5.1 *Within embedded case analysis*

Alpha

Alpha's mission is to conserve biodiversity and support sustainable livelihoods of farmers and farm workers in commodity GSNs. *Alpha's* specific goals in the banana supply network are to promote workers' rights, improve their livelihoods, reduce the impact of pesticides and fertilizer use (many of which can be harmful to human health), and increase the profitability of banana production. To accomplish these goals *Alpha* deploys a certification initiative that includes a sustainability standard, auditing processes, and a consumer-facing label. This secondary stakeholder has been involved in the banana GSN in Costa Rica since 1987.

The sustainability standard is the cornerstone of *Alpha's* certification initiative. The standard is organized into 4 sets of criteria, which are classified as either critical or continuous improvement. The largest set contains the criteria designed to support the improvement of farmer and farm worker livelihoods and wellbeing.

Compliance is assessed through annual audits conducted by independent certification bodies. Suppliers are responsible for paying the cost of the audit. To be eligible for certification, suppliers must comply with all critical criteria. To maintain the certification, suppliers must also demonstrate compliance with an increasing number of continuous improvement criteria over a 6-year period. For example, in terms of worker remuneration, the continuous improvement design means that suppliers must first ensure workers are paid the legal minimum wage (a critical criterium) and then progress towards paying a living wage over a period of 6 years.

Alpha also engages with buyers through the certification initiative. The consumer-facing label aims to support end-consumers in making more informed purchasing decisions. Buyers that source from certified suppliers can display the label in their products and communications. Buyers can access data about certified suppliers through *Alpha's* database of certified producers. Regarding pricing, *Alpha* is working with buyers to ensure that certified suppliers receive a sustainability premium for their product, but at the time this research was conducted this initiative was not yet in place in the banana GSN.

Alpha's long history of working in Costa Rica has allowed it to develop relationships with many suppliers and buyers in the GSN. Suppliers and buyers are aware of *Alpha's* mission of improving social and economic sustainability in the banana supply network. As a result, *Alpha* is recognized as a relevant actor for addressing sustainability concerns and often participates in negotiations between buyers, suppliers, and workers that pertain to concerns over workers' rights, livelihoods, and well-being.

Beta

Beta's mission is to develop safe, sustainable agriculture worldwide. Like *Alpha*, *Beta* deploys a certification initiative composed of a sustainability standard, auditing processes, and a consumer-facing label to accomplish this goal. *Beta's* certification initiative is applicable to a broad range of products, including bananas, and is used widely in food supply networks. Costa Rican suppliers of bananas perceive this certification initiative as a minimum requirement for accessing global markets. *Beta's* office for Central America is in Guatemala, and it does not have a physical presence in Costa Rica.

The criteria in *Beta's* sustainability standard are built to reflect good agricultural practices. In terms of sustainability, the standard contains criteria that impact worker safety, health, and well-being. The standard does not include criteria for assessing labour rights or worker remuneration. Compliance is assessed through annual audits conducted by independent certification bodies and paid for by suppliers. *Beta* provides suppliers with guidance regarding their performance on the key criteria needed to achieve certification prior to the assessment.

To update the sustainability standard, *Beta* engages with buyers and end consumers to understand their expectations regarding the conditions under which food is produced, including sustainability. *Beta* also provides buyers and suppliers with an opportunity for participating in a consultation period as part of the process for updating the sustainability standard. Buyers can also consult a database to locate suppliers that are certified by *Beta*.

Buyers that source from certified suppliers can display *Beta's* consumer-facing label on their products and in their communications. The label is a means for buyers to provide end consumers with information regarding the way their food was produced. *Beta* does not aim to generate demand for sustainable products, but rather to assure end consumers that their expectations for safe and sustainable food are met.

Gamma

Gamma's mission is to promote the development of the banana industry in Costa Rica, with a focus on strengthening independently owned plantations (as opposed to plantations owned by large international buyers such as Chiquita or Dole). *Gamma* aims to ensure that Costa Rican suppliers remain competitive in global markets. The rising importance of sustainability for accessing global markets led *Gamma* to include assessment of environmental impact, worker remuneration, health, education, and well-being in its objectives.

In this regard, *Gamma's* goals are ensuring that suppliers comply with local laws regulating worker wages, social security benefits, and worker health and safety. *Gamma* also identifies industry best practices and encourages suppliers to them. To accomplish these goals, *Gamma* conducts annual audits where suppliers must achieve 100% compliance with labour laws and 85% compliance in terms of adoption of best practices.

Gamma provides training to suppliers that struggle to pass the annual audits. Trainings include technical support for implementing the sustainability practices required to pass the audit as well as follow-up until the next audit is conducted. In cases where a supplier continuously fails to adhere to the minimum requirements, *Gamma* engages the supplier's buyer and attempts to get the buyer involved in working with the supplier to fix the issues. As a measure of last resort, *Gamma* can take over the administration of plantations that are consistently non-compliant. *Gamma* also organizes a local working group dedicated to the development of sustainability in suppliers. Representatives from *Gamma*, buyers, and suppliers participate in this working group.

Delta

Delta's mission is to work towards a world where banana production and trade are sustainable from the environmental, social, and economic perspectives. To accomplish its mission *Delta* coordinates three international working groups focused on environmental impact, labour rights, and distribution of value in the GSN. Buyers and other secondary stakeholders (such as NGOs and government agencies) participate. Supplier representation in

the working groups is limited because few suppliers are full members of *Delta*. The working groups are chaired by *Delta* and meet on a regular basis. Specific initiatives for developing sustainability in the GSN, such as good practice manuals and guidelines, are created in the working groups. In terms of dissemination, the results of specific initiatives are reported, translated, and made publicly available on *Delta*'s website.

Delta also coordinates an annual conference specifically for the global banana industry. The conference is attended by buyers, suppliers, civil society organizations, and representatives of governments from banana producing and banana buying countries. The conference offers buyers and suppliers an opportunity for interacting with each other, as well as interacting with civil society organizations. It is also a forum for engaging in discussions about pressing issues in the network, such as the development of sustainability upstream.

5.5.2 Cross-embedded case analysis

Analysis across the four embedded cases shows that secondary stakeholders play specific roles to develop sustainability in the upstream portion of the banana GSN. Specifically, we find that the role of secondary stakeholders can be characterized in terms of structural position in the information network and governance mechanisms used for developing sustainability upstream.

Structural position in the information network

The four secondary stakeholders in our sample intermediate buyers and suppliers to develop sustainability in the upstream portion of the GSN. In our sample, all four secondary stakeholders have a high number of ties with other GSN actors, meaning they are highly central in the sustainability-related information network. A central position in the sustainability-related information network means that secondary stakeholders either have direct contact with a high number of buyers and/or suppliers or lie on the shortest path between other pairs of actors. Higher centrality means that the secondary stakeholder can influence buyers and/or suppliers to a greater extent. Centrality is thus associated with the influence scope and relational mediation possibilities of each secondary stakeholder.

While all four secondary stakeholders are central in the sustainability-related information network, we find that they display specific patterns of ties in different portions of the network (upstream or downstream). *Gamma* has ties to all suppliers and comparatively fewer ties to buyers. *Gamma* also lies on the shortest path between other pairs of network

actors most frequently. Differently, *Delta* has a high number of ties to buyers and fewer ties with suppliers and is seldom on the shortest path between other pairs of network actors. *Alpha's* and *Beta's* ties are not concentrated in a specific portion of the GSN. Instead, these two secondary stakeholders have many ties to both buyers and suppliers and lie on the shortest path between other pairs of network actors with moderate frequency. Table 5.6 summarizes the centrality measures for each secondary stakeholder.

Secondary stakeholder	Upstream degree centrality	Downstream degree centrality	Betweenness centrality
<i>Alpha</i>	High (0.608)	High (0.750)	Medium (0.153)
<i>Beta</i>	High (0.784)	High (0.875)	Medium (0.272)
<i>Delta</i>	Low (0.020)	Medium (0.500)	Low (0.004)
<i>Gamma</i>	High (1.000)	Low (0.375)	High (0.534)

Table 5.6 Centrality measurements

Drawing from social network theory, we propose that different patterns of ties are indicative of differences in influence scope and relational mediation for the secondary stakeholders in our study. We coded centrality as high, medium, or low. Following Kim et al. (2011) we determined the cut-off point for the three categories (i.e. high, medium, low) based on one rule: when there was a noticeable drop-off in scores, the previous score constitutes the threshold for the category.

High upstream centrality means that *Gamma's* influence scope is primarily upstream, and high betweenness centrality suggests a high level of relational mediation connecting suppliers and buyers. High scores on both upstream and downstream centrality mean that *Alpha* and *Beta's* influence scope is bi-lateral and medium betweenness centrality indicates moderate levels of relational mediation. Medium downstream centrality means that *Delta's* influence scope is primarily downstream and low betweenness centrality is indicative of limited relational mediation, as it is not connected with suppliers.

Governance mechanisms

We also find that the secondary stakeholders in our study use specific governance mechanisms for developing sustainability in the upstream part of the GSN.

The first governance mechanism we identified in our cases is assessment of supplier compliance with sustainability requirements. This governance mechanism consists of evaluating if suppliers adhere to pre-defined requirements regarding pollution, wages paid by suppliers to their workers, and working and labour conditions. *Alpha's* director for

sustainable agriculture explains “we work to ensure that suppliers meet all the criteria, otherwise, they cannot be certified. And if they do not want to meet the criteria, then they can’t have the certification”. This governance mechanism is used by *Gamma*, *Alpha*, and *Beta*. Although each secondary stakeholder defines its own criteria and thresholds, all three have criteria in place for assessing the key elements of sustainability (i.e., pollution, wages, working and labour conditions).

A second governance mechanism used by secondary stakeholders is training suppliers. This governance mechanism consists of improving the capacity of suppliers to adopt sustainability practices. In our cases we found that secondary stakeholders train suppliers by providing technical assistance to improve the supplier’s managerial capabilities and readiness for assessment of environmental and social outcomes such as pollution, worker wages, safety, and labour conditions. Developing managerial capabilities is described as a key antecedent for successful adoption of sustainability practices, as explained by *Gamma* “when producers are doing poorly in economic terms, they tend to be doing poorly in everything else, especially regarding sustainability.” This governance mechanism is used by *Alfa* and *Beta*.

Penalizing suppliers that are consistently non-compliant with sustainability requirements is a third governance mechanism identified in our case studies. This mechanism is used by *Alpha*, *Beta*, and *Gamma*. In *Alpha*’s and *Beta*’s case, certified suppliers that fail to adhere to requirements can lose the certification. Losing certification can mean that the supplier also loses access to buyers. Referring to a neighbouring supplier, *Supplier D* explained that “due to issues with wages and poor practices they lost the certification. Now their buyer has to go looking for a certified supplier to make up that volume”. *Gamma* penalizes suppliers that fail to comply with the requirements established in its audits by sharing information about non-compliant suppliers with buyers. As explained by *Gamma*’s sustainability director, *Gamma* attempts to get the buyer to work with the non-compliant supplier in correcting the issues. *Gamma* can also intervene the operations of suppliers that consistently fail to meet sustainability requirements.

A fourth governance mechanism identified in our cases is transmission of expectations of downstream stakeholders upstream. Employed by *Alpha* and *Beta*, this governance mechanism refers to providing suppliers with information about downstream stakeholder expectations regarding worker wages and working conditions. To accomplish this the secondary stakeholder is in direct contact with buyers, as explained by *Alpha*’s banana commodity lead “I facilitate the flow of information and the coordination of activities

between the actors here in the field, suppliers, and our market team, which is mainly in Europe and the United States". This governance mechanism is associated with developing sustainability upstream because it allows secondary stakeholders to update certifications and trainings to reflect changing end-consumer concerns over upstream wages and working conditions. Furthermore, suppliers receive information about end-consumer expectations through changes in certification requirements and trainings, as explained by *Supplier D* "we see changing tendencies, for example, Alpha is now starting to discuss living wages".

The fifth governance mechanism identified in our cases is facilitating joint initiatives to promote the development of sustainability upstream. This governance mechanism is primarily exhibited by *Delta*. *Delta* leverages its knowledge of the expertise held by specific buyers and other secondary stakeholders to promote the development of specific initiatives, such as good practice manuals and guidelines, that are aimed at improving sustainability in the GSN.

Configuration approaches

Our analysis suggests that the role of secondary stakeholders in developing upstream sustainability in GSNs can be characterized based on structural position in the sustainability-related information network and governance mechanisms. We identified each role by considering the prevailing influence scope, relational mediation, and governance mechanisms employed by each secondary stakeholder. In this way, three roles emerged from our inductive analysis. Building on social network theory, which suggests that the combination of individual actor's network position with specific practices is indicative of the extent to which it can influence other actors in the network, we labelled these roles gatekeeper, liaison, and coordinator (Gould & Fernandez, 1989; Obstfeld et al., 2014).

Gatekeeper

The gatekeeper role is characterized by upstream influence scope, high relational mediation, and governance mechanisms based on assessment and enforcement of sustainability requirements. In our case studies, this role is enacted by *Gamma*. *Gamma*'s high number of ties with suppliers allow it to assess environmental and social outcomes for every supplier in the GSN through an annual audit. The relevance of the information that *Gamma* gathers through these audits is recognized by suppliers as well as other secondary stakeholders. "The work they do is extensive, they carry out regular audits, they have direct contact with producers all the time" (*Commodity lead, Alpha*).

In addition, *Gamma* leverages its high relational mediation to penalize suppliers that are consistently non-compliant with sustainability requirements. Specifically, *Gamma*'s network position allows it to quickly share information about non-compliant suppliers with buyers. "We send the results of the assessment to each producer. When there are issues, we follow up in the next audit to check if improvements have been made. Most producers do well, but there are a few, a minority, that continue to struggle. In those cases, we talk to the buyers, try to get them to say to the producer "if you don't fix this then I can't buy your fruit anymore"" (Sustainability director, *Gamma*).

We put forth the following propositions:

P1a: Secondary stakeholder gatekeepers contribute to developing upstream sustainability by enforcing supplier compliance with sustainability requirements.

P1b: The gatekeeper role can be enacted by combining upstream influence scope and high relational mediation with governance mechanisms based on supplier assessment and penalization.

Liaison

This role is characterized by a structural position in the sustainability-related information network that offers bi-lateral influence scope and medium relational mediation with governance mechanisms for transmitting information to suppliers and developing supplier capabilities. In our sample, this role is enacted by *Alpha* and *Beta*. These secondary stakeholders leverage bi-lateral influence scope to share information about buyer sustainability requirements with suppliers. More specifically, both *Alpha* and *Beta* use their ties with buyers to gather information about end-consumer expectations regarding upstream environmental and social outcomes. Gathering such information from the downstream portion of the network allows *Alpha* and *Beta* to revise and update their certification initiatives. The most recent revision of *Alpha*'s standard, for instance, reflects increasing end consumer concerns over upstream wages by incorporating payment of a living wage (as opposed to local minimum wage) as part of the commitments required to achieve or maintain certification.

Besides communicating changing end-consumer concerns to suppliers through updates in their standards, moderate levels of relational mediation allow *Alpha* and *Beta* to share the rationale for the changes -agreed with buyers- directly with suppliers. Providing this information to suppliers helps *Alpha* and *Beta* transmit the full implications of committing to sustainability. "Suppliers initially see traceability and certification as just one more market

requirement. So, I try to help them understand that it is more than just a requirement, it's really a commitment they are making that will help ensure they have a high-quality product, good agricultural practices, and high social responsibility. And when [suppliers] see this, then they say: OK, yes, I want to be part of this change, I want to produce more efficiently and more responsibly, I'm going to adopt the certification” (Key account manager, Beta).

Alpha and Beta also leverage their upstream ties to improve the capacity of suppliers to develop sustainability by developing supplier capabilities through training. Specifically, they offer suppliers training in terms of the business component of banana farming and training to improve assessment readiness. As mentioned above, developing managerial capabilities is related to adoption of sustainability because suppliers that struggle financially are the least capable of investing in environmentally friendly technology and providing fair wages and safe working conditions to workers, as highlighted by Alfa's commodity lead “besides good agricultural practices, a managerial component is also needed, especially with smaller suppliers”. Providing suppliers with training to improve assessment readiness contributes to developing supplier capabilities because suppliers learn about the specific processes that will be assessed in terms of environmental and social outcomes. This allows suppliers to maintain, or when needed improve such processes. Supplier C noted the importance of audit readiness assistance “it helps understand the traceability and documentation that is required of all the different practices and processes that we have”.

We put forth the following propositions:

P2a: Secondary stakeholder liaisons contribute to upstream sustainability by sharing information with suppliers about downstream sustainability requirements and developing supplier capabilities.

P2b: The liaison role can be enacted by combining bi-lateral influence scope and medium relational mediation with governance mechanisms based on transmission of stakeholder expectations and training.

Coordinator

The coordinator role is characterized by downstream influence scope and low relational mediation combined with governance mechanisms based on the development of joint initiatives for developing upstream sustainability. *Delta* enacts this role in our case studies. *Delta's* downstream ties provide it with visibility into buyer sustainability requirements and allow it to coordinate initiatives where buyers and other secondary stakeholders besides NGOs and trade associations such as government agencies and unions work jointly to

develop new initiatives for improving sustainability upstream. Recent joint initiatives include the development of a methodological guide to measure and reduce carbon and water footprints on banana plantations that was published in English and Spanish in 2018, and the development of a manual on occupational health and safety in the banana industry that has been published in English, Spanish, and French. Buyers, NGOs, government agencies, and unions participated in the development of both initiatives. In this way, *Delta* works to coordinate the sustainability requirements of buyers and other secondary stakeholders in the GSN. “*We have a global vision of the expertise our members have, and we know how these points can potentially be joined. This is fundamental for visualizing strategic opportunities for collaboration that can yield high value for the GSN*” (Working group coordinator, *Delta*). The results of each initiative are freely available on *Delta*’s website. However, *Delta*’s low relational mediation limits the extent to which suppliers participate in joint initiatives.

Delta also organizes a semi-annual conference where buyers, suppliers, and other secondary stakeholders from multiple countries meet. Environmental and social outcomes such as improving reducing the use of agrochemicals and upstream wages, working and labour conditions, are discussed in such events.

We put forward the following propositions:

P3a: Secondary stakeholder coordinators contribute to upstream sustainability by developing common guidelines and best practices.

P3b: The coordinator role can be enacted by combining downstream influence scope and low relational mediation with governance mechanisms based on facilitating joint sustainability initiatives between buyers and other stakeholders.

Network approach

Besides analysing network position and governance mechanisms at the node level, we also analysed how secondary stakeholders interact with each other at the network level for developing upstream sustainability. Our case study suggests that the three secondary stakeholder roles complement each other for developing sustainability in the upstream part of the GSN. Specifically, sustainability requirements originate in the downstream portion of the GSN. The common guidelines and best practices developed in *Delta*’s working groups reflect requirements of buyers and other secondary stakeholders, and sustainability requirements for suppliers are frequently associated with certifications demanded by buyers, as explained by *Supplier B* “*we got certified because the buyers we wanted to do business with ask for the certification. When we sit down to negotiate with them, the first thing they ask is what*

certifications we have". Alpha and Beta transmit the sustainability requirements to suppliers through their certification initiatives, as explained by Alpha *"most of our interventions answer to a request by actors in the market... we get feedback from them [in this case, buyers] for improving our standards, for example, to consider a specific agrochemical or specific social problems... and sometimes suppliers are not happy about this, because it implies costs, and it is like forcing them a little in terms of sustainability. We tell them that our standard is voluntary, but they say that it is not, because the market is asking for it"*. At the network level, Alpha, Beta, and Delta thus act as representatives of buyers.

However, given their limited relational mediation, Alpha, Beta, and Delta also engage with Gamma to gain support for developing upstream sustainability, as explained by Beta *"my job includes disclosing information about changes in our standard to producers. So, I talk to Gamma, show them what has changed and explain what we want to achieve"*. Gamma's high upstream influence scope and high relational mediation provide it with greater capacity to influence supplier behaviour. Gamma is part of Delta's working groups and has taken an active role in initiatives such as the carbon and water footprint initiative described above. Alpha also highlights that Gamma *"is a very important stakeholder for us, we meet with them frequently"*. Such interaction is frequently amiable, as explained by Gamma *"We have good relationships with them [Alpha and Beta]. Sometimes they come here, other times we go to meetings together"*.

There are, however, also moments of friction, especially when major changes to sustainability requirements are introduced by buyers. The Living Wage initiative provides an example. This initiative aims to achieve wages that allow workers to achieve a decent life for themselves and their families. This often requires that employers (i.e., suppliers) pay workers more than the local minimum wage. During our fieldwork Alpha was taking steps to include Living Wage in their sustainability standard but encountered resistance from suppliers, as explained by Supplier D *"we are not against wages that allow workers to improve their quality of life, that is not the problem... the problem is getting the consumer to understand that there is a cost associated to that and they also need to pay fair prices"*. Gamma also resisted this new sustainability requirement, as noted by Alpha *"Gamma disagreed with the requirement, and I think they had a fair point because the methodology used to make the calculations [for the Living Wage] was imposed externally. But we have had many conversations with them, and that has helped us get closer again."* Gamma also voiced concerns about Living Wage in Delta's forum, as explained by Gamma's sustainability director *"we are discussing the Living Wage requirement with other banana producing*

countries, raising the issue in Delta’s forum”. At the network level, therefore, Gamma’s role is to represent suppliers. Hence, we put forth the following propositions:

P4. At the GSN level, coordinator, liaison, and gatekeeper secondary stakeholder roles transmit and enforce sustainability requirements from buyers to suppliers.

a. At the GSN level, the gatekeeper secondary stakeholder role acts as representative of suppliers.

b. At the GSN level, liaison and coordinator secondary stakeholder roles act as representatives of buyers.

5.6 Discussion

5.6.1 Theoretical implications

This chapter sought to unpack how secondary stakeholders contribute to developing sustainability in the upstream portion of a GSN. Previous research on indirect governance models for developing sustainability in global settings suggests that secondary stakeholders play an important role (Gualandris & Klassen, 2018; Yaziji, 2004). However, most studies have been conducted from the buyer firm’s perspective and considering single firms or buyer-supplier dyads as the unit of analysis, so the role of secondary stakeholders in contributing to sustainability in GSNs remains under-explored. To fill these research gaps, we conducted inductive research in a GSN from the perspective of the secondary stakeholders. Our findings, summarized in table 5.7, provide a nuanced view of the roles that secondary stakeholders play in developing sustainability in the upstream portion of GSNs.

	Gatekeeper	Liaison	Coordinator
<i>Influence scope</i>	Upstream	Bi-lateral	Downstream
<i>Governance mechanisms at the node level</i>	Supplier assessment and penalization	Transmission of expectations and training	Facilitating joint sustainability initiatives
<i>Role at the node level</i>	Enforcing supplier compliance with sustainability requirements	Sharing information and developing supplier capabilities	Developing common guidelines and best practices
<i>Role at the network level</i>	Representation of suppliers	Representation of buyers	

Table 5.7 Secondary stakeholder roles for developing sustainability upstream in GSNs

The contributions of this chapter are threefold. First, our approach to considering configurations of network structural position and governance mechanisms allows us to extend recent findings by Liu et al. (2018) that show the resources and relational mechanisms used by secondary stakeholders to collaborate with buyers in the context of supplier development for sustainability. We add a structural component to the secondary stakeholder roles proposed by Liu et al. (2018) by characterizing the role played by secondary stakeholders in the development of upstream sustainability in terms of centrality. In line with previous GSN studies, we find that centrality affords secondary stakeholders with information-rich positions vis a vis buyers and suppliers (Gong et al., 2018; Hahn & Gold, 2014). Extending the influence scope construct proposed by Kim et al. (2011), our study suggests that such positions are associated with upstream, downstream, or bi-lateral influence scope. Our study shows that no single secondary stakeholder role is fully central and that multiple secondary stakeholder roles that complement each other need to operate simultaneously to develop sustainability in a GSN. Our results also provide empirical support for recent conceptual studies that highlight the importance of considering structural embeddedness for understanding how actors in a GSN leverage their network ties to reach sustainability objectives (Tate et al., 2013).

We also add to the literature that has previously explored governance mechanisms used by buyers (Alexander, 2020; Formentini & Taticchi, 2016), and to a lesser degree by suppliers (Fontana & Egels-Zandén, 2019; Huq et al., 2016), by exploring the governance mechanisms used by secondary stakeholders to develop sustainability in a GSN. Our study suggests that secondary stakeholders replicate the mechanisms employed by buyers in direct governance models for developing sustainability, especially in terms of assessment. The coordinator role deploys governance mechanisms aimed at fostering collaboration, but its impact is limited because the role has a relatively low level of connection with suppliers and low relational mediation.

Our third contribution relates to the level of analysis. Most prior research on developing sustainability in GSNs has focused on either single firms or buyer-supplier dyads (Gualandris et al., 2014; Jiang, 2009a). The few studies taking a network perspective to explore development of sustainability have either considered the perspective of buyer-supplier-supplier (Wilhelm et al., 2016a) or buyer-NGO-supplier (Rodríguez et al., 2016b) triads. We extend these studies by considering sustainability-related information ties that allow us to explore a network composed of multiple secondary stakeholders and multiple suppliers. Extending previous work that proposes that buyers interact with secondary

stakeholders to extend sustainability initiatives across supply networks (Alvarez et al., 2010; Saunders et al., 2017), we show how heterogeneous secondary stakeholders interact not just with buyers but also with suppliers and with each other. However, we find little evidence of bi-directional flows of information across the GSN. Our results suggest that collaboration for sustainability between suppliers, buyers, and secondary stakeholders is limited because the flow of sustainability requirements remains unidirectional, with requirements originating in the downstream portion of the GSN imposed upon upstream suppliers. While the Gatekeeper role represents suppliers at the network level, we found no evidence that this role helps improve supplier participation in the development of sustainability initiatives.

Taken together, our findings about the role of secondary stakeholders and the flow of sustainability through the GSN call into question the effectiveness of indirect governance for improving environmental and social outcomes upstream and suggest that further exploration of this approach is required.

5.6.2 Managerial implications

This research also has implications for practice. For managers in buyer firms, our work highlights the importance of engaging with secondary stakeholders that are well-connected to suppliers to increase the effectiveness of indirect governance for sustainability. This may require reaching out to secondary stakeholders that are co-located with suppliers. Otherwise, the buyer risks interacting with secondary stakeholders whose capacity to influence supplier behaviour is limited. For managers in supplier firms, our work suggests that locally developed sustainability initiatives, local issues, and local needs are not currently relevant for buyers and only to a limited extent for secondary stakeholders. In this sense, managers in supplier firms can benefit from strengthening horizontal ties to homogenize locally developed sustainability initiatives and legitimize such initiatives at the GSN level. Fontana and Egels-Zandén (2019) show that such an approach has been effective for limiting unilateral buyer sustainability requirements in the Bangladeshi apparel GSN.

The lack of supplier participation in terms of developing sustainability initiatives and standards also has implications for managers in organizations that we refer to as secondary stakeholders. Our work suggests that although secondary stakeholders advocate for sustainability, there is limited resource provision directed at the upstream portion of the GSN. Furthermore, supplier engagement is passive and they are mainly asked to respond to buyer requests. Suppliers, especially those located in developing economies, however, are frequently the most resource-deprived actors in the network. In this regard, managers in

secondary stakeholders can leverage their bi-lateral influence scope to re-direct resources from the downstream to the upstream parts of the GSN to provide resources and give voice to suppliers.

For policymakers, an important implication of this research relates to the importance of developing mechanisms that facilitate bi-directional flows of sustainability-related information in GSNs. Our work shows that suppliers continue to be standard-takers instead of standard-setters (Nadvi, 2008), at least partly because they are poorly connected to each other and to secondary stakeholders that aim to develop sustainability. Standards are mainly defined by buyers to reflect their interests, and secondary stakeholders primarily transmit and enforce these standards upstream, but do not facilitate greater interaction between buyers and suppliers. In this sense, policy mechanisms that enable greater interaction between global and local actors need to be developed (Vellema & Van Wijk, 2015). One way this can be addressed is through the creation of local government agencies with a mission of promoting the development of local sustainability initiatives and legitimizing these initiatives in international forums attended by GSN actors such as the one held by *Delta* in our study.

5.6.3 Limitations and future research

Our research also has limitations that need to be considered. Our choice of the banana GSN as research context, while justified due to the presence of initiatives for sustainability and multiple secondary stakeholders, may limit the generalizability of our findings to other settings. Nevertheless, we believe our research context is representative of GSNs characterized by a low number of tiers, large numbers of small and medium suppliers, and few large buyers. The GSNs for other agricultural products (pineapples, for instance) or textiles are examples of such networks that are also beset by pressures for developing sustainability upstream (Karaosman et al., 2020). The presence of a local trade association in our data could also limit the generalizability of our findings. However, this limitation is mitigated by the presence of similar trade associations in other countries and other industries such as those present in the apparel industry in Bangladesh and the cut flower industry in Kenya (Lund-Thomsen & Nadvi, 2010) or the business council studied by Adobor and McMullen (2014) in the United States. Nevertheless, future research should consider different types of secondary stakeholders.

Although we take a network perspective, our primary data collection was focused on the upstream portion of the GSN. While this approach is justified given our focus on

development of sustainability upstream and we collected secondary data from buyers, future research can build on our work by collecting data from the downstream portion of the supply network. Our assessment of network ties was also focused on the existence of sustainability-related information ties. Future research can improve on our measurements by considering frequency of interactions and multiplicity of ties (such as contractual ties in addition to sustainability-related information ties). Quantitative assessments of centrality scores can also be conducted in future studies. Furthermore, our measurements did not consider the content of the information that is exchanged. Additionally, our data collection was focused on secondary stakeholders that are connected to traditional supply network actors (i.e., buyers and suppliers). While this allowed us to capture four relevant secondary stakeholders, there may be additional secondary stakeholders, such as unions, that also play an important role in the GSN but that are not connected to buyers or suppliers. In this sense, we do not claim that the three roles identified in our study are exhaustive. Future research focusing on social sustainability should consider ties between workers and secondary stakeholders to expand our findings. An additional avenue for future research lies in exploring the dynamics associated with secondary stakeholder roles. In this regard, future studies can draw from the growing literature on brokerage behaviour, which suggests that network actors have agency and may manoeuvre to position themselves in central network positions (Kwon et al., 2020). Future studies can also explore how roles emerge and evolve at the network level (Boari and Riboldazzi, 2014). In terms of generalizability, future research can also build on our findings by collecting data from multiple networks. Finally, future research can test our results in larger empirical settings through surveys or large-scale social network analysis.

Appendix 5.1 Semi-structured interview protocols

Interview protocol for suppliers

Introduction

- Can you tell me about your current role in your company?
- Can you tell me about your responsibilities in your company?
- What are your company's goals?
- How many plantations does your company operate?
- What is the size of the plantation(s)?
- How many employees does your company have?
- How many boxes are exported?
- Is your company certified by any sustainability standards?

Social sustainability practices

- Please describe your company's social sustainability program.
- What are the key priorities in your company's social sustainability program?
- What socially sustainable operations practices are currently in place?
 - When were the practices adopted?
 - Why were they adopted?
 - What resources were needed for adoption?
- What are the main challenges associated with adoption of socially sustainable practices?

Customers

- Who is your main customer?
- Does this customer ask that your company implement any social sustainability practices?
- Can you describe your company's relationship with this customer?

Secondary stakeholders

- Besides your main customer, who are the most important stakeholders for your company in terms of social sustainability?
- How do the stakeholders mentioned influence your company's social sustainability program? (if the interviewee named more than 2 stakeholders besides the buyer, ask them to talk about only the two most important stakeholders).
- Please describe your company's relationship with each stakeholder (if the interviewee names more than 2 stakeholders besides the buyer, ask them to describe the relationship only with the two most important stakeholders).

Conclusion

- Is there anything else that you think is important that we have not talked about?

- Do you have any questions for me about the research project or your participation in it?

Interview protocol for secondary stakeholders

Introduction

- Can you tell me about your current role in your organization?
- Can you tell me about your responsibilities in your organization?
- What are your organization's goals?

Social sustainability priorities

- What are the major initiatives your organization has for improving social outcomes in companies?
- What are the key priorities in your organization's social sustainability program?

Engagement with suppliers

- Can you describe your relationship with (PRODUCER NAME)?
- How closely do you work with (PRODUCER NAME) regarding adoption of socially sustainable practices?
- What are the key challenges for promoting adoption of socially sustainable practices by (PRODUCER NAME)?
- Are there any tensions in the relationship with (PRODUCER NAME)?

Engagement with buyers

- Can you describe your relationship with (BUYER NAME)?
- What are the major initiatives you have with (BUYER NAME) to promote adoption of socially sustainable operations practices by its lower-tier suppliers?
- Are there any tensions in the relationship with (BUYER NAME)?

Conclusion

- Is there anything else that you think is important that we have not talked about?

Appendix 5.2 SNA centrality measurement

We calculated degree and betweenness centrality following the procedure described by Kim et al. (2011). Degree centrality (C_D) for node $i(n_i)$ in a non-directional network is defined as:

$$C_D(n_i) = \sum_j x_{ij} = \sum_j x_{ji}$$

Where x_{ij} is a binary variable equal to “1” if there is a tie between n_i and n_j and equal to “0” if there is no tie. In other words, degree centrality in non-directional networks is the row sum of the adjacency matrix. Degree centrality is normalized by accounting for the proportion of nodes with ties to n_i , where g is the total number of nodes in the network:

$$C'_D(n_i) = \frac{C_D(n_i)}{g - 1}$$

Because our objective was understanding how secondary stakeholders intermediate and influence buyers and suppliers for developing sustainability in the upstream portion of a GSN, we adjusted the degree centrality measurement to reflect the proportion of ties to a node based on the maximum number of either upstream or downstream ties. We defined the upstream portion of the network as ties with suppliers and the downstream portion of the network as ties with buyers.

Betweenness centrality assumes that a connection between two nodes n_j and n_k follows the lengths of the shortest paths (geodesic) between them. Betweenness centrality (C_B) for node $i(n_i)$ in a non-directional network is defined as:

$$C_B(n_i) = \sum_{j < k} \frac{g_{jk}(n_i)}{g_{jk}}$$

Where g_{jk} is the total number of geodesics linking the two nodes and $g_{jk}(n_i)$ is the number of those geodesics that contain n_i . Betweenness reaches a maximum of 1 when n_i falls on all geodesics and has a minimum value of 0 when n_i falls on no geodesics.

6

Conclusion

6.1 Summary of main results and answers to the research questions

The overarching goal of this Ph.D. dissertation was to explore how to develop sustainability in global supply chains (GSCs). In light of the challenges associated with improving environmental and social outcomes in global settings through supplier assessment and supplier collaboration, the research focused on investigating sustainable supply chain management (SSCM) in presence of geographic distance between buyers and suppliers and engagement with secondary stakeholders. To achieve these aims, this Ph.D. dissertation sought to address the following research questions:

- *RQ1: What is the state of the art of research on sustainable supply chain management and sustainability outcomes in global supply chains?*
- *RQ2: How does geographic distance between buyers and suppliers affect buyer adoption of supplier assessment and collaboration?*
- *RQ3: How does secondary stakeholder engagement affect the relationship between geographic distance and buyer adoption of supplier assessment and collaboration?*
- *RQ4: How do secondary stakeholders contribute to developing sustainability in the upstream portion of global supply chains?*

The four research questions have been addressed in chapters 3, 4, and 5. The results of each chapter inform the subsequent chapter. In this way, geographic distance and engagement with secondary stakeholders are explored in increasing depth, which contributes to refining understanding of how sustainability can be developed in GSCs. The main results of the Ph.D. dissertation and the answers to each research question are summarized below.

RQ1: What is the state of the art of research on sustainable supply chain management and sustainability outcomes in global supply chains?

This research question is addressed in chapter 3, which reviews 69 papers published across 15 years of research in peer-reviewed journals. The review was structured around three key concepts to characterize SSCM in GSCs: supply chain structure, supply chain relational mechanisms, and sustainability outcomes.

In terms of supply chain structure, the results suggest that firms increasingly need to manage sustainability outcomes of suppliers that are geographically distant and separated by multiple tiers. This gives rise to three distinct SSCM configurations, which reflect the structural arrangement of actors that form the GSC. Consistent with the framework proposed by Tachizawa and Wong (2014), SSCM configurations are characterized as open, closed, and third-party. The review shows that the three configurations have received uneven attention from scholars, with open configurations being the structural arrangement that has been studied the most frequently. The results of the review also show that the most recent studies point towards closed and third-party configurations as key for jointly improving outcomes across multiple dimensions of sustainability.

In terms of supply chain relational mechanisms, the results of the review show that SSCM in GSCs is characterized by two types of governance mechanisms: direct and indirect. Consistent with previous studies such as Gimenez and Sierra (2013) and Sancha et al. (2016), direct governance mechanisms are represented by practices such as supplier assessment, supplier collaboration, and buyer participation in multistakeholder initiatives. Indirect governance mechanisms instead rely on industry-specific and multi-industry certifications. Direct governance mechanisms have been the most extensively studied, but tension remains regarding their effectiveness for improving sustainability outcomes in GSCs. Indirect governance mechanisms characterized by engagement with secondary stakeholders have received less attention from SSCM scholars, and further research is suggested in this area. Further research that considers direct and indirect governance mechanisms jointly is also suggested.

RQ2: How does geographic distance between buyers and suppliers affect buyer adoption of supplier assessment and collaboration?

The answer to RQ1 suggests that governance approaches for developing sustainability in global settings need to be explored further, especially under conditions of high geographic distance between buyers and suppliers. To fill this research gap, RQ2 is addressed in chapter 4. Using secondary data, the results of statistical analysis on a sample of 186 firms in multiple countries show that geographical distance between buyers and suppliers is positively related to buyer adoption of supplier assessment and collaboration. In other words, as the geographical distance between a buyer and its suppliers increases, the buyer is more likely to adopt specific practices aimed at managing supplier sustainability outcomes. Viewed through the lens of information processing theory, the results suggest that the buyer firm's information processing needs increase as the distance between supply chain actors increases. This result is in line with previous studies that suggest buyers perceive greater sustainability risk in distant suppliers (Villena & Gioia, 2018), and that greater distance between buyers and suppliers increases the likelihood of diverging interpretations of sustainability goals throughout the supply chain (Huq et al., 2014). The buyer's information processing needs thus increase because interacting with distant suppliers whose language and cultural backgrounds are likely to differ from the buyer's elevates the amount of information that needs to be processed. As suggested by information processing theory, buyer firms respond by adopting supplier assessment and collaboration as a way of increasing information processing capacity.

RQ3: How does secondary stakeholder engagement affect the relationship between geographic distance and buyer adoption of supplier assessment and supplier collaboration?

The answer to RQ1 also suggests that secondary stakeholders play an increasingly important role in developing sustainability in GSCs, but few studies have considered direct and indirect governance approaches jointly. RQ3, which is also addressed in chapter 4, aims to fill this research gap. The results suggest that secondary stakeholder engagement negatively moderates the relationship between geographic distance and buyer adoption of supplier assessment and collaboration. In other words, when suppliers are distant buyers that display higher levels of stakeholder engagement adopt supplier assessment and collaboration to a lower extent. In light of information processing theory, this result suggests that secondary stakeholder engagement lowers the buyer's information processing needs. This result is

aligned with previous studies that suggest secondary stakeholder engagement allows buyers to delegate some of the activities needed for managing upstream sustainability, especially activities associated with the collection of information regarding sustainability performance of distant suppliers (Lee et al., 2012; Plambeck et al., 2011) The result is also aligned with qualitative evidence provided by Wilhelm et al. (2016b) that suggests buyer firms are more likely to collaborate or delegate the management of supplier sustainability outcomes to secondary stakeholders when suppliers are distant. The negative moderation suggests secondary stakeholders play a relevant role, but also raises a question about the extent to which secondary stakeholders contribute to developing sustainability in GSCs.

RQ4: How do secondary stakeholders contribute to developing sustainability in the upstream portion of global supply chains?

Building on the results obtained in RQ2 and RQ3, which suggest that secondary stakeholders play an important role in developing sustainability in GSCs, RQ4 is addressed in chapter 5. The results of an embedded case study where secondary stakeholders are considered as the focal actors show position in the sustainability-related information network and governance mechanisms as relevant for understanding the roles of secondary stakeholders for developing sustainability in GSCs. Three specific roles are proposed, labelled gatekeeper, liaison, and coordinator

The gatekeeper role contributes to developing sustainability in the upstream part of GSCs by enforcing supplier compliance with sustainability requirements. This role is characterized by upstream influence scope combined with high relational mediation and governance mechanisms based on assessment of supplier compliance with sustainability requirements and penalization of non-compliant suppliers. The liaison role contributes to developing sustainability in the upstream part of GSCs by sharing information with suppliers about downstream sustainability requirements and developing supplier capabilities. This role is characterized by bi-lateral influence scope combined with moderate relational mediation and governance mechanisms based on transmission of sustainability expectations and supplier training. The coordinator role contributes to developing sustainability in the upstream part of GSCs by developing common guidelines and best practices. This role is characterized by downstream influence scope combined with limited relational mediation and governance mechanism based on facilitating development of joint initiatives for sustainability.

At a network level, the results suggest that secondary stakeholders interact with each other to develop sustainability in the GSN. Consistent with previous studies, this case study suggests that sustainability requirements originate in the downstream portion of the GSC, and are then transmitted upstream (Corbett, 2006; Lee et al., 2014). The results also show that, at the network level, the gatekeeper secondary stakeholder role acts as a representative of suppliers, and coordinator and liaison secondary stakeholder roles act as representative of buyers.

6.2 Theoretical contributions

Overall, this Ph.D. dissertation contributes to extending the SSCM literature by focusing on engagement with secondary stakeholders for developing sustainability in GSCs. The main academic contributions of the research are presented below.

Answering Quarshie et al.'s (2015) call for more research focused on understanding the management of sustainability in global contexts, the systematic literature review contained in chapter 3 contributes to the SSCM literature by identifying shortcomings in scholarly understanding of SSCM configurations and SSCM governance mechanisms in GSCs. Specifically, the study contributes by suggesting avenues for future research associated with SSCM configurations and SSCM governance mechanisms in GSCs. Regarding SSCM configurations, further research considering SSCM configurations characterized by buyer engagement with secondary stakeholders is needed. In terms of SSCM governance mechanisms, further research that explores how direct and indirect governance mechanisms relate to each other for developing sustainability in GSCs is also needed. These suggestions are aimed at helping to resolve mixed results that currently exist in the literature regarding the effectiveness of SSCM for improving environmental and social outcomes in GSCs, where some studies suggest SSCM improves sustainability outcomes (e.g. Andersen & Skjoett-Larsen, 2009) while others suggest SSCM is ineffective in global settings (e.g. Huq et al., 2014; Locke et al., 2009). While previous studies have examined SSCM configurations (Tachizawa & Wong, 2014; Wilhelm et al., 2016b) and SSCM governance mechanisms (Formentini & Taticchi, 2016; Gimenez & Tachizawa, 2012) independently, this study advances that specific combinations of SSCM configurations and SSCM governance mechanisms may be equally well-suited to develop sustainability, but in different organizational contexts. In global contexts, SSCM configurations that include third parties such as secondary stakeholders are a promising avenue for future research, especially

considering recent calls for reconceptualizing the type of actors that are considered as part of the supply chain (Pagell & Wu, 2009).

The main contribution of chapter 4 lies in analysing direct and indirect governance approaches jointly. Answering Busse et al.'s (2017) call for more research on sustainability-related information processing, this chapter conceptualizes sustainability-related information processing needs in terms of geographic distance. In alignment with previous literature that conceptualizes SSCM in terms of risk management (Foerstl et al., 2010; Seuring & Muller, 2008), in presence of geographic distance buyers adopt supplier assessment and collaboration as a way of aligning information processing needs and information processing capabilities needed to manage supplier sustainability outcomes. Extending previous studies that suggest secondary stakeholders are sources of valuable information regarding supply chain sustainability issues when suppliers are distant (Alvarez et al., 2010; Hahn & Gold, 2014; Matos & Hall, 2007), this research suggests that secondary stakeholder engagement serves to reduce the buyer's information processing needs. Secondary stakeholder engagement thus substitutes, at least partly, buyer efforts to develop sustainability directly.

Chapter 5 digs deeper into the role of secondary stakeholders in developing sustainability in GSCs. This chapter makes three main contributions. The first lies in extending the work of Liu et al. (2018), who suggest that secondary stakeholders play distinct roles for developing sustainability in supply chains, by adding structural position in the sustainability-related information network to characterize the role of secondary stakeholders for developing sustainability in a GSN. The results of the research show that influence scope and relational mediation vary among secondary stakeholders, which affects the roles they play in developing sustainability in the upstream portion of GSCs.

The research also shows that secondary stakeholders replicate the governance mechanisms employed by buyers in direct governance approaches (Formentini & Taticchi, 2016; Gimenez & Tachizawa, 2012). The lack of mechanisms based on collaboration is likely to limit the effectiveness of indirect governance approaches.

Chapter 5 also extends the literature on indirect governance approaches by considering a network perspective. Building on prior work that suggests buyers and secondary stakeholders interact to develop sustainability across GSCs (Saunders et al., 2017), this chapter contributes by showing that secondary stakeholders also interact with each other. Furthermore, the research shows that sustainability initiatives flow from the downstream part of the GSC to the upstream part of the GSC. This result is aligned with previous research that suggests sustainability emerges within the buyer firm and is then diffused across supply

chains through the actions of secondary stakeholders (Nair et al., 2015). We extend such work by showing that the actions of secondary stakeholders are mostly limited to transmitting and enforcing downstream sustainability requirements to suppliers. Despite the presence of secondary stakeholders with bi-lateral influence scope, the study finds little evidence of bi-directional flows of sustainability. Indirect governance, therefore, is limited in its capacity to involve suppliers in the development of sustainability initiatives, which has been proposed as key for improving adoption and effectiveness (Vellema & Van Wijk, 2015).

To summarize, this Ph.D. dissertation contributes to the discourse on developing sustainability in GSCs by exploring indirect governance based on secondary stakeholder engagement. The research suggests that buyers employ both direct and indirect governance approaches to manage the sustainability outcomes of distant suppliers. In presence of high geographic distance, secondary stakeholder engagement gains relevance as buyers seek ways of overcoming the challenges associated with increased information processing needs. Focusing on the role of secondary stakeholders, the research finds heterogeneity in roles and replication of the mechanisms employed in direct governance approaches, which may limit the effectiveness of indirect governance approaches for developing sustainability in GSCs.

This body of research thus informs future studies by highlighting the need to critically examine the role of secondary stakeholders and how they contribute to the development of sustainability in GSNs. The research also highlights the need for further exploration of both information and resource flows in GSNs, considering the possibility of bi-directional flows between buyers and suppliers.

6.3 Managerial implications

This Ph.D. dissertation also has several implications for business managers and managers of organizations considered secondary stakeholders such as NGOs and trade associations. First and foremost, the results of this body of research suggest that business managers that seek to develop sustainability in GSCs are likely to face difficulties in exchanging sustainability-related information with their suppliers, especially if suppliers are highly distant. Although supplier collaboration has previously been proposed for improving upstream sustainability outcomes, opportunities for collaboration with distant suppliers may be limited. This Ph.D. dissertation suggests that engaging with secondary stakeholders to alleviate these challenges requires engaging with secondary stakeholders that are co-located in supplier geographies. This research offers downstream business managers a framework for analysing the different

roles that individual secondary stakeholders can play in the development of sustainability. Downstream business managers can use the framework to support their decisions regarding the type of secondary stakeholders to engage, given that they are likely to encounter a wide variety of secondary stakeholders.

There are also implications for managers in supplier firms. Specifically, suppliers remain limited in their capacity to develop local sustainability initiatives aimed at addressing local issues and needs. Furthermore, their capacity for communicating the value of such initiatives to global buyers remains limited because of size and power differences. In this regard, suppliers remain standard-takers (Nadvi, 2008). Changing this situation requires that supplier managers create governance mechanisms at the local level that promote the strengthening of horizontal ties. Stronger horizontal ties facilitate both the development of local sustainability initiatives and the legitimation of such initiatives at the global level (Fontana & Egels-Zandén, 2019).

Regarding managers in the organizations that this research considers secondary stakeholders, the key implication of this research is the importance of engaging with business actors. This research provides evidence that firms with a global presence are increasingly open to engaging with secondary stakeholders. This Ph.D. dissertation shows, however, that secondary stakeholder engagement with suppliers remains limited. Given the limited engagement of suppliers with secondary stakeholders in terms of development of sustainability initiatives, their capacity to provide resources to disadvantaged suppliers is also limited. In this regard, managers in secondary stakeholders advocating for sustainability with bi-lateral influence scope should better leverage their upstream and downstream ties by enabling a flow of sustainability from suppliers to buyers, and by enacting governance mechanisms to re-direct the flow of resources from downstream to upstream GSC actors. Secondary stakeholders that are geographically proximate to suppliers may be more effective for developing sustainability because they can more easily establish ties with suppliers that allow for both legitimizing supplier-developed sustainability initiatives as well as enforce them.

The limited connection identified in this research between suppliers and secondary stakeholders in terms of sustainability-related information also has implications for policymakers. Specifically, in light of the increasing attention that indirect governance is receiving from buyers, policymakers need to enhance interaction between local suppliers and global buyers. Since local suppliers are frequently at a power disadvantage vis a vis global buyers (Gereffi et al., 2005), the formation of local government agencies may be a way for

policymakers to influence global-local interactions. Such government agencies should seek to enable the growth of horizontal ties between suppliers and represent supplier collectives in the face of international buyers.

6.4 Limitations & future research

Theoretical and managerial implications notwithstanding, this Ph.D. dissertation has limitations that need to be acknowledged. This section provides summarizes the most relevant limitations as well as associated future research directions.

Regarding RQ1, the results presented in chapter 3 are based on a keyword search of articles published in peer-reviewed journals. This means that results are limited by the keywords selected for the search and that findings that have not been published in peer-reviewed journals are not considered. Structured content analysis is also subject to a measure of researcher bias, even when analytic categories are well-grounded in extant research. A third limitation is that it can only capture relationships and concepts that have previously been considered by scholars. Nevertheless, this limitation is offset by the suggestion of future research avenues.

Chapter 4 relies on cross-sectional data and is therefore unable to capture causal relationships. Future qualitative work can explore the secondary stakeholder engagement construct in greater depth. In this sense, the stakeholder engagement frameworks developed in the CSR and business ethics literatures (e.g. Bowen et al., 2010) can be a useful starting point. Additionally, the dataset used to answer RQ3 and RQ4 was not developed specifically for this study. Although this has advantages in terms of sample size, it also presents a limitation in terms of the reliability of the items that were used to operationalize the main constructs of interest. In this sense, future research can be conducted with items developed specifically for measuring secondary stakeholder engagement and using longitudinal data. The sample frame used in chapter 4, although appropriate for testing the proposed hypothesis, also limits the generalizability of the results. More specifically, because participation in the B Impact Assessment (BIA) is voluntary, there is a degree of selection bias in the sample. Although the information provided in the BIA is subject to validation by external parties, the responses are self-reported. In this sense, future research can broaden the sample frame to include firms that are not associated with the BIA and gather data from multiple respondents including secondary stakeholders to increase reliability and validity.

Chapter 5 is high in internal validity but suffers from limited external validity. The challenge is thus the generalizability of the results. In this sense, future research can employ larger sample sizes and statistical analysis to test and refine the propositions set forth in this chapter. This chapter is also limited by the choice of GSC that was selected for sampling secondary stakeholders and suppliers. Nevertheless, the fresh fruits GSC is structurally similar to many other fruit and vegetable GSCs and is also similar to GSCs in other sectors such as textiles (Karaosman et al., 2020). The focus on development of sustainability on the upstream part of the GSC is an additional limitation. Although this study used secondary data to characterize buyers, future research should collect primary data from downstream network actors. This chapter also takes a static view of the role of secondary stakeholders for developing sustainability in the GSN. Future work can investigate the emergence and evolution of roles. In this sense the work developed in the brokerage literature, which studies not only network structure but also behaviours may be useful (e.g. Boari and Riboldazzi, 2014; Kwon et al., 2020) Finally, this analysis is based on a single supply network. Future research could consider multiple supply networks and include an assessment of the effectiveness of secondary stakeholder engagement for developing sustainability in GSCs.

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