

## Implementing sustainability in multi-tier supply chains: strategies and contingencies in managing sub-suppliers

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# **IMPLEMENTING SUSTAINABILITY IN MULTI-TIER SUPPLY CHAINS – STRATEGIES AND CONTINGENCIES OF MANAGING SUB-SUPPLIERS**

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# **IMPLEMENTING SUSTAINABILITY IN MULTI-TIER SUPPLY CHAINS: STRATEGIES AND CONTINGENCIES IN MANAGING SUB-SUPPLIERS**

## **ABSTRACT**

Buying firms must pay increased attention to supply chain sustainability issues as they might be held responsible by stakeholders for non-sustainable supply chain activities. Frequently, sustainability problems occur upstream at the sub-supplier level. Building on the literature on multi-tier supply chains (MSCs), we investigated the strategies of buying firms in the food, apparel, packaging, and consumer electronics industries to manage the sustainability of second-tier suppliers and beyond. In particular, we analyzed seven cases of global MSCs and found four different characteristic MSC types—open, closed, third party, and “don’t bother”. We identified three main factors—supply chain complexity, the sustainability management capabilities of the first tier supplier, and the type of sustainability in focus (i.e., environmental or social sustainability)—that determine when and how buying firms actually extend their sustainability strategies to their sub-suppliers.

**Keywords:** Sustainability, Buying Firm Strategies, Multi-tier Supply Chains, Case Studies

## 1. INTRODUCTION

Sustainability increasingly depends on the holistic implementation of practices beyond the boundaries of a buying firm (Glover *et al.* 2014, Golini *et al.* 2014, Schoenherr *et al.* 2014). Non-adherence to sustainability standards across lower tiers in the supply chain bears the risk of culminating in negative publicity for global brands. According to this “chain liability effect” (Van Tulder *et al.* 2009), buying firms can be held accountable for actions that take place within their globally dispersed supply chains (Reuter *et al.* 2010).

Non-sustainable actions that cause negative publicity for global brands are also frequently carried out by sub-suppliers. For example, in 2007, Mattel had to recall toys that were coated with toxic paint. An investigation revealed the source of this toxic paint was a subcontractor of Mattel’s first-tier (T1) supplier. Another example involves the parent company of the clothing and accessories retailer ZARA. Inditex was repeatedly denounced for “sweatshop-like” working conditions in the subcontractor facilities of AHA, ZARA’s main supplier (Butler 2015). Although Inditex argued that it cannot be held responsible for AHA’s unauthorized subcontracting, Brazilian authorities responded that “[ZARA’s] raison d’être is making clothes (...) and it follows that it must know who is producing its garments” (Burgen & Phillips 2011). These incidents highlight the growing necessity for buying firms to actively think about the management of both direct suppliers and sub-suppliers.

However, implementing sustainability practices for sub-suppliers is a challenging task due to the lack of contractual relationships between a buying firm and its second-tier (T2) suppliers (Choi & Linton 2011, Grimm *et al.* 2014). Initial studies have explored the different strategies buying firms use to manage sub-suppliers, ranging from “delegating authority” (Choi & Hong 2002) to T1 suppliers for metrics such as quality, delivery, and sustainability (Choi & Linton 2011) to “closed triads” (Mena *et al.* 2013) in which buying firms directly manage sub-suppliers. Recent efforts to build a “theory of multi-tier supply chains” (Mena *et al.* 2013,

Wilhelm *et al.* 2016) have highlighted how these chains operate in terms of their structure, behavior, and performance (e.g., Mena *et al.* 2014, Tachizawa & Wong 2014) and have identified critical success factors for sustainability implementation (Grimm *et al.* 2014).

While there seems to be an implicit assumption underlying these studies that firms “increasingly extend (...) their reach deeper into the supply chain” (Mena *et al.* 2013: 59), in practice, managing sub-suppliers—particularly in the context of sustainability—is still the exception rather than the rule. The main reasons for this lack of control are constrained information about the exact number or identity of sub-suppliers (Choi *et al.* 2001) and limited means to exert influence over them, as they often represent only a small percentage of the business of a lower-tier supplier (Plambeck 2012, Tachizawa & Wong 2014). The fact that sub-suppliers are also increasingly located in emerging economies that are geographically and institutionally distant compounds the challenge of managing such relationships (Alwaysheh & Klassen 2010, Carter & Carter 1998). Consequently, there is a need to develop a better understanding about why and how buying firms extend their reach deeper into the supply chain. We are particularly interested in buying firms’ strategies and their underlying contingencies for managing sustainability in their multi-tier supply chains. The investigation of contingencies is important as it provides the necessary context for managers to allow them to implement the right strategies in their specific situations. Furthermore, it allows researchers to develop, test, and refine theories (Boyd *et al.* 2012). Therefore, our research questions are as follows: *Which strategies do buying firms choose to manage sub-suppliers’ sustainability in different supply chains? Which contingencies determine the choice of a particular strategy?*

As little is known about the actual practices firms use to manage their sub-suppliers’ sustainability in different supply chains, our paper is explorative with the aim of elaborating theory (Ketokivi & Choi 2014). To this end, we study the sustainability strategies of four buying firms active in three different industries (food, apparel, and consumer electronics (CE)) in

seven multi-tier supply chains (MSCs) and explore the contingencies involved in managing sub-suppliers. Our findings contribute to MSC theory (Tse & Tan 2011), particularly in the context of sustainability. MSCs represent a helpful basis of analysis to study the challenges of extending sustainability to sub-suppliers (Grimm *et al.* 2014, Mena *et al.* 2014, Tachizawa & Wong 2014) as they constitute a middle ground by avoiding “some of the complexities of networks without the drawbacks of the dyad” (Mena *et al.* 2013: 59).

In the following, we will first discuss the relevant literature relating to our research questions. We will then detail the research methodology leading to the data analysis section that comprises an intra- and cross-case analysis. Finally, we discuss our findings in light of existing research and develop research propositions before discussing the study limitations and recommending future research avenues.

## **2. LITERATURE REVIEW**

### **2.1. Strategies for Extending Sustainability to Sub-Suppliers**

A growing body of research suggests that companies should expand their sustainability strategies beyond the boundaries of their firm to the supply chain level (e.g., Brockhaus *et al.* 2013, Carter & Jennings 2002, Linton *et al.* 2007), including sub-suppliers (e.g., Choi & Linton 2011, Tse & Tan 2011). We follow the widespread understanding of sustainability as the explicit consideration of social, environmental, and economic issues, commonly referred to as the triple bottom line (Bansal 2005, Dyllick & Hockerts 2002, Elkington 1997, Gimenez *et al.* 2012). Sustainable supply chain management therefore comprises the “management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals of all three dimensions of sustainable development, i.e. economic, environmental and social, into account which are derived from customer and stakeholder requirements” (Seuring & Müller 2008: 1700).

However, it remains unclear how buying firms can implement sustainability standards and practices in light of the growing complexity of modern, globalized supply chains. As sustainability risks usually originate from minor, less visible suppliers (Plambeck 2012, Roth *et al.* 2008) that are “sheltered” from the glare of the general public (Lee *et al.* 2012), there is an increasing need to monitor sub-suppliers and incorporate the assessment of risks stemming from non-adherence to quality or sustainability standards into the supplier evaluation process (Tse & Tan 2011). Such risks of supply chain glitches that have particularly low “visibility” for buying firms, such as environmental pollution due to manufacturing or the use of child labor, can nevertheless cause huge chain liability effects and result in a negative reputation.

Even though there is now agreement among supply chain management scholars that buying firms should manage sub-suppliers’ sustainability (Grimm *et al.* 2014), there is still little understanding about how this can be achieved. Mena *et al.* (2013) were the first to differentiate between three strategies of extending sustainability to suppliers that result in different MSC structures. The “open” MSC is characterized by a structure with a linear flow of information and products and no direct connection between the buying firm and the T2 supplier. This can, for example, mean that the buyer delegates the authority for managing T2 suppliers to the T1 supplier (Choi & Hong 2002; Wilhelm *et al.* 2016). In a “closed” MSC, the buying firm and the T2 supplier have established a mutual relationship that can be managed in a more formal or informal way. A “transitional” MSC establishes a middle ground and develops when the buying firm and the T2 supplier “stretch out to each other and begin building a link and initiating a move toward a ‘closed MSC’” (Mena *et al.* 2013: 62). This structure can be found, for example, in the practice of “directed sourcing” in the automotive industry (Choi & Hong 2002). Tachizawa and Wong (2014: 651) later extended this typology to include “any lower-tier supplier (i.e., so not only the second tier)” and added two types: “work with third parties” (such as NGOs, government, competitors etc.) and “don’t bother” (when the buying firm has

only an internal or first-tier supplier focus regarding sustainability). We will build on these typologies but explore their contingencies in more depth, that is, the contexts in which these approaches are chosen (Sousa & Voss 2008).

## **2.2. Contingencies for Sustainable Sub-Supplier Management**

Despite the importance of the concept of managing sub-suppliers, we know little about which approaches buying firms are choosing in real life and the underlying contingencies of sustainable sub-supplier management. In the wider sustainable supply chain context—but not specifically with respect to MSCs—Awaysheh and Klassen (2010) provide initial cues indicating when firms are more likely to engage in sustainability management of their next-tier supplier.

Awaysheh and Klassen (2010) look at the influence of supply chain structure—operationalized as supply chain transparency, dependence between the firm and other members of the supply chain, and distance among supply chain members—on the lead firm’s use of suppliers’ social sustainability practices, such as audits and codes of conduct. Dependence represents the degree to which a firm relies on other members of the supply chain for critical resources, components, or capabilities and influences a firm’s ability to control and stimulate change in its suppliers’ operations. There was only weak support for the hypothesis that dependency on a customer would lead to increased use of socially responsible practices by the focal firm; the effects of supplier dependence were unclear. Distance encompasses three sub-dimensions: geographical, cultural, and organizational distance. Organizational distance, measured by the total length of the supply chain, particularly results in firms making use of multiple suppliers’ social sustainability practices, “as having more tiers in the supply chain translates into greater complexity and uncertainty” (Awaysheh & Klassen 2010: 1260). Moreover, greater supply chain transparency in terms of product visibility by the end consumer has been related to increased emphasis on human rights to avoid any media scandals.



Building on their work, but not specifically in the multi-tier context, Hojmosse *et al.* (2013) take a deeper look at the role of power in shaping socially responsible supply chain management practices. Their study confirms that relative buyer power enhances a firm's ability to implement socially responsible supply chain practices and can also create a multiplier effect such that the influence of buyers on suppliers can force sub-suppliers to act in a responsible manner. Their study moreover reveals that jointly dependent relationships (i.e., power symmetries) are strongly and positively associated with the implementation of socially responsible supply chain practices as the development of trust and partnership becomes more likely. Jointly dependent relationships also generate a sense of common purpose, as the exposure to risk associated with irresponsible supply chains will affect both buyer and supplier in such cases. This is in line with previous findings that the reputational vulnerability of members of a supply network and the distribution of power among them will lead to the higher propensity of a network to introduce an ethical sourcing code of conduct (Roberts 2003).

As a related topic, Wilhelm *et al.* (2016) analyze three MSC cases where the buying firm has chosen to delegate the responsibility for managing sub-suppliers' sustainability to the T1 supplier. Drawing on central constructs of agency theory, such as incentive structures and information transparency, they investigate the conditions under which the T1 supplier will accept this new role. The perspective taken here is, thus, the one of the supplier and we know little about the contingencies that lead to different MSC choices of the buyer other than delegating sustainability management tasks to the T1 supplier.

Another important basis for our study is the groundwork provided by Tachizawa and Wong (2014). Based on a systematic literature review, several contingency variables for managing sustainability in MSCs are identified that could inform our study, such as a lead firm's power, stakeholder pressure, industry, material criticality, dependency, distance, and knowledge resources that determine the approach chosen by the buying firm to manage the sustainability of

lower tier suppliers. Despite the novelty of their work, their variables do not always seem to capture the multi-tier context adequately, which makes further in-depth investigation necessary. “Knowledge resources” in Tachizawa and Wong’s framework, for example, refer to the technical expertise to manage the sustainability of suppliers but is only conceptualized at the level of the buying firm, when it could also become more relevant at the level of the T1 supplier. Suggestions for further research are also formulated on a global level (e.g., “*Power; stakeholder pressure, material criticality, industry dynamism/pollution level, dependency, distance and knowledge resources determine the approach chosen by the lead firm to manage the sustainability of lower-tier suppliers.*”) (p. 657). Moreover, Tachizawa and Wong’s (2014) study focuses only on environmental sustainability, reflecting its current dominance in sustainable supply chain studies, whereas social sustainability remains under-researched (Gimenez *et al.* 2012, Seuring & Müller 2008). However, initial evidence points at the fact that social sustainability might be more difficult to manage (Ashby *et al.* 2012) and that its link with performance is more difficult to establish (Gimenez & Tachizawa 2012).

Therefore, we see a need for a more fine-grained, empirically grounded study about managing sustainability in MSCs to provide a more solid conceptualization of each contingency and of their possible influence on the buying firm’s managing approach. By further exploring the contingencies identified in the literature in a real-life setting, we aim to verify, refine, and inductively identify further contingency variables that we link to actual strategies chosen by firms in different industries. In addition, we aim to more systematically compare the social and environmental dimensions of sustainability and their implications for managing MSCs.

### **3. METHODS**

The main goal of this study is theory elaboration (Ketokivi *et al.* 2014). In particular, we seek to validate and refine the contingencies identified in our literature review and to introduce

new ones (for a similar approach see Ketokivi 2006) based on abductive reasoning (Locke *et al.* 2008).

Apart from enabling scholars to study a phenomenon in its natural setting, a case study approach (Dubois & Araujo 2007, Meredith 1998) allows for a richer understanding of the nature and complexity of the phenomenon under investigation (Benbasat *et al.* 1987, Stuart *et al.* 2002). More importantly, when compared to other large-scale theory-testing methods, the case study method provides the unique ability to get closer to the theoretical constructs and to uncover underlying causal relationships (Siggelkow 2007). In order to ensure validity and reliability, we applied the measures highlighted in Table 1; these will be explained in detail in the following paragraphs.

=== Insert Table 1 about here ===

### **3.1. Theoretical Sampling**

Using a theoretical sampling approach, we began our case selection by identifying industries that are characterized by an increased need to improve environmental and social sustainability in global supply chains. The sampling process involved a three-step selection process—industry selection, buying firm selection, and supply chain selection—using a set of criteria. In particular, the food, apparel, and CE are industries in which consumers, NGOs, and other stakeholders exert high pressure on buying firms to implement network-wide sustainability (e.g., Lee & Kim 2009, Maloni & Brown 2006, Rv & Kolk 2001, Yu 2008). We assumed that focal firms are increasingly held responsible for their sub-suppliers' actions (cp. the chain liability effect). We concentrated on a list of potential firms in those industries that lead sustainability-related rankings and listings, such as the UN Global Compact (UNGC), the Dow Jones Sustainability Index (DJSI), the Fair Labor Association (FLA), the Carbon Disclosure Project (CDP), and the Global Reporting Initiative (GRI). These rankings often integrate measures of whether the focal firm

extends sustainability to their direct suppliers (e.g., DJSI, FLA). Although the management of sub-suppliers in terms of sustainability is not separately listed, we assumed that the more highly-ranked companies are generally more likely to actively pursue a sustainability strategy, and also extend their standards to sub-suppliers.

In order to increase comparability, we focused our search on firms of similar size with headquarters in Europe (due to similarities in regulations) and a global scope in terms of their supply chains. A selection of similarly ranked companies was contacted, and four firms from three different industries (food, apparel, and CE) agreed to participate in our study. All firms are large, well-known multinationals with an annual turnover of over 10 billion USD. We selected 1–2 direct purchasing categories from each buying firm's sourcing portfolio with the assistance of the heads of purchasing. As a general criterion categories were supposed to be significant in terms of the firms' total spend.

Finally, we chose a key T1 supplier for each category with the help of the purchasing manager of the selected category. We assumed that the characteristics of the T1 supplier, such as existing capabilities regarding the management of sustainability, are influential in determining which multi-tier strategy would be followed by the buying firm for the respective supply chain. Moreover, we sought to validate the insights we gained from the buying firms through interviews with those suppliers that play a more active role in the buying firm's sustainability program. We therefore decided to focus on the most important suppliers in terms of purchasing spend (over 20% of the category spend) and longer business relationships (more than four years). If several suppliers fitted these selection criteria, we opted for the supplier with the highest purchasing spend. In total, we sampled seven MSCs, which lies within the often suggested sample size of 4–10 cases (e.g., Eisenhardt 1998).

### **3.2. Data Collection**

For every sampled supply chain case, semi-structured interviews with key informants (e.g., chief procurement officer (CPO), purchasing manager, sales manager, or sustainability manager) from the buying firm and the T1 supplier were conducted. For the interviews, we adopted questions from previous research in the field of buyer–supplier relations and sustainable supply chain management (e.g., Chen & Paulraj 2004, Vachon & Klassen 2006, Wu & Choi 2005, Wu *et al.* 2010, Zhu & Sarkis 2004). Interviews were conducted in English, German, and Chinese. Given the sensitivity of the data provided, all contacts were requested not to mention their company’s name or the supplied product. Therefore, the case descriptions and Table 2 include only anonymous information for the sampled firms, which we labeled Educat, Sequenzia, Integris, and Electra, and their respective supply chains.

=== Insert Table 2 about here ===

The interviews generally lasted one hour on average and were carried out by a team of three researchers. Interviews were audiotaped and transcribed afterwards. In total, we conducted 61 interviews at two levels of the MSCs of the four buying firms. We triangulated the insights gained from the interviews with several alternative data sources to increase internal validity: (1) corporate materials from all network partners, such as annual reports, homepages, and other Internet sources, (2) corporate sustainability reports, publications concerning sustainability initiatives, (3) other documents provided by the interview partners, including audit templates and evaluation documents, and (4) additional background interviews with NGOs, such as the Clean Clothes Campaign and Rainforest Alliance. The additional background interviews were specifically used to check if firms acted in the way they indicated in the interviews (see Table 3). We mainly checked if the external view of firm practices and the internal views were consistent; in most instances, this was indeed the case. In case external views did not jive with the internal perspectives, we fed back external assessments from NGOs to the

firm interviewees, thus provoking further discussion. The more balanced description that we received through this interviewing technique allowed us to more confidently assess the seriousness of the buying firms' endeavors to improve sustainability in their supply chains.

=== Insert Table 3 about here ===

### **3.3. Data Analysis**

Our analysis consisted of two major steps. The within-case analysis allowed us to understand single firm approaches in depth, whereas the cross-case analysis was instrumental in identifying common patterns across cases. We began by writing up within-case descriptions. We tried to generate internally consistent descriptions of each case, capturing all relevant information about the buying firm's management of indirect supplier relations with respect to sustainability. Next, we carried out open coding of the interviews and arranged the codes into categories. This was followed by axial coding. Axial coding allowed us to root our data analysis in theory and helped to refine our concepts, leading to better reliability of the data (Wuttke *et al.* 2013). More specifically, we looked for the contingency variables outlined in our literature review, which often required major adjustments. For example, stakeholder pressure was less relevant because, due to our sampling approach, all buying firms were exposed to similar degrees of regulatory pressure. Therefore, we adjusted the variables where necessary (e.g., the "knowledge resources" relating to managing suppliers' sustainability proved to be less relevant at the level of the buying firm but more relevant at the level of the T1 supplier, which we relabeled as "sustainability management capability", and distance was less relevant in terms of geographical and cultural distance but was more relevant in terms of institutional distance). Finally, we developed additional contingency variables, either inductively or by comparing our emerging codes with existing concepts in the literature. This allowed us to validate supply chain complexity, which is an important contingency in terms of the buyer's choice of MSC strategy. We followed Choi and Hong (2002) in their

conceptualization of *supply chain complexity*, where *vertical complexity* refers to the number of tiers in a system, and *horizontal complexity* refers to the number of suppliers in each tier.

In Table 4, we describe each major category and its operationalization and link them to the corresponding literature. Even though some of these dimensions, such as MSC complexity, only emerged during the case analysis, we list the operationalization of all our constructs for ease of readability of the case descriptions.

=== Insert Table 4 about here ===

During each step, one member of the research team who was not involved in the first round of data analysis verified the patterns and themes identified. We discussed differences in perceptions among the members of the research team throughout the process until final agreement was achieved. In very rare instances in which no agreement could be achieved, the data was not considered further in the analysis. This helped to improve reliability and resulted in a jointly shared picture of the analysis. In the following section, we present an overview of our within-case and cross-case analyses of the seven supply chains.

#### **4. WITHIN-CASE ANALYSIS**

##### **Sequenzia**

Sequenzia is a large multinational food brand that has set a target to source 100% of their agricultural raw material sustainably by 2020. Sequenzia expects all suppliers to either be certified by a recognized global organization, such as Rainforest Alliance, Fairtrade, or the Marine Stewardship Council, or be assessed against Sequenzia's own code. Sequenzia has formulated its own sustainability code that comprises 11 key indicators, each focusing on a specific area of sustainable farming, such as soil health, pest management, and energy consumption, and people management. The code is "dynamic" as it contains both mandatory and highly desirable practices that could become

mandatory in the near future. We investigated two of Sequenzia's supply chains, one for dairy products (DP) and one for tea bags (TB), which we illustrate in Figure 1.

== Insert Figure 1 about here ==

### **Sequenzia Dairy Products**

Sequenzia sources DP such as processed milk, cream, and butter from about 20 large cooperatives and 40 privately owned firms based mostly in Europe. The cooperatives and firms source raw milk from about 100,000 smaller privately owned farmers. We conducted interviews at one privately owned dairy processing firm in France and one Dutch cooperative that also processes milk in their own factories. Sequenzia highlights the fact that the high number of sub-suppliers at the T2 level makes it impossible for them to be in direct contact with all farmers, which increases their *dependence* on their key T1 suppliers if they want to reach their aim of sourcing 100% of their agricultural raw material sustainably by 2020:

“(…) the average farm size in Europe is about 80 cows. It's not one of these [huge] American farms with about 3000 cows. So, we source from quite a large number of farms, we therefore have (...) to reach out to each and every one of them, and that's the challenge, and we can only do that via our suppliers, via the dairies, and to get them on board and to convince them that this is the way to go and [ask them] whether they will join us on this journey” (Sequenzia DP, Purchasing Manager).

Sequenzia trains the T1 supplier's farm advisors (i.e., agronomists) with regard to Sequenzia's sustainable agricultural code and provides them with extensive implementation guidelines. Suppliers were requested to implement the sustainability practices at their farmers' operations and to perform audits every 18 months. Audits were carried out by farm advisors:

“We are not doing the audit ourselves. What we do is that we initially work with the suppliers and their farm advisors. It is up to the suppliers to make sure that what they supply to us is sustainable. And we have trained them, or their farm advisors, regarding our code. (...) So once the benchmark is done and improvements are made, there are self-assessments, how we call it, (...) of the farms by the suppliers. So it is based on trust, you could say.” (Sequenzia DP, Purchasing Manager).

The cooperatives were already quite advanced in this regard, and most have set up their own sustainability programs. The Sequenzia purchasing manager emphasized that the geographical



location of the entire supply base in Europe (resulting in a low *institutional distance*) also contributed positively to their sustainability practices because there were strict environmental regulations to which suppliers must adhere and control mechanisms behind them:

“I guess in Europe, we are quite lucky in that sense. I think it will probably be more of a challenge in the Asia Annex, for example, but in Europe, what we see are the big companies, the big dairies, already having their own sustainability agenda and the targets in place.” (Sequenzia DP, CPO)

Not least due to the training provided to their farm advisors, the T1 suppliers possessed a high degree of knowledge about farmers’ processes, and we found evidence for a high level of *competence regarding sustainability management* among Sequenzia’s T1 suppliers as they “translated” the buying firm’s general guidelines into more operational, specific instructions for farmers. As Sequenzia’s agricultural code was originally designed for farming and not animal husbandry, the requirements for food and water provision for animals, animal health, and animal medication treatments were formulated on a more general level. The T1 supplier, that is the dairy producer, further specified these requirements for cow husbandry at its dairy-supplying farms, including regular checks of cow alimentation, bovine spongiform encephalopathy (BSE or mad cow disease), the isolation of sick cows, and maintenance of the farm’s surrounding area.

The Dutch cooperative had developed particularly strong competencies for sustainability management based on its various experiences with its broad customer base and had proactively formulated its own sustainability program:

“Many companies are struggling with what is sustainable. A lot of them don’t know what they are talking about. For example, XY, another customer of ours, is not as advanced in their sustainability program as Sequenzia, or as we are. As we are more proactive in this area, we have actively approached XY to adopt our sustainability standards, and they were happy about that.” (Sequenzia DP\_T1\_B, Key Account Manager)

In contrast to the French T1, the Dutch cooperative was also powerful enough to reject the firm-specific sustainability requirements of Sequenzia when they did not fully overlap with the requirements of other customers, thus reflecting *power symmetries between the buyer and T1*:

“Sequenzia is *a* customer, but there are others. We will not confront farmers with individual demands from just one customer.” (Sequenzia DP\_T1\_B, Key Account Manager)

Sequenzia was well aware of this challenge:

“...and what the challenge is for the dairies that they don’t want to be having something specific for Unilever, something specific for Nestle, something specific for Danone. (...) So, for the dairies, what’s probably challenging is to get them to do something specific for us.” (Sequenzia DP, CPO)

### **Sequenzia Tea Bags**

Sequenzia sources tea globally from traditional tea growing countries such as Indonesia, India, Sri Lanka, and Tanzania. Sequenzia introduced the Rainforest Alliance certification to their TB brand in 2010, with a target to source all tea from certified farmers by 2015. In the region of Kenya (the geographical area for which our interview partner is responsible), tea is sourced from approximately 40 tea processing firms, agents, or auctions that source tea leaves from up to 600,000 small farmers.

Tea is a typical commodity that is traded in auctions. However, in the past years, Sequenzia had been shifting purchasing volume from tea auctions to direct sourcing from farmers or through their agents, which cuts out the middlemen. In addition to a higher *transparency* concerning the origin of the tea, a major reason for this strategic change was to offer economic incentives to implement sustainability practices.

Due to the large number of smallholder farmers at the T2 level, the high *institutional distance* between the buyer and T1 and T2 suppliers that were located in a developing country, the high complexity of the supply chain resulted in particular challenges in achieving a holistic implementation of sustainability. Therefore, Sequenzia chose to cooperate with one large tea cooperative that represented about 500,000 smallholder farmers in Kenya and sourced tea directly from them rather than through auctions. The cooperative owned 65 processing plants, each of which received tea leaves from approximately 8,000 farmers. This resulted in a high degree of *inter-dependency*

between the buyer and T1, as Sequenzia was an important buyer for the tea cooperative that purchased about 60% of the supplier's output. At the same time, Sequenzia also sourced 50–60% of its tea through the cooperative and because it had advertised that its tea is certified 100% sustainable, it was also dependent on having a strong partner in Kenya:

“Sequenzia Tea\_T1 is one of our biggest suppliers. So if we want to achieve our target to source all the ingredients for our tea bags sustainably, we have to get Sequenzia Tea\_T1 certified; otherwise, we will never make it. They are a major, major supplier for our brand. (...) There has always been a business relationship, but it has only become extremely strong in the last couple of years (...)” (Sequenzia, TB Operations Manager)

At the same time, there were *power asymmetries* between the multinational company Sequenzia and the developing country cooperative that mainly represents smallholder farmers.

Instead of relying on self-assessments, the Rainforest Alliance, a global third-party organization, certified farmers' sustainability compliance. Certification was valid for three years, but audits took place annually. Financial support for certification and training was mainly provided by Sequenzia but also by other sources, such as regional development funds. At the outset, Sequenzia had built up *knowledge resources* for managing farmers' sustainability by training their own agronomists in Kenya to bring them up to speed with Rainforest Alliance standards.

“When we started the process of getting Rainforest Alliance certification, the first thing we had to do was to understand what standard was required and adapt that for tea. (...) We got our own people up-skilled so we understood what it was all about, and then on the basis of that, our own personnel were the first to start training our suppliers in Rainforest Alliance certification requirements because they were the most knowledgeable, because they understood tea and they understood standard requirements. So, for a number of years, the most qualified group of trainers in Kenya for tea and links with Rainforest Alliance adaptation were Sequenzia people.” (Sequenzia TB, Supplier Development Manager)

Subsequently, *knowledge resources* were passed on to the next tier by training agronomists of the tea cooperatives who in turn trained so-called “lead farmers”, who were usually farmers with above-average tea management capacities. Finally, lead farmers trained farmers regarding the sustainable agriculture standards and conducted internal inspections at the farm level prior to audits. Rainforest Alliance certification was awarded to a factory after a positive group audit (that

included all farmers who deliver to the factory). In 2015, Sequenzia reached its target of certifying all its farmers.

## 4.2. Educata

Educata, another multinational food brand, faces challenges similar to those of Sequenzia. The company has set itself the goal of enhancing sustainable agriculture through a 15% reduction of its carbon footprint, a 15% reduction in water usage by changing from “flooded fields” to grid irrigation, and a 5% increase in crop yields by developing special seeds.

Educata has developed a “sustainable agricultural farming manual” that covers the regulation of the use of fertilizer and pesticides, allowed seeds, water usage, food safety, personnel practices, genetically modified crop control, transportation, and farmer improvement. Educata applies high standards regarding the use of pesticides, and farmers are “restricted to only 20% of the pesticides allowed by the EU”. We investigated two supply chains, one for vegetables (VT) and one for metal product packaging (PP). As the structure of the supply chain resembles those of DP, we only illustrate the PP supply chain in Figure 2.

=== Insert Figure 2 about here ===

### Educata Vegetables

We investigated a supply chain for a type of vegetable that accounts for over 60% of Educata’s purchasing volume. The supply chain for Educata VT was recently reduced from 15 to 10 T1 suppliers, again resulting in lower *supply chain complexity* and *high interdependencies* between the buyer and T1 supplier. The majority of suppliers were located in Southern Europe and a smaller fraction was located in North America; therefore, the *institutional distance* between buyer and supplier was low. We interviewed two T1 suppliers, one located in Portugal and one in North America. Each supplier sourced raw vegetables from approximately 100–300 farmers. In addition

to consolidating purchasing volume, a major reason for cutting down the number of T1 suppliers was to gain more control over the supply chain. Long and stable relationships existed with T1 suppliers, some lasting over 40 years. At the same time, there was an ongoing consolidation at the farmer level. Most T2 suppliers were large professional farmers with over 10,000 acres of land. Their *sustainability capabilities* were generally assessed to be very high by the lead firms.

In order to improve the understanding of the product itself and its final manufacturing process, Educata regularly invited its key suppliers (4–5) to its facilities and visited the fields of the top farmers with them. The aim was to encourage a holistic understanding of the origin of the products, their final processing, and the particular importance of agricultural processes.

Some activities directly involved the T2 level. During the crop season, Educata's buyers regularly visited the field to "not lose contact with the farmers" (purchasing manager VT\_A). Educata employed a team of 40 global agronomists that regularly visited the farmers' fields and supported the agronomists of the T1 suppliers (called field reps) in their work:

"What we would typically do is to have sessions with the field reps of the first tier suppliers. (...) We constantly look at developing tools that we can use with our suppliers that help them to think differently about risks in the field (...) and from my perspective, you can judge your supplier on how proactive they are. If you ask a question on something that is relatively new in the industry and you have a supplier that goes: 'Yeah, we are aware of that, and we've got some things that we are working on. It leaves you feeling a lot better than a supplier who writes it down and says: 'I go and have a look at it.''" (Educata VT, buying firm, Purchasing Manager)".

Due not least to the training, both interviewed T1 suppliers were active in terms of sustainability beyond the relationship with the customer, engaged in industry initiatives and roundtables, and had set up their own programs to improve environmental performance. Their *capabilities to manage sub-suppliers' sustainability* were therefore quite developed. Three to four times a year, T1 suppliers audited farmers' compliance regarding specified sustainability indicators, such as the type of seed or the amount of water used. T2 suppliers needed to docu-

ment sustainability indicators in a field book that was checked by the T1 supplier “3–4 times a year as well as a soil and water analysis once a year” (interview VT\_A, T1 supplier). In addition, the T1 supplier took samples of all farmers’ deliveries that were checked for pesticides by external laboratories. Educata only checked the field book in case of irregularities, and the T1 supplier could be made accountable for incomplete or false information from the T2 supplier. Overall, the level of MSC transparency was assessed to be high by the buyer.

### **Educata Product Packaging**

For PP, Educata aimed to halve the waste associated with its products by 2020 by increasing the use of recycled and renewable materials and by decreasing the use of materials, for example, by reducing the thickness of packaging. Although PP was not a core product for Educata, the purchasing spend was high for this category. The PP supply chain was highly consolidated with five suppliers and 10 T2 suppliers (i.e., metal foil producers). The reasons for this *low horizontal complexity* at both tiers are the high requirements regarding specifications (e.g., size, can ends, and thickness) of the product that only few suppliers were able to fulfill, thus increasing *dependence* on single suppliers:

“It is a big spend with a very consolidated supply base and because we have done so much work on reducing can weight and size for costs and sustainability reasons. For one product, our specifications are so strict that there is only one supplier that can supply our particular size and thickness of can ends.” (Educata PP, Purchasing Manager)

The supply base was *entirely located in Europe*, thus eliminating *institutional distance*. The *transparency* of the supply chain was assessed to be very high by the buying firm, as there was intense research and development (R&D) collaboration for improving sustainability between Educata and its T1 suppliers:

“Our suppliers have got some in-depth knowledge on sustainability which we do use. Our R&D colleagues work closely with them on the down-gauging projects, reducing the composition of metal components and they are working on better ways to recycle products as well.” (Educata PP, Purchasing Manager)

Although the T1 suppliers' *general capability for sustainability* was assessed to be very high, T1 suppliers were not allowed to change sub-suppliers without prior written agreement from Educata who regularly requested sustainability related information on T2 suppliers from the T1, such as existing certifications or their CO<sup>2</sup> footprint.

As a result, T1 suppliers were actively pursuing their own sustainability agenda and were, for example, conducting regular life cycle analysis together with T2 suppliers for selected product categories. In fact, the interviewed T1 suppliers defined sustainability as one of the core areas where they could demonstrate their competitive advantage:

“Companies like Nestle or Unilever want to understand the whole supply chain. And if you are not able to answer questions on sustainability, not just in terms of marketing but in terms of concrete projects, you easily end up in a category that has nothing to do with the premium strategy we follow as a supplier.” (Educata PP\_T1, Purchasing Manager)

## **Integris Apparel**

Triggered by various incidents in the apparel industry with high media coverage, such as the collapse of Rana Plaza and worker strikes in Cambodia in 2013, apparel firms such as Integris have become highly sensitive about sustainability issues and have tried to increase public trust by publishing extensive information about their activities on their website. Integris has issued three detailed manuals on social standards, environmental standards, and health and safety standards, as well as detailed guidelines for their implementation. We investigated two major supply chains—one for clothing (CL) and one for footwear (FW)—that are structured and organized very similarly. Therefore, we report on them together (see Figure 3).

=== Insert Figure 3 about here ===

## **Integris Clothing and Footwear**

In the CL supply chain, Integris sourced fabrics from 70 suppliers. Twelve were considered key suppliers, with 10 located in emerging markets such as Vietnam and Cambodia. The number of T2 suppliers was estimated to be as high as 28,000. The FW supply chain was slightly less complex with 20 T1 suppliers, five of which were considered key. All were based in emerging markets. The number of T2 suppliers was approximately 8,000, so that the *horizontal complexity* in both supply chains was very high at the T2 level.

Although it was common practice in the apparel industry to follow price-driven purchasing practices and to frequently switch suppliers, Integris tried to build long-term relationships with suppliers, some of them existed for over 30 years. As Integris accounted for a large share of their sales volumes, resulting *power asymmetries* between the buyer and T1 suppliers were nevertheless high.

Integris encouraged its T1 suppliers to demonstrate their *transparency* regarding sustainability in their facilities. A list of all T1 suppliers was published on the website, and some suppliers uploaded their own sustainability reports. Integris set well-specified sustainability targets in both extended supply chains, and there was a clear idea about the driving role of the buying firm:

“I think the initiative has to come from us. We have to say exactly what we want. And this is the way it works in many areas of supplier management where we say, as the brand, what we expect from our suppliers. And suppliers should actually be thankful about this and act according to our expectations” (Integris FW, Purchasing Manager).

Up until that point, the supplier sustainability management capabilities of T1 suppliers had not been assessed as high, which is why Integris conducted all training and audits by itself:

“Our suppliers are not comparable to those in the automotive industry. They are not on a level of a Bosch or Johnson Control and the level of production capacity planning or strategy development is rather limited, to put it carefully. (...) The same goes for sustainability, at least at the moment” (Integris FW, Purchasing Manager)



Therefore, the brand employed a team of 12 full-time auditors who conducted factory audits in eight main sourcing regions. In 2014, Integris audited over 330 facilities, with the large majority belonging to T1 suppliers and some belonging to T2 and T3 suppliers. Audits took place regularly in a time span of eight months to two years, depending on the initial audit rating of the supplier.

The company's auditing focus was on major suppliers in terms of purchasing volume at the level of T1 suppliers and beyond. As a general rule, a T1 supplier could only source major materials from a T2 facility if it has been previously audited by Integris. For certain issues, such as child labor, the company had a "zero tolerance" policy that led to immediate termination of the relationship, but most other negative audit results required the supplier to implement rapid improvements.

Parallel to the audits, Integris offered training to its major T1 suppliers on topics such as waste reduction, energy efficiency, and gender equality and standardized reporting according to GRI. Sustainability training was organized for groups of T1 suppliers but often also involved T2 suppliers. On average, a T1 supplier received at least 3–4 training sessions per year. In addition, Integris organized a one-day "sustainability roundtable" for each geographic region where 60–90 T1 and T2 suppliers jointly discussed sustainability-related topics. Our informants from Integris announced their intention to provide more training to T1 suppliers to enable them to take more responsibility for the sustainability management of sub-suppliers in the future.

## **Electra**

Electra is a member of the Electronics Industry Citizenship Coalition (EICC) and adopts the EICC Code of Conduct as a standard to help manage supplier sustainability. The EICC Code of Conduct specifies requirements on labor practices, health and safety, environment, management systems, and ethics. Electra had set a target for itself that by 2015, 80% of its T1 suppliers should be compliant with the EICC Code of Conduct. To achieve this target, Electra

had set up a supplier sustainability office with 11 sustainability experts, eight of which are located in China. Each expert was responsible for the sustainability performance of a group of suppliers. The office provided trainings to help suppliers better understand EICC requirements. We investigated the supply chain for preassembled parts and components for CE, which is illustrated in Figure 4.

=== Insert Figure 4 about here ===

### **Electra Consumer Electronics**

CE parts were sourced from over 400 T1 suppliers, 60 of which were classified as important, indicating high *horizontal complexity*. Audits were conducted for many suppliers that were located in a “high-risk” country, such as China or India, and when the purchasing spend exceeded one million Euro. We investigated seven T1 electronics component suppliers within this supply chain. Their long-standing business relationships with Electra and their experience with several audits helped them to build sustainability capabilities for their own operations:

“Our customers have become more stringent in their sustainability requirements, such as working hours and emergency preparedness. Along with the stricter requirements, we are also becoming more experienced in coping with these audits. We know these requirements better after these audits (...). We have developed our understanding of social responsibility in this process; otherwise, we would have no idea about the EICC codes of conduct.” (Electra CE\_T1\_C, General Manager Assistant).

Audits took place every three years and were carried out by a third party. Suppliers’ non-compliance with the EICC Code of Conduct resulted in a corrective action list. Suppliers that failed to resolve major non-compliance issues within the timeframe faced the risk of being phased out from Electra’s supply base.

Electra did not directly manage the sustainability performance of its sub-suppliers. In 2013, Electra introduced the responsibility of managing next-tier suppliers’ sustainability as an audit criterion for T1 suppliers. Since then, T1 suppliers needed to provide evidence that

“the EICC code requirements have been communicated to the next-tier suppliers” and that “an effective process to ensure that the next-tier suppliers implement the code is in place” (Electra supplier sustainability audit tool, 2013). However, as Electra did not provide any clear implementation guidelines, there was little clarity about this issue. In an EICC training session for T1 suppliers that one of the authors attended in April 2014, many suppliers raised questions how they should extend sustainability requirements to their next-tier suppliers:

“(...) Suppliers can send emails and draft supplier sustainability protocols to inform their next-tier suppliers about the EICC Code of Conduct. Conducting supplier sustainability audits is encouraged but not required for tier-one suppliers (...)” (Electra CE, Supplier Sustainability Manager).

Most T1 suppliers restricted their activities to merely informing suppliers about the EICC requirements but did not see it as their responsibility to actually monitor their compliance. One major reason for T1 suppliers’ reluctance to become more active at the T2 level was the lack of resources, indicating a lower *capability for managing sub-suppliers’ sustainability*. Whereas T1 suppliers had dedicated quality managers for their own operations who could also be sent to their suppliers’ facilities, the role of a dedicated sustainability manager was undefined. Most of the T1 suppliers assigned these responsibilities to the general manager and the operational manager who were already struggling to implement sustainability requirements in their own operations as part of fulfilling their daily tasks.

“We have more approximately 200 suppliers. How many people do we have in our firm for management systems? We have in total three part-time managers doing this... We do not have the time and resources to enforce these requirements as Gamma is doing...” (Electra CE\_T1\_F, HRM Manager)

Another problem was decreasing *power asymmetries* between T1 and T2, either because the T2 supplier was much larger in size or because T1 suppliers were concerned about finding alternative supply sources that were able to deliver parts of sufficient quality at low prices:

“We are hesitating to extend the EICC codes of conduct because many suppliers will not accept our request at all. We are motor producers, and we use a lot of copper and steels. These components are provided by two Chinese giants. We are a trivial customer to these suppliers. They even reject our quality and process improvement requirements. How can we enforce stricter requirements on social responsibility?” (Electra T1\_E, General Manager)

Oftentimes the T1 was very aware about possible sustainability non-compliance instances at the T2 level:

“We pay more attentions to quality-related issues. By contrast, it is out of our scope to check how much money our suppliers pay their employees (...). We know that our suppliers have problems with overtimes. What can we do about that? We can find another supplier with less overtime, but this supplier will be more expensive (...). And our customer will not accept such a cost increase.” (Electra CE\_T1\_C General Manager Assistant)

As there were practically no interactions taking place between the sustainability managers at Electra and the T2 level, the buyer was not well informed about any non-compliance instances, and the level of *MSC transparency* was low.

## 5. CROSS-CASE ANALYSIS

As we expected based on our theoretical sampling approach, all multinational companies in our sample were active in extending sustainability to their T1 suppliers. All companies also made efforts to consolidate their supply base and build long-term, collaborative relationships with selected suppliers. However, we observed differences regarding the management of sub-suppliers. While all investigated buying companies have recognized the importance of managing sub-suppliers' sustainability, the approaches they chose ranged from a very hands-on approach in the apparel supply chain to a complete delegation of sustainability tasks to T1 suppliers in the packaging, food, and consumer electronics supply chains. In order to identify patterns in the contingencies of sub-suppliers' sustainability management, we compared the cases for similarities and differences. We reorganized cases according to five industry sectors that we linked to the MSC archetypes (Mena *et al.* 2013, Tachizawa & Wong 2014). Based on our theoretical pre-conceptualizations and additional themes that emerged from our data (see Table 4), we were able to compare our cases in terms of five key variables, as presented in Table 5. We will explain these patterns in the following.

=== Insert Table 5 about here ===

One interesting finding was that four of the seven investigated cases (VT, DP, PP, and CE) can be classified as open MSC structures, meaning that the buyer delegated all or part of the sub-suppliers' sustainability management to the T1 supplier. In the CE case, the delegated authority for sustainability management tasks to the T1 suppliers took place in a less informed way, as the buyer did not ensure that the T1 had acquired sufficient capabilities for this additional task. In particular, a dedicated sustainability expert was missing, which can be seen as an indication that the T1 suppliers' sustainability management capabilities were less developed. As China was considered a high-risk country by Electra, characterized by high institutional distance, the high degree of delegated authority reflects a "don't bother" approach (see Tachizawa & Wong 2014). For the other three cases, the T1 supplier sustainability management capabilities were highly advanced, and there was often a dedicated expert (e.g., in the form of an agronomist) in place. Moreover, the T1 suppliers demonstrated proactive behavior in disseminating sustainability upstream.

Similar to CE, the apparel supply chains (CL & FW) were characterized by high complexity and focus on emerging countries, resulting in high institutional distances between the buying firm and its supply base. As a result, clothing companies like Integris not only make major investments in strengthening the sustainability capabilities of their T1 suppliers but also participate directly in the selection, training, and auditing of T2 suppliers, as is typical for a closed MSC.

In extremely fragmented supply chains like we found with TB where suppliers are largely located in developing countries with high institutional distances, buying firms collaborated with third-party certification organizations, such as the Rainforest Alliance, Fairtrade, or UTZ. This "work with third parties" MSC structure is typical for managing sustainability for tropical commodities such as tea, coffee, and cocoa. This variation of a closed MSC structure

allows multinational firms to delegate assessment tasks and some training tasks to third parties that are more experienced and efficient in the implementation of sustainability at the farmers' level and that can also help to increase legitimacy with external stakeholders.

## **6. DISCUSSION**

While all buying firms in our sample have recognized the importance of managing the sustainability of sub-suppliers, it was the aim of this study to identify the contingencies that account for the strategy that buying firms take to manage sustainability in their multi-tier supply chains. Our study was able to validate some of the contingency variables outlined in the existing literature and identify some new contingencies, such as the sustainability management capabilities of the T1 suppliers and the triple bottom line focus (environmental or social sustainability). In the following, we will develop propositions regarding the interplay of contingencies and MSC strategies based on the patterns we identified in our cross-case analysis. Subsequently, we will discuss our insights in light of the existing literature.

### **6.1. Strategies and Contingencies for Managing Sustainability in MSCs**

Overall, we found support for the different strategies of managing MSCs, as postulated by Mena *et al.* (2013). This provides ample evidence that these strategies play an important role across diverse contexts. However, we would like to add that the “don't bother” MSC-type observed is the result of a planned strategy but rather emerges out of an uninformed delegation of tasks.

As to be expected, institutional distance between the buying firm and its supply base mattered for the choice of a MSC strategy, and we found an open MSC type only in those cases where the buying firm is sourcing from suppliers that operate in a tightly regulated environment (Europe and North America in our cases). For other categories such as apparel and con-

sumer electronics sourcing activities shift increasingly to emerging countries, where high institutional distance often went in line with the perception of a ‘high risk’ sourcing country in terms of sustainability. While buying firms naturally dedicate more attention to suppliers in these countries and increase their sustainability management efforts in the supply chain, this does not necessarily imply that they take a direct approach in managing sub-suppliers, resulting in a closed MSC. In this context, our cases show that horizontal complexity (Choi & Hong 2002) was found to be an important contingency for a buying firm’s strategy to manage sustainability in its MSC. A low level of horizontal complexity at the T1 level resulting from the buying firm’s efforts to consolidate supply chains enabled the delegation of sub-suppliers’ sustainability management tasks, even when horizontal complexity at the T2 level was high, as the case of Sequenzia TB demonstrates. However, the case also showed that a high level of horizontal complexity at the T2 level in addition to high institutional distance posed considerable challenges in managing an MSC that might not be mastered by actors in the supply chain on their own, even if the buying firm and T1 suppliers would share this responsibility. This necessitates the involvement of third parties. A high level of horizontal complexity at the sub-suppliers’ level (T2 suppliers and beyond) therefore influences the choice of a certain MSC strategy more than horizontal complexity at the T1 supplier level, leading to our first proposition:

**Proposition 1a:** *A low level of horizontal complexity at the T1 level facilitates the delegation of sub-suppliers’ sustainability management tasks, leading to an open MSC, but only when institutional distance is low.*

**Proposition 1b:** *The higher the level of horizontal complexity at the sub-suppliers’ level, the more likely the involvement of additional (external) parties, leading to a “work with third parties” MSC, particularly when institutional distance is high.*

As expected, power played an important role, but rather than traditional purchasing power (in terms of the sales dependency of a supplier on a particular customer), the dependency of the buyer on a T1 supplier as an agent to disseminate the buyer's sustainability policy upstream was crucial to understand which MSC strategy the buyer chose. This dependency—and therefore supplier power—seems to be positively related to higher horizontal complexity at the T2 level, as observed in the dairy, tea, and apparel cases.

**Proposition 2a:** *The higher the horizontal complexity at the T2 level, the higher the dependency of the buyer on a particular T1 supplier to disseminate sustainability upstream and the more likely “delegated authority” becomes, leading towards an open MSC.*

Moreover, contrary to common assumptions (e.g., Van der Vaart & Van der Donk, 2004), we found one case where power asymmetries increase towards the T2 level rather than decrease, leading to difficulties implementing sustainability strategies upstream. The case of Electra CE showed that T1 suppliers often found it hard to switch supply sources that were able to fulfill both the quality as well as cost criteria, and thus had very little leverage to enforce sustainability requirements. In these cases, the risk of T1 suppliers “decoupling” (Ericsson & Svensson 2015; Wilhelm et al. 2016) their delegated authority from their actual engagement in managing sub-suppliers becomes high.

**Proposition 2b:** *In the case of increasing power asymmetries upstream, the risk of T1 suppliers decoupling the assigned delegated authority becomes high, leading to a “don't bother” MSC.*

An important contingency variable that emerged from our data analysis and that was not considered in our theoretical pre-conceptualization is the ability of the T1 suppliers to manage the sustainability of sub-suppliers through collaboration and assessment activities that we termed “T1 sustainability management capability”, which is an important prerequisite for an open MSC. The capability seems to be highly related to the ability of the T1 supplier to im-



plement sustainability in its own operation but does not necessarily overlap, as the CE case showed. The CE case also demonstrated that sustainability management capabilities are not necessarily connected to the ability to manage the quality of suppliers, as all investigated suppliers generally performed well in this regard.

**Proposition 3a:** *Strong T1 supplier sustainability management capabilities facilitate delegated authority of managing sub-suppliers' sustainability and lead to an open MSC.*

**Proposition 3b:** *Less developed T1 supplier sustainability management capabilities increase the risk of a "don't bother" MSC, even though the buyer intends to manage the MSC.*

Even though all firms in our sample pursued the triple bottom line in their sustainability activities, the type of sustainability targeted emerged from our data analysis as an interesting contingency that was strongly related to MSC transparency and that we defined here as the ability to detect suppliers' non-compliance along the different tiers. Regarding environmental sustainability (that was predominantly pursued for DP, VT, PP, and TB), any misconduct of suppliers that contravened the code of conduct, such as the illegal use of pesticides or CO<sub>2</sub> emissions of farmers, was more easily detectable. Suppliers' non-compliance with social sustainability standards regarding, for example, child labor, sexual harassment, or excessive overtime is not traceable in end products and can often only be detected by experienced auditors. Therefore, a more traceable form of sustainability makes it easier for the buying firm to delegate authority over sustainability management to the T1 supplier, as sustainability non-compliance at the sub-supplier level becomes easier to detect.

**Proposition 4a:** *Non-compliance regarding environmental sustainability is more traceable and thus positively related to supply chain transparency, which is more likely to lead to a delegation of authority regarding sub-suppliers' sustainability management to the T1 supplier, leading to an open MSC.*

**Proposition 4b:** *Non-compliance regarding social sustainability is less traceable and are thus negatively related to transparency, and is more likely to lead to a closed MSC.*

## **6.2 Contributions to the Field of Sustainable Supply Chains**

Our approach to consider the dimensions of the triple bottom line simultaneously revealed interesting differences between social and environmental sustainability with regard to a buyer's choice of MSC strategy. We provided a partial answer to the question raised by Tachizawa & Wong (2014) whether observed patterns of choices for MSCs might differ according to the type of sustainability. Our study provides strong indications of this. Inconsistent findings in past research (e.g., Wilding *et al.* 2012) might be based on this omitted consideration. We validate the earlier observation that the “more process-driven nature of environmental sustainability makes it easier to put into supply chain practice” (Ashby *et al.* 2012: 497). We found that the differences between social and environmental sustainability are linked differently to MSC transparency. Of the two, noncompliance with environmental sustainability is easier to detect, as the illegal use of pesticides at the field level can be traced in samples, and the use of water and other natural resources is rigorously documented in field books. Conversely, overtime and sexual harassment issues remain “invisible.” As the link between the type of sustainability and supply chain transparency has been little discussed so far, our insights provide an interesting starting point for future research.

Our study can be seen as complementary to similar studies in the rapidly emerging field of sustainability in MSC (e.g. Tachizawa & Wong 2014). We find support that no firm can be that omnipotent to orchestrate the entire MSC but that buying firms can and do exercise control even to the level of secondary suppliers through formalization and delegating authority. While previous studies have acknowledged that T1 suppliers can play an “active mediating role” in the management of sub-suppliers' sustainability (Grimm *et al.* 2014), and explored

the conditions under which T1 suppliers will actually accept this new role (Wilhelm et al. 2016), we provide another important building block for understanding the functioning of these supply chain structures based on delegated authority. By answering the question when buying firms choose to delegate responsibility for managing sustainability of sub-suppliers to T1 suppliers, we found that the delegation of authority is highly dependent on the T1 sustainability management capabilities. The concept of sustainability management capability is generally under-conceptualized, and the few exceptions focus on the capability of suppliers to implement sustainability in their own operations (e.g., Fu *et al.* 2012, Lee & Klassen 2008, Wong *et al.* 2012). We found only one study that explicitly applies sustainability management capabilities to the level of sub-suppliers. Lee and Klassen (2008) conceptualize “environmental management capabilities” of small- and medium sized suppliers as five specific and inter-related capabilities, one of them being the ability to motivate sub-suppliers to be environmentally responsible and reduce the environmental burden caused by logistics. This ability comes closest to our idea of “sustainability management capability”, but our understanding of the concept is broader as it encompasses not only the environmental but also the social dimension because it goes beyond logistics. Notably, T1 suppliers’ sustainability management is, according to our study, a key lever for managing complex upstream supply chains that has been overlooked to a large extent in the existing literature. This also opens up avenues for investigating T1 suppliers’ capability building and supplier development, specifically in the context of disseminating sustainability along MSCs.

As a further contingency, we validated the importance of supply chain complexity, which has often been linked to important supply chain performance dimensions, such as delivery performance (Milgate 2001, Vachon & Klassen 2002), manufacturing performance (Bozarth *et al.* 2009), supply chain flexibility (Blome *et al.* 2014), reliability (Adenso-Diaz *et al.* 2012), customer-integration efficiency (Danese & Romano 2013), and the traceability of ad-

verse events (Skilton & Robinson 2009). The effect of complexity on sustainability in supply chains has been less researched so far (exceptions are Awaysheh & Klassen 2010, Vachon & Klassen 2006), and even less in a multi-tier context. In this regard, our findings shed light on the sub-dimensions of structural complexity in sustainable MSCs. Further research could focus more on behavioral components that are connected to dynamic complexity.

Finally, in the tradition of research on the role of power in supply chains (Benton & Maloni 2005, Nyaga *et al.* 2013), our study highlights the role of power asymmetries along MSCs. While previous studies suggest that buying power creates a multiplier effect such that the influence of buyers on suppliers can force sub-suppliers to act in a responsible manner (Hoejmose *et al.* 2013), our findings revealed that this might not necessarily be true. As power asymmetries was found to increase upstream, this requires a closer look at behavioral aspects like supplier motivation.

A practical implication from our study is that there are viable approaches for buying firms to deal with the complexity of their supply chains when they start assigning a more responsible role to the T1 supplier. This occurs when the buying firm builds more collaborative relationships with T1 suppliers, even if commodities are traded (see also Pagell & Wu 2009). In this respect, the MSC archetypes can also be interpreted as a sequential model of the development of sustainability management of sub-suppliers. This also provides important groundwork for the application of supplier development practices for practitioners. In cases of low sustainability management capabilities of T1 suppliers, a closed MSC seems most appropriate to control supply chain risks of sustainability non-compliance. Otherwise, focal firms will be held responsible for not sufficiently addressing sustainability issues in their supply base. This strategy, however, might come at a very high cost. Therefore, buying firms should try to invest in long-term relationships with selected T1 suppliers to systematically develop their sus-

tainability management capabilities. This illuminates the clear need for sustainability capability building of suppliers in order to educate T1 suppliers as “sustainability disseminators”.

## 7. CONCLUSION AND LIMITATIONS

Our study contributes to the rapidly growing literature on MSCs (Choi & Linton 2011, Mena *et al.* 2013), particularly in the context of sustainability (Grimm *et al.* 2014, Mena *et al.* 2014, Tachizawa & Wong 2014). We elaborate on the emerging theory in this field by providing more in-depth knowledge on the contingencies that influence how a buying firm manages sustainability beyond firm boundaries.

While the identification of novel concepts that emerge from data is a unique strength of the case study method, it is also connected to a number of limitations. First, we selected a set of multinational firms that were known to be advanced in terms of their sustainability strategies. While we could assume that all these firms are engaged in extending sustainability to their direct suppliers at least, they might not be representative in terms of buying firms’ strategies in each industry sector. More large-scale studies are needed to validate our insights to see if buying firms’ strategies of managing sustainable MSCs are more firm-specific or industry-specific.

Second, as we selected multinational firms from the same region (Western Europe) in order to ensure comparable sustainability conditions, the results might be biased. For example, American or Chinese consumers might have different preferences for sustainability, and the legal environment might significantly impact which types of MSC management are pursued. Moreover, firms in Asia opposed to Western Europe might be located further up the supply chain, such that buying firms are closer to the origin of supply. This provides further avenues for research complementing and contrasting our “European” findings with findings from other regions, such as North America or Asia. Researchers might want to specifically target region-

specific contingencies and the effects of crossing national boundaries with respect to MSC management.

Third, we operationalized MSCs as a three-tier structure, which allowed us to capture a higher level of the real-life complexity compared to the traditional buyer–supplier dyad, while simultaneously being aware of the simplifying nature of our approach. Although there is common agreement that MSCs are better characterized as “networks” with vertical and horizontal linkages among actors (Choi & Hong 2002, Holweg & Pil 2008), there are still considerable methodological challenges to overcome to consider the full complexity of real-life supply chains. Nevertheless, the simplified operationalization of the supply chain enables us to gain a deeper understanding with regard to our theoretical interest (i.e., contingency variables of buying firms’ strategies of managing sustainability in MSCs), but the application of additional methods, such as social network analysis, is desirable.

Fourth, we focused on a set of industries that is frequently studied in sustainability research where significant pressure to address several dimensions of the triple bottom line exists. Our selection of industries is by no means exclusive, and it would be interesting to see how buying firms in other industries such as the automobile industry (Simpson *et al.* 2007, Xia & Tang 2011), the chemical industry (Foerstl *et al.* 2010), and the mineral industry (Epstein & Yutas 2010), are currently coping with the need to make their sub-suppliers’ sustainable but that might be subject to different MSC contingencies (see also Fu *et al.* 2012). Specifically, the automobile industry is characterized by relatively long MSCs (Choi & Hong 2002) and a strong focus on the tangible aspects of sustainability. T1 suppliers in this industry usually have highly developed capabilities regarding the management of sub-suppliers and performance criteria, such as quality and efficiency (Sako 2004), which could lead to different strategies regarding the delegation of sustainability management tasks to them. Despite the limita-

tions of this work, we hope that our suggestions for further research trigger additional studies in the area of MSCs, specifically in the sustainability context, to extend and test our ideas.

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## TABLES AND FIGURES

**TABLE 1:** Validity and reliability issues addressed throughout the course of our research<sup>a</sup>

Reliability/Validity Criterion	Research Phase			
	Design	Case Selection	Data Gathering	Data Analysis
<b>Reliability</b>	<ul style="list-style-type: none"> <li>▪ Develop case study protocol</li> <li>▪ Development and utilization of case study database</li> </ul>	<ul style="list-style-type: none"> <li>▪ Selection criteria well documented in the case study protocol</li> <li>▪ Selection based on multi-step process (ranking as sustainability sector leader in Dow Jones Sustainability Index; listing in at least one other sustainability index, such as FTSE4Good; official commitment to the UN Global Compact; publication of sustainability reports according to the Global Reporting Initiative at least on a B-Level; active involvement in the Carbon Footprint Disclosure Project; and three additional associations)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Semi-structured interview guidelines reported in case study protocol</li> <li>▪ All interviews transcribed by interviewers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Involvement of authors who have not been in the field gathering the data</li> <li>▪ Rigorous coding process</li> </ul>
<b>Internal Validity</b>	<ul style="list-style-type: none"> <li>▪ Foundation of our research model, previous literature, and a theoretical framework</li> </ul>	<ul style="list-style-type: none"> <li>▪ Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>▪ Multiple respondents</li> <li>▪ Most knowledgeable key informants interviewed</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pattern matching within and among cases</li> <li>▪ Triangulation of questionnaire, semi-structured interview and secondary data</li> <li>▪ Active search for alternative explanations</li> </ul>
<b>Construct Validity</b>	<ul style="list-style-type: none"> <li>▪ Adoption of questions from previous research in the field of sustainable supply chain management</li> <li>▪ No questions asked, which would involve broad speculation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>▪ Multiple sources of information: questionnaires, semi-structured interviews, databases, and reports</li> <li>▪ Assured anonymity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Data triangulation based on independent sources</li> <li>▪ Data analysis in parallel with interview phase to be receptive to new results</li> </ul>
<b>External Validity</b>	<ul style="list-style-type: none"> <li>• Comparative multiple case studies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Theoretical sampling</li> </ul>	<ul style="list-style-type: none"> <li>▪ Gathering data on the case context</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consideration of case context</li> <li>▪ Comprehensive intra-case analysis</li> <li>▪ Pattern matching rather than statistical projections used</li> </ul>

<sup>a</sup> based on Yin 2009; Gibbert, Ruigrok, and Wicki 2008

**TABLE 2:** Overview of cases and interviews

Supply Chain	Purchasing spend for category in mn. Euro	Share of emerging market country sourcing	Category description	Company	Company turnover in mn. EUR (rounded)	Location	Informant	Number of interviews
DP <i>Dairy</i>	200	0%	Dairy products	<b>Buyer Sequenzia</b>	40,000	Europe	CPO, Purchasing Manager DP	<b>3</b>
			T1: Processed dairy	Sequenzia DP_T1_A	45	France	CEO, Purchasing Manager	2
			T1: Processed dairy	Sequenzia DP_T1_B	11,000	Netherlands	Key Account Manager, Manager Cooperative Affairs, Manager Global Sustainability Framework	3
TB <i>Tea in bags and bulk</i>	600	100%	Tea bags	<b>Buyer Sequenzia</b>	40,000	Europe	Procurement Operations manager TB, Supplier Development Manager	<b>3</b>
			T1: Processed tea	Sequenzia TB_T1	30	Kenya	Sales Manager	2
			Certification body	Rainforest Alliance	N.A.	UK	Manager Sustainable Agriculture Relations, Manager Tea East & Southern Africa and Asia	2
VT <i>Vegetables</i>	100	> 10%	Canned vegetables	<b>Buyer Educata</b>	7,000	Europe	CPO, Head of Sustainability, Purchasing manager VT	<b>6</b>
			T1: Processed vegetables	Educata VT_T1_A	90	Portugal	CEO, Purchasing Manager	2
			T1: Processed vegetables	Educata VT_T1_B	80	North America	Corporate Quality Assurance Manager	1
PP <i>Product Packaging</i>	160	0%	Product packaging	<b>Buyer Educata</b>	7,000	Europe	Purchasing Manager PP	2
			T1: Metal cans	Educata PP_T1	2,000	UK	Sales Manager, Purchasing Manager	2
CL <i>Clothing</i>	300	<80%	Clothing	<b>Buyer Integris</b>	3,000	Europe	Head of Sustainability, Purchasing Manager CL	<b>3</b>
			T1: Clothing	Integris CL_T1	35	Turkey	Sales Manager	1
FW <i>Footwear</i>	1,000	<90%	Footwear	<b>Buyer Integris</b>	3,000	Europe	Head of Sustainability, Purchasing manager FW	<b>3</b>
			T1: Footwear	Integris FW_T1	110	China	Sales Manager	1
CE <i>Consumer Electronics</i>	150	<90%	Consumer electronics	<b>Buyer Electra</b>	25,000	Europe	Purchasing Managers CE, Sustainability Managers	<b>5</b>

T1: Assembled parts	Electra_T1_A	4	China	General Manager, HRM Manager, Sales Manager, Production Manager	4
T1: Assembled parts	Electra_T1_B	22	China	Management System Engineer, HRM Manager	2
T1: Assembled parts	Electra_T1_C	24	China	General Manager Assistant	1
T1: Assembled parts	Electra_T1_D	250	China	HRM Manager	1
T1: Assembled parts	Electra_T1_E	6	China	General Manager, Quality Manager, HRM Manager	3
T1: Assembled parts	Electra_T1_F	60	China	General Manager, HRM Manager, Production Manager, Administrative Manager, Key Account Manager	6
T1: Assembled parts	Electra_T1_G	40	China	General Manager, General Manager Assistant, Management System Engineer	3

**TABLE 3:** Additional interviews with NGOs and multi-stakeholder organizations

<b>Organization</b>	<b>Industry focus</b>	<b>Aim of the organization</b>	<b>Informant</b>
<b>Fair Food International</b>	Food	Improve the socio-economic conditions of vulnerable people in the global food system, such as workers (especially women) and smallholder farmers, promote the sustainable use of natural resources and preserve the environment.	Director Policy and Advocacy
<b>China Labor Watch</b>	Consumer electronics	Improve working conditions in the Chinese manufacturing industry by uncovering unethical labor practices through investigations and local union collaborations and organizing media campaigns.	Program coordinator
<b>Ethical Tea Partnership</b>	Tea	Improve tea sustainability, the lives and livelihoods of tea workers and farmers, and the environment in which tea is produced by working with tea producers and smallholder farmers in supply chains to help them meet internationally recognized social and environmental standards.	President
<b>Centre for Research on Multinational Corporations (SOMA)</b>	Tea	Strives for global economic development that is sustainable and fair and the elimination of the structural causes of poverty, environmental problems, exploitation, and inequality. Through research targeted at achieving sustainable change and strengthening cooperation, SOMO seeks to offer social organizations worldwide, especially those in developing countries, the opportunity to promote sustainable alternatives and to provide a counterweight to unsustainable strategies and practices of multinational corporations.	Senior researcher
<b>Clean Clothes Campaign</b>	Apparel	Improve working conditions in the global apparel industry by uncovering unethical labor practices through investigations and local union collaborations and organizing media campaigns.	Researcher and international secretariat officer

**TABLE 4:** Operationalization of major constructs

<b>Category</b>	<b>Definition</b>	<b>Operationalization</b>	<b>Source</b>
<b>Supply chain complexity</b>	Different elements of a system that require coordination by the buying firm	<i>Vertical:</i> Number of tiers  <i>Horizontal:</i> Number of suppliers in each tier (0–10: very low, 11–100: low, 101–1000: high, >1,000 very high)	Choi & Hong 2002; Awaysheh & Klassen 2010  Choi & Hong 2002
<b>Institutional distance</b>	Distance between the home country institutions of two firms engaged in buying and supplying regarding voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption	Composite index based on the difference of each of the Worldwide Governance Indicators of each sourcing country compared to the buying firms' country. The deviations were corrected for differences in the variances of each dimension and then arithmetically averaged (0-0.5: very low, 0.5–2: low, 2-3.5: high >3.5: very high).	Kogut & Singh 1988, The Worldwide Governance Indicators 2015
<b>Transparency</b>	Instances where interview partners described the degree to which non-compliance is detectable along the different tiers of the MSC	<i>High</i> , when the buyer frequently conducted audits at the T1 facility (at least 1 p.a.) and is able to gain insights regarding sustainability at the T2 level (e.g. through third part audits, field books etc.)	Mainly inductively generated
<b>T1 Supplier sustainability management capability</b>	Instances where interview partners describe the technical expertise of suppliers to implement sustainability in their own operations and/or to train their suppliers how to be sustainable and assist them in the implementation process	<i>High</i> , when the supplier was able to conduct audits and/or training independently, and when a dedicated expert for managing sustainability at the supplier was in place (e.g. agronomist)	Mainly inductively generated
<b>Power asymmetries along the MSC</b>	Instances where interview partners describe differences in power, i.e. the dependency of a firm on another member firm in the supply chain in order to reach its own aim	Mainly based on anecdotal evidence and qualitative assessments of interviewees	Mainly inductively generated



**TABLE 5: Cross-Case Comparison**

	Dairy	Tea Bags	Vegetables	Product Packaging	Apparel	Consumer Electronics
<b>Supply chain</b>	Sequenzia DP	Sequenzia TB	Educata VT	Educata PP	Integriss FW and CL	Electra (CE)
<b>Sustainability focus</b>	Environmental	Environmental	Environmental	Environmental	Social	Social
<b>MSC type</b>	<b>Open MSC</b>	<b>Third party</b>	<b>Open MSC</b>	<b>Open MSC</b>	<b>Closed MSC</b>	<b>“Don’t bother”</b>
<b>Vertical complexity</b>	2 tiers	2 tiers	2 tiers	2 tiers	4 tiers	4 tiers
<b>Horizontal complexity</b>	T1: 60 T2: 100,000	T1: 350 T2: 600,000	T1: 10 T2: 1000-3000	T1: 6 T2: 10	T1: 70-80 T2: >28,000	T1: 450 T2: Unknown
<b>Institutional distance</b>	0.6: Mainly concentrated in Europe (Netherlands–Portugal)	4.5: Developing country sourcing (UK–Kenya)	0.6 and 0.25: Mainly concentrated in Europe/US (Netherlands–Portugal/US)	<0.1: Mainly concentrated in Europe (UK–Germany)	4.3: Emerging country sourcing (Germany–Vietnam)	4.8: Emerging country sourcing (Netherlands–China)
<b>MSC transparency</b>	<p><i>High:</i></p> <ul style="list-style-type: none"> <li>▪ Annual audits of T1 factories through lead firm</li> <li>▪ T2 audits take place every 18 months</li> <li>▪ Agronomists of lead firm regularly visit main farmers (T2) and have good insights into farmers’ facilities</li> <li>▪ Extensive documentation through farmers’ field books, and the use of forbidden pesticides can be detected through sample checks</li> </ul>	<p><i>High:</i></p> <ul style="list-style-type: none"> <li>▪ Annual audits of T1 plant and T2 farms.</li> <li>▪ Due to the nature of tea (quality can fluctuate weekly), purchasers regularly visit tea farmers and are sensitized regarding sustainability issues.</li> </ul>	<p><i>High:</i></p> <ul style="list-style-type: none"> <li>▪ Annual audits of T1 factories through lead firm</li> <li>▪ Agronomists of lead firm regularly visit main farmers (T2) and have good insights into farmers’ facilities.</li> <li>▪ Extensive documentation through farmers’ field books, and the use of forbidden pesticides can be detected through sample checks.</li> </ul>	<p><i>High:</i></p> <ul style="list-style-type: none"> <li>▪ R&amp;D staff of T1 supplier works on joint sustainability projects with buying firm.</li> <li>▪ Any changes in the sub-suppliers base need to be approved by the buying firm.</li> </ul>	<p><i>Low:</i></p> <ul style="list-style-type: none"> <li>▪ Some issues of social sustainability non-compliance are hard to detect (e.g., underaged workers, sexual harassment). Audits take place every 3 years</li> <li>▪ Buying firm also audits selected T2 facilities and thus possesses some insight about sustainability issues at this level.</li> </ul>	<p><i>Low:</i></p> <ul style="list-style-type: none"> <li>▪ Non-compliance against social sustainability can generally be detected through audits (e.g., registration of working hours)</li> <li>▪ Buying firms audit T1 every three years</li> <li>▪ Buying firms possess no information on T2 sustainability compliance, and interaction with T2 level is sparse.</li> </ul>

**Supplier sustainability management capability of T1**

*High:*

- Due to regular training of their farm advisors, the T1 has a good understanding of T2 processes and is able to translate the buyer's sustainability requirements for them.
- T1 employs 35 of their own agronomists who also cover sustainability management.

*High:*

- Capabilities for managing suppliers' sustainability were initially built up by the buyer but systematically passed on to T1's agronomists.
- T1 employs 250 of their own agronomists who also cover sustainability management.

*High:*

- T1 are very active in developing their own sustainability management program and independently conduct audits at T2 level.
- T1 employs 20–30 of their own agronomists who also cover sustainability management.

*High:*

- The T1 are highly advanced in their own sustainability programs and have developed the capability to manage suppliers' sustainability and initiate sustainability improvement projects with them (e.g., life cycle analyses).

*Low:*

- Capabilities of T1 suppliers are currently not assessed to be high enough, but Integris is making investments to build them up.

*Low:*

- Capabilities of T1 to manage sustainability in their own facilities have developed with growing experience with customer audits. Capabilities to manage sub-suppliers are less developed, however, as the role of the supplier sustainability manager is missing in the T1 organization.

**Power asymmetry**

- Power relations are symmetrical: As complexity is high at the T2 level, the buyer is dependent on the T1 supplier if it wants to reach its sustainability target of sourcing 100% of its agricultural raw material sustainably by 2020.
- The Dutch T1 had a broader customer base and was less sales-dependent on Sequenzia.

- Power asymmetry exist as buyer is the most important customer for the T1. Due to the complexity at the T2 level, the buyer is also dependent on T2 to reach its sustainability targets.

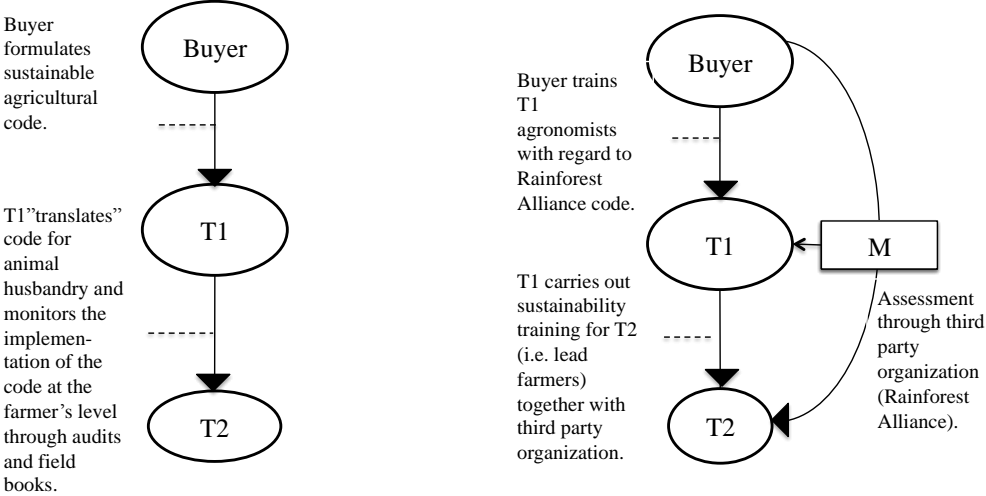
- Power relations are quite symmetrical: Educata is a main customer for the T1 but is not the most important one.

- Power relations are symmetrical: Packaging suppliers are large multi-national companies themselves and are hardly dependent on their buyers. As packaging is not its core business, Educata is in fact dependent on its packaging suppliers to realize the environmental sustainability improvements.

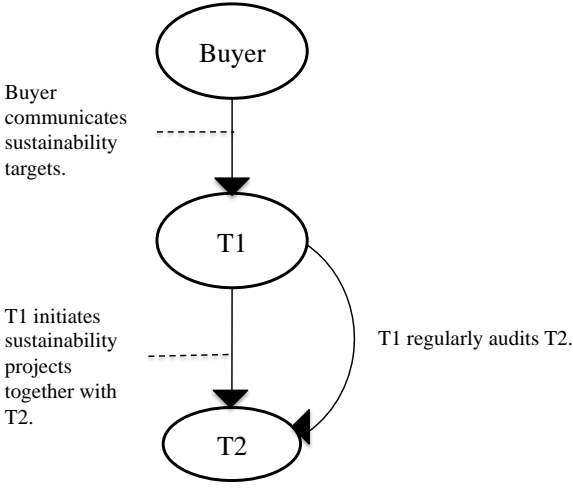
- Power relations are asymmetrical: The buyer is very powerful as it accounts for a large share of their T1 suppliers sales volume.

- Power asymmetries between the buyer and T1 are high and oftentimes even increases towards the T2 level.

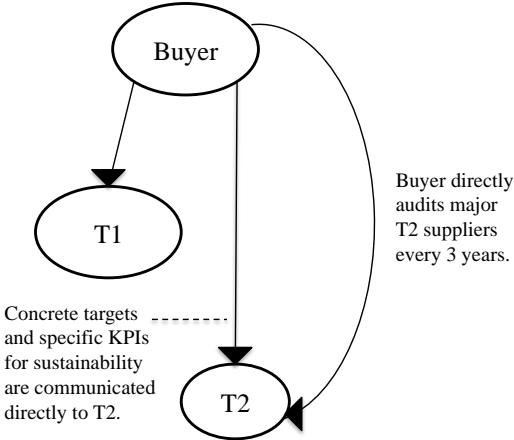
**FIGURE 1** MSC of Sequenzia (Dairy Products and Tea Bags)



**FIGURE 2** MSC of Educata (Metal Cans)



**FIGURE 3: MSC of Integris (Footwear/ Clothing)**



**FIGURE 4: MSC of Electra (Consumer Electronics)**

