DRIVERS OF SUPPLIER SUSTAINABILITY: MOVING BEYOND COMPLIANCE TO COMMITMENT

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Mounting pressure for sustainable business practices has led to a greatly increased focus on highlighting sustainability drivers throughout the supply chain. While the literature has concentrated on why downstream original equipment manufacturers (OEMs) and retailers become sustainable, much less is known regarding why and how upstream suppliers implement sustainability practices. Based on findings from a cross-case analysis of eight first-tier (FT) suppliers and an integration of resource dependency theory (RDT), this study explores the drivers and mechanisms of FT supplier engagement in sustainable supply chain management. Suppliers need to understand the sustainability priorities of customers and stakeholders to derive the effective focus and depth of further upstream integration with subsuppliers. Therefore, the integration between the two functions that manage the relevant external interfaces, namely marketing (downstream and stakeholder communication) and procurement (upstream), appears to be the essential cornerstone to move beyond FT supplier compliance to actual commitment to sustainability practices. We present findings on how (1) stakeholder-related, (2) process-related, and (3) product-related drivers influence the choice and effectiveness of the procurement–marketing integration (PM integration) mechanisms. Stakeholder pressures are considered to be the principal drivers of sustainability efforts. However, on their own, they rarely provide sufficient grounds for permanent and embedded PM integration initiatives at FT suppliers. Evidence suggests that suppliers' commitment to PM integration is motivated by the opportunity to leverage sustainability initiatives in their product offerings and sustainability certificates recognizable by customers and secondary stakeholders.

Keywords: *sustainable supply chain management; sustainability; cross-functional integration; resource dependence theory; case study*

INTRODUCTION

Expectations for sustainable business practices are steadily increasing. From retailers, original equipment manufacturers (OEMs), their direct suppliers, and subsuppliers located further upstream, firms are being pressured by regulators, end consumers, NGOs, and other stakeholders to provide evidence of sustainable business processes (Auger, Devinney, Louviere & Burke, 2010; Awaysheh & Klassen, 2010). However, research on sustainable business practices has primarily focused on the activities of downstream members of the supply chain, such as retailers and large OEMs. First-tier (FT) suppliers to OEMs are often responsible for managing large parts of their OEM customers'

subsupplier base and play a decisive role in ensuring sustainability throughout the supply chain (Mentzer, Stank & Esper, 2008), yet there has been less research about how these suppliers seek to ensure sustainability further upstream in the chain (Paulraj, 2011). Indeed, the role of suppliers in ensuring a sustainable supply chain has only recently become a research focus (Lee & Klassen, 2008).

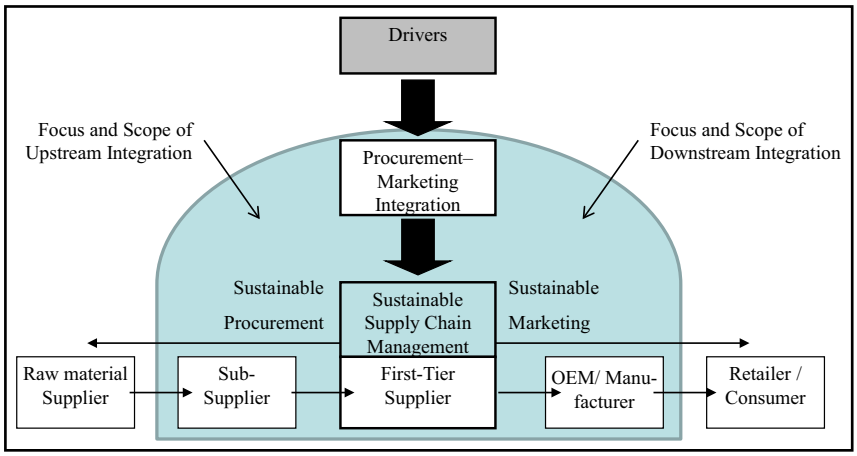
Pressure to engage in sustainable practices can vary greatly from one tier of the supply chain to the next. For instance, regulations in the European Union (such as RoHS and REACH) that target manufacturing industries are aimed at firms with a direct connection to the end consumer (Green et al., 1996). However, most upstream suppliers rarely have direct contact with end consumers and are therefore rather indirectly affected by such regulations. Moreover, suppliers that operate in business-to-business (B2B) settings generally do not have high-profile brand names, and their products (e.g., components) often go unnoticed by end consumers. Some even suggest that upstream suppliers may exploit their distanced positions to merely satisfy the bare legal minimum of sustainability requirements (Siegel, 2009). These factors suggest that FT suppliers may react differently to sustainability expectations than do their downstream OEM customers. Nevertheless, there is a lack of research explaining the determinants of supplier sustainability commitments that go beyond the direct pressure exerted on them by their direct OEM customers (Lee, Klassen, Furlan & Vinelli, 2014). More specifically, the drivers and mechanisms that enable FT suppliers to engage in proactive sustainability efforts remain to date relatively unexplored.

Our objective in this study is to offer a thorough perspective on the determinants of suppliers' sustainable supply chain management (SSCM) practices and to examine why some FT suppliers assiduously move beyond compliance commitments and toward truly sustainable business practices while others do not. In this context, we define SSCM as "the strategic, transparent integration and achievement of an organization's social, environmental and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its suppliers [and customers]" (Carter & Rogers, 2008; p. 368). Accordingly, commitments to green and social practices at least have to not harm the FT supplier's economic performance. A specific practice that fosters such synergetic performance improvements between green/social and economic firm priorities is cross-functional integration (Wolf, 2011). More specifically, FT suppliers need to understand the sustainability priorities of downstream customers and other external stakeholders to derive the effective focus and depth of their upstream subsupplier integration practices. This likely requires both internal and external arcs and angles of integration (Frohlich & Westbrook, 2001; Thun, 2010). Therefore, the internal integration of the two functions that manage the relevant external interfaces, namely marketing (downstream and stakeholder communication) and procurement (upstream), appears to be the essential cornerstone for moving beyond merely compliance to true commitment (Sheth, Sharma & Iyer, 2009). The extant research has pointed out that under specific circumstances, enhanced internal procurement–marketing integration (P-M integration) ultimately results in enhanced (triple bottom line) performance (Kirchoff, Koch & Nichols, 2011; Piercy, 2009; Schoenherr & Swink, 2012). Hence, we seek answers to the following two research questions: (1) What are the contextual drivers of PM integration for SSCM? (2) How do the contextual drivers influence the choice of PM integration mechanisms to effectively move beyond sustainability compliance for FT suppliers?

Given the nascence of the topic, we adopt an exploratory research approach. Based on findings from eight in-depth case studies of FT suppliers to OEMs in several industries, we explain how FT suppliers commit to SSCM as manifested in their PM integration mechanisms (Figure 1). We use theoretical reasoning from resource dependency theory (RDT) to introduce how FT suppliers can be incentivized to adopt PM integration mechanisms. We then analyze our cases to provide more depth to the available theoretical reasoning, thereby making several contributions to SSCM research. First, our research highlights a set of interdependent contextual drivers that influence the degree to which suppliers may implement sustainability efforts. More specifically, this research shows that stakeholder pressures do not necessarily guide FT suppliers toward more permanent and embedded PM initiatives. Thus, we reveal the specific circumstances under which the focus on green and social improvements along the supply chain can be developed into economically viable initiatives for FT suppliers (Pagell & Shevchenko, 2014). In addition, we outline how the complementary process-based and product-based contextual drivers motivate FT suppliers to move beyond compliance commitments. Finally, this study provides empirical validation for the scant literature on the effects of downstream demand and upstream supply integration in the SSCM context (Kirchoff et al., 2011), which answers the call for cross-functional research in the SSCM domain (Sheth et al., 2009; Stock, Boyer & Harmon, 2009).

The remainder of the paper is structured as follows: First, we provide a literature review of how suppliers may perceive sustainability differently than manufac-

FIGURE 1
Unit of Analysis in the Context of a Simplified Competitive Supply Chain



turers. The theoretical reasons for PM integration are grounded in RDT. Next, we present our case study method, which includes the theoretical case sampling approach, data collection process, and data coding procedures. We then analyze and discuss our empirical results to derive testable propositions about the relationship between contextual drivers and the resulting PM integration. The paper concludes with a summary of the key findings, study limitations, and directions for further research.

THEORETICAL FOUNDATION AND CONCEPTUAL DEVELOPMENT

The Suppliers' Role in Sustainable Supply Chain Management

Suppliers perceive the need to incorporate sustainability efforts into their business practices differently than their downstream OEM customers, as regulatory pressures and end-consumer scrutiny occur in the downstream part of the supply chain (Lo, 2013). Moreover, FT suppliers are further from the "point of sale" and the product brand, where the effects of consumer and other stakeholder pressures are directly felt (Green et al., 1996). Hence, FT suppliers' incentives to proactively pursue sustainability initiatives are less obvious (Gonzalez-Benito & Gonzalez-Benito, 2006). Some critics suggest that suppliers of raw materials and components "camouflage" their deficient sustainability mindsets behind OEM trademarks with which consumers identify (Rivera-Camino, 2007). Because supplying firms are often smaller in size, revenue, and financial capabilities than their OEM customers, engaging in sustainability measures can simultaneously be more challenging for suppliers and carry fewer immediate benefits (Chiu & Sharfman, 2011; Siegel, 2009). This results in suppliers being less proactive than their downstream OEM customers in the application of sustainability-related measures.

Specific to FT suppliers, product marketing is targeted at industrial buyers, who have a notably different set of priorities in their purchasing evaluations compared with end consumers. Industrial buyers care more about justifiable value of their spend volume than about emotional appeals or instant gratification. These buyers tend to be well-educated and certified professionals who are proficient in carefully evaluating the benefits and specifications of the items to be purchased (Mudambi, 2002). Recently, OEM customers have increasingly pressured FT suppliers to place more emphasis on sustainability efforts through their product and process specifications, but the rigor and stringency with which these OEMs track actual compliance and select suppliers varies significantly from one OEM to the other (Lee et al., 2014; Reuter, Foerstl, Hartmann & Blome, 2010). Any variance in OEM expectations should not undermine the significance of FT suppliers in SSCM. In fact, many FT suppliers manage a large portion of the final product's total value creation because of the pyramid-like structure of today's tiered upstream supply base (Foerstl, Reuter, Hartmann & Blome, 2010; González, Sarkis & Adenso-Díaz, 2008). Indeed, as end consumers' expectations for more sustainable product offerings have increased, manufacturers have augmented their collaborative efforts with selected FT suppliers to address market demands (Spence & Bourlakis, 2009). Therefore, many FT suppliers have strong justification to invest in and signal proactivity in their SSCM practices to be selected for these collaborative projects, which will improve their competitive position and ultimately their economic performance (Hoejmose, Brammer & Millington, 2012). Some suggest that, to ensure stringency in their practices and to avoid public

accusations, FT suppliers must commit to internal PM integration that allows them to *walk* their downstream sustainability *talk* in their upstream supply chain (Closs, Speier & Meacham, 2011).

The Significance of Procurement–Marketing Integration in Supplier SSCM Commitment

The ever more dynamic nature of consumer demand and the recent need for customized solutions have necessitated deeper collaborations between upstream and downstream supply chain members (Emerson, 1962). Buyer–supplier partnerships have evolved from short-term joint product development projects to an often lasting integration of suppliers into intricate aspects of an OEM's operations. Sustainability efforts are no exception to the effect of these trends in deeper collaborative relationships. However, from a resource dependence theory (RDT) perspective, such interorganizational collaborations provide opportunities for firms to leverage the other party's dependency. RDT suggests that as both the buyer and the supplier become more dependent on one another, both parties will seek stability in the relationship to minimize their risks. As a result, the companies' integration becomes a normative aspect of the relationship (Casciaro & Piskorski, 2005). As related to our topic, SSCM-related practices that the FT supplier adopts depend on how well downstream customers' expectations are aligned with the materials that subsuppliers provide and the sustainability of upstream production processes. Once focus and depth are aligned, both parties become more willing to invest in resources that reduce uncertainty and prevent supply chain disruptions, be they caused by natural events or through sustainability misconduct at the subsupplier level (Bode, Wagner, Petersen & Ellram, 2011).

The RDT perspective is particularly pertinent when *sustainability-related risks* of the buying OEM are a matter of concern. Sustainability-related risk becomes an issue when the supply base's potential negative deviation from expected sustainability behavior may lead to reputational damage for the buying OEM (Koplin, Seuring & Mesterharm, 2007). Such risks are particularly troubling because the OEM does not have direct and full control over the FT suppliers' and subsuppliers' behaviors, but the OEM's public legitimacy and reputation depend on these parties' business conduct (Foerstl et al., 2010; Spence & Bourlakis, 2009). The less information that is openly available to the OEM about upstream value creation processes, the higher the OEM's risks are bound to be (Lee et al., 2014). In this context, buyer risk and dependence provide impetus for the FT supplier to proactively ensure sustainable business conduct in its own and subsuppliers' production processes. The capability to prevent reputational damage to the downstream buyer can thus be a strategic resource advantage that allows the FT supplier to outcompete others (Srivastava, Shervani & Fahey, 1999).

To align their sustainability efforts, FT suppliers need to integrate interfunctionally and interorganizationally so as to pass on the expectations of downstream OEM customers and stakeholders within their own company functions and across to upstream tiers of the supply chain (Chandler & Johnston, 2012; Thun, 2010; Wolf, 2011). When the FT supplier can successfully coordinate its marketing (demand) and procurement (supply) functional activities, it can better ensure that its customers and stakeholders receive what they are promised by presenting a unified message from the company and its products (Kirchoff et al., 2011). In line with the cross-functional integration literature, we define PM integration as the extent to which the procurement and marketing functions work cooperatively to arrive at mutually accepted goals and to assure compatibility and alignment across their functions (O'Leary-Kelly & Flores, 2002).

Although the significance of PM integration is well noted in the literature, an empirical investigation of the link between motivational drivers and the chosen PM integration mechanisms is limited (Carter & Easton, 2011; Closs et al., 2011; Sheth et al., 2009). Kirchoff et al. (2011) note that customers and other stakeholders have become increasingly watchful and critical of the alignment between sustainable marketing messages and the actual supply chain processes. The authors conclude that integration can increase the likelihood of overcoming incoherent sustainability practices and the deceptive marketing messages that result due to this incoherence. Zhu, Sarkis and Lai (2008) observe that the integration of sustainability throughout the firm's supply chain provides competitive differentiation, which in turn improves market and firm performance. However, the contextual factors that motivate commitment to beyond-compliance SSCM, as manifested in integration mechanisms at suppliers, have yet to be addressed. Focusing on the PM integration mechanism, we present evidence of how the response to legitimate stakeholder demands for green/social performance can not only align upstream and downstream supply chain member focus, but can also be transformed into economically viable projects instead of being a cost burden for the company (Pagell & Shevchenko, 2014).

RESEARCH METHOD

Our a priori premise about how FT suppliers would consider implementing sustainable practices at the PM integration interface was limited because of the scant literature available on the subject. RDT was applied as a theoretical platform to explain why FT suppliers

might implement sustainability practices. To provide further detail to these explanations, we opted for a multiple case study design to explore our initial research questions. We categorize the work as theory-enriched empirical research or grounded theory, where initial reasoning from existing theories is used for a phenomenon's further elaboration (Gilbert, 2005; Strauss & Corbin, 1990). The work can be classified as middle-range theory, as we generalize beyond a particular case but within the context of our sample (Ketokivi, 2006).

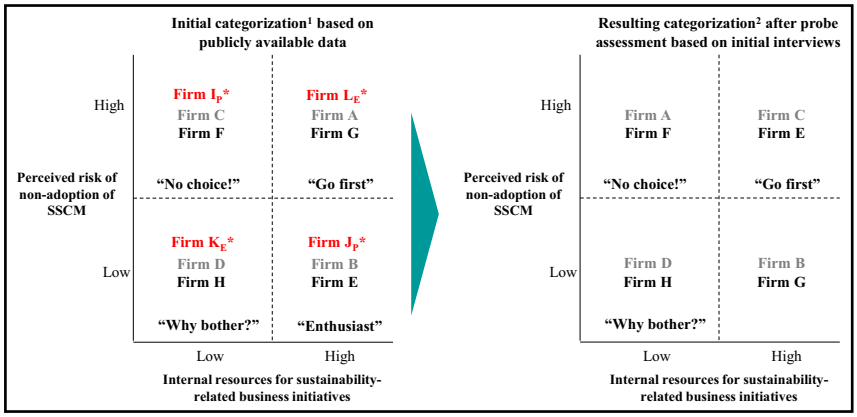
Research Design

In this exploratory research, we selected a multiple case study approach for several reasons. First, the review of extant literature revealed limited insights concerning the integration of sustainable procurement and marketing practices. In such a nascent stage of research, a qualitative research approach that is based on case studies provides a better means to identify patterns and a suggestive theory, particularly if the relationships between constructs are undefined or poorly understood (Edmondson & McManus, 2007; Lee & Klassen, 2008). Second, researchers are able to interact with informants in case study research. Therefore, informant perspectives are better understood, and relevant processes can be examined (Boyer & Swink, 2008; Pratt, 2009). Moreover, the link between contextual drivers and the applied integration mechanism can be determined (Dul & Hak, 2007). Finally, the method allowed us to involve managers who are involved in the actual management situation of interest, which enabled us to generate managerially relevant knowledge (Gibbert, Ruigrok & Wicki, 2008). Thus, cases provided a good fit to our practical research objective (Dubois & Araujo, 2007). To ensure validity and reliability, we developed a research framework for our research process and elaborated on theory to detect relationships between the central categories emerging from the data (Ellram, 1996).

Case Selection

We followed a theoretical sampling approach to increase the generalizability of the results while simultaneously setting clear boundaries for the population (Perry, 1998; Yin, 2009). This sampling approach was based on an adapted version of Cousins, Lamming and Bowen's (2004) 2 × 2 sustainability classification matrix. The theoretical framework categorizes firms according to their *allocated resources for sustainability-related business initiatives* (*x*-axis) and their *perceived risk for nonadoption of upstream sustainability* (*y*-axis). This sampling approach was chosen as the *x*-axis represents the internal perspective and the *y*-axis represents the externally induced risk (Figure 2). Internal resource allocation served as an initial approximation for the resources available for PM integration toward SSCM, and the perceived risk of noncompliance approximates the aggregate strength of the external drivers.

FIGURE 2
Refinement of Case Classification in a Theoretical Sampling Procedure Based on Cousins et al. (2004).



[1]Firms in gray font are in the packaging industry. Firms in black font are in the electronics industry.[2]Firms A, C, G, and E were reassigned to a different quadrant after the initial telephone interview with an executive.*Firms I, J, K, and L were dropped after the initial analysis as two firms per quadrant seemed sufficient to derive valid and reliable results. Throughout the development of the manuscript, these firms have been revisited and contacted again to ensure that data saturation was reached. No additional drivers or PM integration mechanisms were found in the post-hoc analysis; hence, we concluded that data saturation was reached.

TABLE 1

Case and Informant Characteristics

Firm[a]	Size[b]	Main Products	Main Customer Industries	Informant Job Titles	Market Conditions	PSM Approach Toward Sustainability	Marketing Approach Toward Sustainability	Sampling Category
A_P	5.0	Converted packaging Corrugated bags Uncoated fine paper	Consumer goods Food and beverage Construction	Head of Sales[c] Marketing Manager[d] Head of Procurement	Powerful retailers Suppliers lead sustainability debate High NGO pressures	TBL is included in supply management practices. Focus on supplier certification	Wide range of sustainability-related marketing practices	"No choice!"
B_P	1.5	Packaging, cartons Confectionery packaging Carton boards	Food and beverage Consumer goods Tobacco	Head of Marketing Head of Sourcing Head of Sustainability	Customers set high sustainability targets. European scarcity of certified timber and woods	Reactive approach toward sustainability Focus on supplier certification	Marketing focuses on the environmental dimension of sustainability and the related cost advantages.	"Enthusiast"
C_P	8.9	Food packaging containers and coated cardboard boxes Filling systems Industrial distribution equipment	Food and beverage Consumer goods Food retailers	Technical Marketing Manager, Europe Procurement Category Manager[d]	Retailers are primary drivers of sustainability in the SC. Food producers and retailers have vaguely defined sustainable packaging agendas.	Sustainability has emerged as a dominant topic over the past few years Substantial part of supplier management processes is based on TBL.	Sustainability is a major pillar of the firm's product and brand strategy. Sustainable development initiatives communicated to the broader public and (in) direct customers	"Go first"

(continued)

TABLE 1 (continued)

Firm[a]	Size[b]	Main Products	Main Customer Industries	Informant Job Titles	Market Conditions	PSM Approach Toward Sustainability	Marketing Approach Toward Sustainability	Sampling Category
D_P	3.5	Steel and plastic containers Container board and cardboard Blending; filling and packaging services	Industrial products Chemical/ pharmaceutical Automotive	Manager Sales and Marketing Manager Supply Chain Management	Packaging solutions are invisible to consumers. Price-driven commodity market Special regulations for packaging of hazardous substances	Sustainability has only been adopted in supplier evaluations. TBL at a basic level in terms of content and processes	Marketing focuses on quality, reliability, and price. Sustainability plays a minor role.	"Why bother"
E_E	3.0	Semi-conductors Process control devices Custom devices	Automotive Power generation Electronics	Supply Chain Director Sales/Mktg. Director Purchasing Director Sustainability Director	Customers demand innovation and reliability Oligopolistic market with limited focus on sustainability among competitors	Integrated sustainability concept for the entire upstream supply chain	Marketing promotes firm's TBL-related leadership position.	"Go first"
F_E	1.5	Micro-processors Micro-controllers Semi-conductors	Consumer electronics Tele-communications Automotive	Head of Sales and Operations, Europe Chief Purchasing Officer	High-cost pressure and demand volatility Strict social/ environmental regulations	Supply management covers the ecologic dimension of TBL.	Marketing does not actively promote the firm's sustainability efforts.	"No choice!"
G_E	2.5	Automation equipment Control	Power generation Oil and gas Transmission	General Manager Head of Sales[c]	Large, long-term industrial projects; focus	Recently started green SCM activities,	Marketing actively promotes	"Enthusiast"

(continued)

TABLE 1 (continued)

Firm[a]	Size[b]	Main Products	Main Customer Industries	Informant Job Titles	Market Conditions	PSM Approach Toward Sustainability	Marketing Approach Toward Sustainability	Sampling Category
		equipment Building technologies		Head of Purchasing	on innovation and quality Sustainability as part of product features	including sustainable supply management issues and procedures	sustainability-related product features in the context of innovation.	
H_E	.6	Sensors Industrial scanners Automation equipment	Electronics Automotive Machinery	Head of Sales Head of Corporate Procurement[c]	Technology driven Price-driven market Customers demand delivery flexibility.	Supply management focuses on supplying materials. No focus on sustainability	Marketing does not emphasize sustainability.	"Why bother?"

[a]Indices P and E indicate whether the firm belongs to the packaging (P) or electronics (E) industry.
[b]Annual revenue in billion Euros (2009).
[c]Telephone interview.
[d]Informant did not have personnel or budget authority in their current position; all other informants did hold at least a second-level functional leadership position.
Cases A_P and B_P are headquartered in Austria; the other six cases are headquartered in Germany.

In populating this theoretical sampling framework with real case studies, we opted for replication in each of the four quadrants. We sampled until we obtained one suitable case from the packaging industry and one case from the industrial electronics industry per quadrant. This enabled us to study the constructs of interest in alternative industries but in comparable contexts (Eisenhardt & Graebner, 2007). This sampling resulted in three replications (four cases) per industry across the four quadrants (Figure 2 and Table 1). FT suppliers in packaging and industrial electronics deliver a limited range of products to a broad range of industrial customers (one supplier to multiple customers from different industries), and they thus confront a multitude of professional buyers with heterogeneous sustainability demands. For instance, a packaging supplier delivers its products to sustainability-conscious manufacturers of consumer goods while also supplying packaging for the construction materials and machine-building industries, which tend to have low sustainability demands (Found & Rich, 2007). Similar patterns of heterogeneous sustainability demand have been observed in the electronics industry (Smith, Sonnenfeld & Pellow, 2006).

We limited the sample to FT suppliers headquartered in Germany and Austria to limit extraneous variations. These suppliers confront similar social and environmental regulations and cost structures within the European Union (Wilson & Vlosky, 1997). To ensure the comparability of external sustainability pressures, we limited our scope to FT suppliers with international production and sales operations (Bozarth, Handfield & Das, 1998) and annual revenues of at least €500 million (Lee & Klassen, 2008).

We analyzed each potential case company for its sustainability-oriented initiatives, recognitions, or press releases, as suggested by Pagell and Wu (2009). Based on the retrieved information, we positioned the potential cases in our sampling matrix. To probe this assessment, during a telephone interview, we asked the executives responsible for these firms' corporate sustainability programs about how they perceive their firm's sustainability risk and how intensively their respective firm devotes resources to sustainability. As a result of these initial interviews, we eliminated four potential cases from our study (Figure 2). In total, although we contacted twelve FT suppliers, we excluded the latter four and kept the eight cases explained in detail as the main subjects of analysis in the study. The four excluded cases (Figure 2, case companies I, J, K, and L) did not yield previously unobserved findings.

We adjusted our detailed interview guidelines whenever new themes emerged throughout our stepwise case-by-case data collection procedure. After completing the seventh case (Case G), no more new themes emerged; thus, the novelty of findings from subsequent data collection was marginal, which further indicated that saturation had been reached. This confirmed that we had achieved data saturation (McCutcheon & Meredith, 1993).

Data Collection

We contacted the appropriate interview partners in the marketing, procurement management, and sustainability functions to start collecting case data. Table 1 summarizes the case company and the corresponding key informant descriptives. In the first data collection phase, we asked each interviewee to complete a questionnaire about the firm and its respective approach toward sustainability and sustainability-related practices in marketing and procurement. To prepare for the interviews, we compared the questionnaire responses of the 29 informants with publically available information (e.g., annual reports, sustainability reports, or corporate Web sites) to develop probing and guiding questions for the semi-structured interviews (Appendix) (Eisenhardt, 1989; Perry, 1998). The subsequent interviews lasted between 90 and 180 min and were conducted by the same two authors. Each interviewer took notes on the responses and presented data and documents throughout the course of the interview. To allow for triangulation, we collected archival data of publicly available documents (e.g., annual sustainability reports, secondary articles) and internal documents (e.g., reports, procedures). The resulting triangulation ensured construct validity and enabled an investigation of the phenomena from diverse perspectives (Gibbert et al., 2008; Meredith, 1998), thereby substantiating constructs and propositions (Eisenhardt, 1989). Moreover, the triangulation process confounded the social desirability bias inherent in the sustainability topic (Crane, 1999). To ensure reliability, the case protocol was sent to each interviewee for correction and final release after verifying that all facts were accurately described (Ellram, 1996; Pratt, 2008).

Coding Procedures and Outcomes

Once all primary and secondary data were collected, we started our open coding procedures to structure the case information (Yin, 2009). This analysis was carried out in two phases: within-case analysis and cross-case analysis. In the first phase, we reflected on informants' statements to derive first-order and provisional codes (Pratt, 2009; Pratt, Rockmann & Kaufmann, 2006). After individual firm profiles were obtained from within-case coding, we conducted cross-case analysis and relied on tabular displays to detect commonalities and differences across firms (Eisenhardt & Graebner, 2007; Yin, 2009). The two authors who collected the data discussed their open coding results to ensure consistency in the identification of critical themes. An

TABLE 2

Critical Themes Table on Drivers of Suppliers' Sustainability Commitment

Category	Driver	Representative Statement of Critical Theme
Stakeholder-related Drivers	End-consumer Pressure	"The less sustainability-conscious their end customers and their retailers, the less emphasis is put on sustainability on their supplier side. . .so we have less to gain from sustainability" (Firm B_P); "Based on our sustainability know-how, we have developed close ties with retailers. Therefore, we are able to influence the sustainability demands and packaging specifications of retailers to our own advantage and to gain a competitive advantage over competitors" (Firm C_P); "We particularly experience that their [the customers'] pressure varies depending on the end-consumer proximity of our customers" (Firm E_E); "Customers that are close to the end consumer value transparency about the sustainability of ingredients and their production processes more than firms that are distant from end consumers" (Firm F_E); "Essentially, many of our customers' simply pass on the end customers' demands for sustainability" (Firm G_E)
	Direct Customer (OEM) Pressure	"We align internally [with marketing] whenever necessary to commit to the new sustainability standards and targets of our customers" (Firm A_P); "Most direct customers demand sustainable products and operations from their suppliers, but the concepts are still vague and immature" (Firm C_P); "Customers put minimal emphasis on product and process sustainability" (Firm D_P); "Our industrial customers (e.g., from the industrial equipment industry) do not force us to conduct particularly profound upstream sustainability programs with our suppliers, but our customers from the consumer electronics industry push us to implement sustainable procurement practices even with our sub-suppliers" (Firm E_E); "Sustainability is not important for our customers in the industrial equipment industry; also, PC producers [their customers] only require limited documentation of the sustainability performance of sub-suppliers" (Firm F_E); "We attempt to pursue higher standards than customers expect to prevent ad-hoc pressure on us" (Firm G_E); "Different customers put different emphases on sustainability depending on their industry, the markets they serve and their home country" (Firm G_E)
	NGO Pressure	"The power of NGOs is manifested by the threat of negative media coverage" (Firm A_P); "Multiple competitors [from the pulp and paper industry] have been publicly accused by Greenpeace and others for destroying the Indonesian rain forest" (Firm B_P); "Cooperating with NGOs requires responsiveness; therefore, the topic is under the surveillance of the marketing function" (Firm C_P); "NGOs do not seem to be interested in industrial firms like us. . .we consider ourselves as minimally relevant in the societal debate on sustainability" (Firm D_P); "NGOs demand information on product ingredients and production processes" (Firm E_E); "NGOs demand information on production standards and sustainability" (Firm E_E); "We are rarely approached by NGOs about green and social topics" (Firm F_E)
Process-related Driver	Sustainability certification Pursuits	"Certification has become a must in our industry, especially for us, as we are operating on a global scale in countries with heterogeneous stakeholder perceptions" (Firm A_P); "ISO 14001 certification has become a quasi-standard for firms of our size in this industry" (Firm A_P); "We seek to enhance sourcing from certified suppliers to eliminate our need to continuously conduct and update supplier audits" (B_P

(continued)

TABLE 2 (continued)

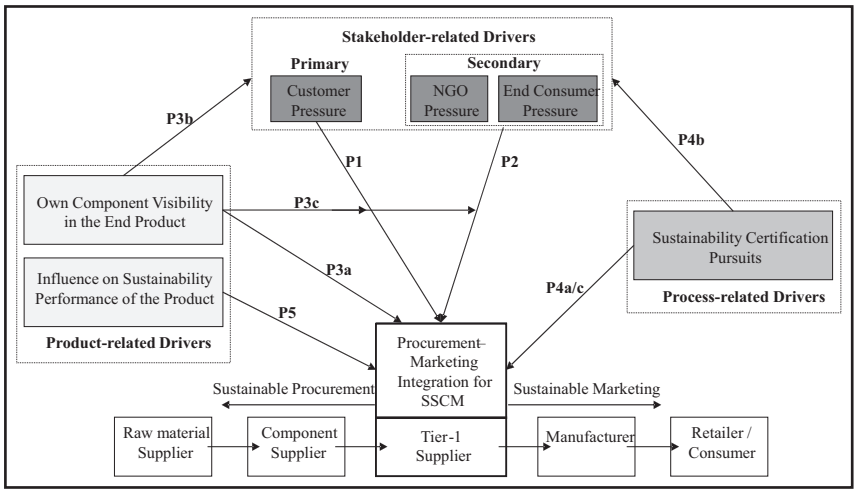
Category	Driver	Representative Statement of Critical Theme
		Purchasing Executive); "Most of our customers' compliance assessments can be satisfied by attaining certifications (DIN ISO 9001, DIN ISO 14001, HACCP, FSC & PEFC)" (Firm B_P); "We seek certifications to signal our sustainability efforts to the broader public" (Firm B_P); "Especially FMCGs firms' demand 100% of paper-based packaging stemming from FSC-certified forests by 2020 [or equivalent certification, such as PEFC]. . .The chain of custody principle of FSC certification requires us to extend our own efforts toward our suppliers." (Firm C_P); "We consider HACCP certification as an add-on to our promised delivery reliability, quality and cost performance" (Firm D_P); "DJSI listing and planned SAM certification in 2011 led to sustainability improvement projects across functions [such as procurement and marketing]" (Firm E_E)
Product-related Drivers	Own Component Visibility	"Our customers convey their brand messages on our packaging solutions. Therefore, we must deliver what we promise" (Firm C_P); "Our brand name appears on our customers' products, which attracts attention from NGOs and other pressure groups" (Firm C_P); "Our customers place little emphasis on the sustainability of product ingredients because industrial packaging is a price-driven commodity market. The irrelevance of our product to the functionality of the end product limits the incentives for us and them [their customers] to engage in sustainability and campaigning" (Firm D_P); "Our products never leave the customers' factory; therefore, our brand is invisible to the public" (Firm D_P); "The environmental-friendliness of ingredients does not play such a strong role for us, as our products are hardly visible to the public. . .most people do not know what we make" (Firm E_E); "Our products are not visible to customers (e.g., blue chips in a car), so we do not get that much attention" (Firm F_E); "Our products do not reach the end consumer, so they do not affect the safety or the properties of consumer products" (Firm H_E)
	Influence on Product Sustainability	"In some cases, cutting costs often means being more environmentally friendly; for instance, lighter materials lead to cheaper transportations" (Firm A_P); "We want to support our clients' eco-efficiency, so we must develop and manufacture semi-conductors that consume less energy regardless of their applications [industrial or consumer applications]" (Firm E_E); "Our customers demand innovative products that help them produce energy-efficient equipment and circuitry. . .by providing better ecological product features than our competitors, we have been able to generate a positive impact on sales" (Firm G_E); "We are able to demand a slight price premium for our green performance if we are able to provide customers with substantial savings over the rather long product lifecycle of our installations and industrial applications" (Firm G_E)

TABLE 3

Critical Themes Table on PM Integration Mechanisms

Group	Representative Statement
Task-based, temporary PM integration	"Customers demand sustainable operations and certifications from suppliers. This also has strong implications for the choice of our suppliers. Thus, we align internally where necessary" (Firm A_P); "Marketing and purchasing are jointly involved in product development projects, as customers increasingly demand sustainable products and processes from us and other suppliers" (Firm B_P); "We need alignment between the two functions during certification and afterwards" (Firm B_P); "Selling environmentally friendly packaging solutions requires close cooperation in product development teams" (Firm C_P); "Some customers (chemical companies) started to push their sustainability agenda, but this is still an exception. . .so we [procurement and marketing] integrate whenever necessary" (Firm D_P); "We [the procurement and marketing function] frequently meet in new product development circles" (Firm E_E); "Product managers are responsible for the initial calculation of green appliances, while procurement people [category managers] organize and execute the required external bids. They exchange in the development team a meeting" (Firm GE); "This information is exchanged between sourcing and marketing teams only if customer sustainability requirements change" (Firm H_E)
Embedded and permanent PM integration	"Still, the purchasing function has to ensure that customer requirements are met. . .for instance, a sustainable pulp supply chain requires certified recyclers and forestry as suppliers. . .to meet client targets (FSC certification percentage), we coordinate so that we can allocate volume for certified suppliers to those customers that demand it" (Firm A_P); "Marketing and purchasing have developed means to exchange data concerning the location of suppliers, volumes. . . certification and audit results" (Firm B_P); "A close cooperation with the purchasing function was established to also investigate and use NGO enquiries about our supply base" (Firm C_P); "Marketing sustainability without appropriate compliance in our own and upstream operations is myopic and doomed to detection. Especially our suppliers from emerging markets are audited for social and ecological standards" (Firm E); "Integration [between procurement and marketing] is necessary to assure coherence between product messages and supply chain standards" (Firm E_E); "We [the procurement function] work hand-in-hand with the marketing department to address customer requests and to assure access to the adequate raw material and suppliers" (Firm E_E); "We would require more people and infrastructure to maintain ongoing reporting processes. . .for instance, reporting the progress in the certification of suppliers or the supply chain's reduced CO_2 emission is not feasible for us" (Firm F_E); "We established an information exchange in our IT systems. . .so in case a supplier fails an audit or we [the sustainable sourcing team] take notice of potentially non-compliant practices, the marketing manager is informed based on a RACI model. . .this often results in personal exchanges between the people in charge" (Firm G_E).
Involvement of liaison roles	"Our centralized sustainability department involves relevant functions to resolve any unwanted practices from our supply chain independent from where they occurred or who raised the flag to us" (Firm A_P); ". . .first the product developers and then the product managers are in charge of coordinating information flows. . .this is especially important to understand in regard to our sustainable product segments" (Firm B_P); "Each function delivers input to our corporate sustainability report. The CSR department collects the achievements for outside communication. . .that way, we ensure coherence in our external communication" (Firm C_P); "The corporate sustainability department sets and controls standards for internal exchange and involves marketing and purchasing" (Firm E_E); "NGO pressure affects marketing and purchasing category managers and others, so we have installed one department as a single point of contact for sustainability requests" (Firm E_E); "Our corporate sustainability department drives project-based PMI through organizational sustainability initiatives, for instance, the alignment of our code of conduct for suppliers with the codes of conduct of our major customers" (Firm G_E)

FIGURE 3
Summary of Findings



excerpt of open codes (critical themes) is presented in Tables 2 and 3. Through cross-case analysis, we clustered the open codes on drivers and the resulting PM integration mechanism into common themes (second-order codes). Finally, based on findings in the relevant literature and RDT, the identified relationships between constructs were then explained to derive more abstract higher-order links and to enfold theory based on axial coding (Ellram, 1996; Pratt, 2009). Coding was only considered complete when agreement was reached, which led to a forced inter-rater reliability of one hundred percent.

The variation in PM integration mechanisms could be traced back to the perceived strength of three types of drivers: (1) stakeholder-related drivers, (2) process-related drivers, and (3) product-related drivers as second-order codes (Table 2). In the first group, we summarized stakeholder pressures. We distinguished between *primary stakeholder* pressures (OEM customers) and *secondary stakeholder* pressures (NGOs, end consumers), as they yielded different PM integration mechanisms (Buysse & Verbeke, 2003; Zietsma & Winn, 2008). In the second group, we clustered *sustainability certification pursuits*. The third group comprised *own component visibility to end customers* and the *component's sustainability performance in customer use*.

Moreover, we determined that multiple PM integration mechanisms are practiced across these cases. These mechanisms correspond closely with the cross-functional integration mechanisms that are used to conceptualize joint process improvement and new product development projects (O'Leary-Kelly & Flores, 2002; Turkulainen & Ketokivi, 2012). In fact, we found similar mechanisms that were deployed to process and exploit relevant sustainability-specific information between the procurement and marketing functions, as described in cross-functional integration research (Miller & Dröge, 1986; Ray, Barney & Muhanna, 2004). Thus, we grouped mechanisms as either (1) *task-based, temporary practices* or (2) *embedded, permanent practices*. The (3) *involvement of liaison functions* was found to complement mechanisms (1) and (2). For a summary of the raw data resulting in second-order codes for the PM integration mechanism, please refer to Table 3. Next, we elaborate on the empirically observed patterns between drivers and PM integration mechanisms that lead to our study's propositions, as summarized in Figure 3.

SUMMARY AND DISCUSSION OF RESULTS

Our research reveals that FT suppliers apply SSCM and PM integration, predominantly due to primary stakeholders' influence. All case companies responded to contractual obligations that required adherence to customers' sustainability demands and guidelines that help any contractual losses because of any such omissions. However, a few case companies sensed enough pressure from secondary stakeholders to respond with sustainability practices. As we noted earlier, secondary stakeholders generally have very limited influence on FT supplier behavior. This implies that any expected response from FT suppliers is contingent on stronger pressure from secondary stakeholders; much stronger that what may initiate a response from OEM customers (Eesley & Lenox, 2006). In other words, the organizational inertia for FT suppliers to react to secondary stakeholders seems to be higher than that of their downstream OEM customers that are often within range of direct criticism from consumers and NGOs.

TABLE 4

Match of Case Firm PM Integration Mechanisms with the Competitive Drivers for SSCM[a]

PM integration mechanisms[a]	Effect	Drivers[b]	Cases[c]								Control Cases[d]			
			A	B	C	D	E	F	G	H	I	J	K	L
Task-based, temporary PM integration	←	Direct Customer Pressure	Y	L	N	L	L	Y	L	L	Y	L	L	L
		NGO Pressure	Y	N	Y	Y	N	Y	L	Y	Y	N	Y	N
		Certification Pursuits	Y	Y	N	N	Y	L	Y	N	L	N	N	Y
		Own Component Visibility	Y	Y	Y	N	Y	L	N	N	L	Y	N	Y
Embedded and permanent PM integration	←	Direct Customer Pressure	N	Y	Y	N	Y	N	Y	N	N	Y	N	Y
		NGO Pressure	N	Y	Y	N	Y	N	Y	N	N	Y	N	Y
		End-consumer Pressure	N	Y	L	N	N	N	N	N	N	Y	N	N
		Own Component Visibility	Y	Y	Y	N	Y	L	N	N	L	Y	N	Y
Involvement of liaison roles	←	NGO Pressure	L	Y	Y	N	Y	L	Y	N	L	Y	N	Y
		Certification Pursuits	Y	N	N	N	Y	L	Y	N	Y	N	N	Y
		Influence on Product Sustainability	Y	Y	Y	L	Y	N	Y	L	N	Y	L	Y

[a]All PM integration mechanisms are expressed based on the indicated resource allocation to the respective practice (FTE, management time and frequency of exchange) and the nature of integration or the involvement of other functions.

[b]All drivers are measured based on informants' expressed perceptions and publicly available data on these drivers and the respective case firm.

[c]Y=yes; L=limited; N=no. The letters express the strength of the respective driver's effect on the PM integration mechanism per case; for example, for Firm C, "own component visibility" was a strong driver of all three types of integration mechanisms. The table provides the foundation for our presented cross-case comparison in which we elaborate on the reasons for the link between the respective driver and the PM integration mechanism on a more general level across the eight cases.

[d]Case I is a replication of Cases G and F; Case J is a replication of Cases A and B; Case K is a replication of Cases D and H; and Case L is a replication of Cases C and E.

Our case analysis suggests that the manifested willingness to allocate resources to PM integration can vary significantly across FT suppliers. In fact, our data revealed that two sustainability strategies were chosen to respond to the observed drivers: (1) cost- and risk-minimizing compliance or (2) value maximization beyond compliance commitment. These two strategies result in notably different manifestations of PM integration. We next discuss the details of these observed relationships, as summarized in Table 4 and Figure 3.

Stakeholder Pressure and PM Integration

Direct OEM Pressure and PM Integration. Supplier C_P's *direct* customers—mostly fast-moving consumer goods (FMCG) producers—are highly sustainability-conscious about the production process and the resulting properties of the purchased packaging. These FMCG OEMs mandate C_P to commit to specific sustainability targets, for example, to exclusively use packaging made from Forest Stewardship Council (FSC)-certified wood by the year 2020. This immediate pressure has implications for C_P's supplier development program (currently only 50–60% of suppliers are FSC-certified) to fulfill the chain-of-custody principle. C_P's sustainability executive affirmed: "As customer pressures to use FSC-certified pulp rises, the bargaining power shifts in favor of FSC-certified suppliers like us. Thus, we seek to develop our supply base to maintain alternative supplier choices for ourselves while entering long-term supply contracts with already certified pulp and paper mills [their suppliers]."

At C_P, the required PM integration—to effectively market the suppliers' SSCM initiatives—is guided by a corporate sustainability function to liaise between procurement and marketing. Customer sustainability demands are channeled upstream, and information about potentially noncompliant suppliers is directed downstream to prevent misaligned sustainable marketing messages. At the same time, PM integration was necessary at C_P to convince OEM customers that the upstream markets (subsuppliers) were not ready to provide 100% FSC-certified packaging. Hence, C_P installed a reporting system to these sustainability-conscious customers that reported the company's progress toward a 100% FSC-certified target.

Suppliers B_P, E_E, and G_E faced direct OEM customer pressures and applied embedded PM integration mechanisms similar to that established by C_P. PM integration allowed this group to manage the information flow in the upstream and downstream facing directions of the supply chain, ensuring responsiveness to adverse events to avoid jeopardizing customer trust. The marketing director at G_E noted the following: "Only some of our customers pass on their customers' demands for sustainability to us, yet we attempt to pursue higher standards than customers expect to prevent ad-hoc pressure on us." To pursue these higher standards, Firm G_E pressured upstream suppliers to pursue even more stringent sustainability goals than what OEM customers demanded from them.

In contrast to B_P, E_E, and G_E, an ad hoc compliance-oriented approach was implemented by the other case companies. This approach is characterized by task force-based temporary integration, as expressed by A_P's PSM executive: "We align internally [with marketing] whenever necessary to commit to the new sustainability standards and targets of our customers." H_E's marketing manager expressed additional rationale for reactive, task-based, temporary PM integration practices: "We do not expect that customers will demand stricter sustainability standards soon; therefore, we do not deem it relevant to further develop our own suppliers. At best, sustainability is an order qualifier in our industry."

In short, we found that suppliers who faced significant demand to consistently provide information to their OEM customers allocated more resources toward establishing embedded and permanent PM integration mechanisms (B_P, C_P, E_E, and G_E). Based on RDT, we conclude that the greater the OEMs' sustainability-related risk in the upstream supply chain, the greater the FT suppliers' benefits from investing in SSCM. Other suppliers stated fewer benefits from continuously managing their customers' sustainability-related risks (A_P, D_P, F_E, H_E) and preferred to focus on task-based, temporary PM integration practices when necessary. Thus, we put forth our first proposition:

> **Proposition 1:** A high degree of customer pressure leads to embedded and permanent resource commitment toward PM integration, whereas a low degree of customer pressure leads to task-based and temporary resource commitment toward PM integration.

Indirect Secondary Stakeholder Pressure and PM Integration. Our case companies highlight how indirect sustainability pressures from end consumers and NGOs affect the choice of PM integration mechanisms. For instance, C_P understands that end consumers care about the environmental impact of their corporate behavior. Therefore, C_P closely collaborates with large grocery retail chains that are closer to consumers than their immediate OEM customers. In doing so, C_P has become an advisor in SSCM issues for these large downstream retailers. The firm's marketing executive explains: "Based on our sustainability know-how, we have developed close ties with retailers. Therefore, we are able to influence the sustainability demands and packaging specifications

of retailers to our own advantage." C_P benefits from end-consumer pressures by jointly developing strategies with retailers that suit C_P's capabilities to exert pressure on the OEMs. This practice enhances their direct OEM customers' sustainability-related uncertainty to the suppliers' benefit. However, to effectively practice this influential collaboration with downstream retailers, a close cooperation between the company's procurement managers, marketing managers, and sustainability experts is necessary. For instance, to reduce the aluminum layers in packaging (which was suggested by C_P's sales and marketing function to downstream retailers) requires new specifications for C_P's aluminum suppliers. This needed to be executed and assured within the subsupplier network through C_P's procurement function. Such an embedded and permanent information exchange between these two functions allowed C_P to channel consumer-based sustainability demands upstream as necessary and to accordingly adapt sustainable procurement practices. Similar tactics were applied at B_P. In contrast, none of the electronic component suppliers reported end-consumer influences on their PM integration needs in the same fashion. Thus, we conclude that such practices are specific to the packaging industry and other similar industries with comparable salience in end-consumer expectations (Mitchell, Agle & Wood, 1997).

Packaging suppliers are under heavy pressure from NGOs. Using hard-to-renew natural resources (e.g., wood, pulp, and water) to produce packaging is a prime target for criticism by green-minded stakeholders. Recently, green NGOs publicly accused B_P of nonsustainable tropical deforestation despite B_P's lack of direct involvement in such practices. This issue not only has posed a legitimate threat to B_P's corporate reputation but also threatened B_P's OEM customers' reputations. B_P and C_P considered a proactive approach to PM integration to be an inevitable response to NGO pressures. Once implemented, PM integration helped these suppliers to prevent overstating their sustainability initiatives in their downstream marketing messages. Moreover, it assured that the specifications for their upstream subsuppliers would be sufficient and reflective of the downstream market's future expectations (Frooman, 1999; Lee et al., 2014). For these two FT suppliers, PM integration was formed so as to be a permanent and deeply embedded part of the organization's structure.

Moreover, these FT suppliers recognized that not all forms of NGO pressures can be instantly addressed or quickly rectified and that their companies need to be able to trace and correct sustainability misconduct soon after NGOs raise the matter (Reuter et al., 2010). To do so, B_P and C_P installed a "corporate issue management" department to interact with NGOs on an ongoing basis and to pass on SSCM-related topics to the respective parts of the internal organization. The "corporate issue management" department served as a liaison function for PM integration by notifying the procurement and marketing functions of new demands of NGOs and other pressure groups. Indeed, G_E and E_E (electronics suppliers) established similar liaison roles for related reasons: E_E's executive explains: "NGOs' demand for information about product ingredients and production modes equally affects marketing and purchasing category managers, but we have installed one single point of contact for such critical requests."

Not all case companies tackled secondary stakeholder pressures in the same proactive manner. Unlike the first group (B_P, C_P, E_E, and G_E) which adopted a proactive strategy to stay one step ahead of NGOs, others decided to take on a more reactive approach. To this reactive group, creating a liaison function in their organizational structure was an unnecessary attempt that added a bureaucratic layer (Galbraith, 1977). We consider this difference in approach to be rooted in how the second group perceives their dependence on NGOs and end consumers differently than the first group. To the second group, NGOs and end consumers are less salient business partners on whom they are not dependent. In this case, allocating resources for the purpose of handling NGO and end consumers' concerns seemed unjustified because of the FT suppliers' limited dependence on them (Suchrnan, 1995). Hence, the reactive group (A_P, D_P, F_E, H_E) opted for task-based PM integration mechanisms.

The above observations suggest that higher perceived pressure from secondary stakeholders does indeed lead to the larger perception of sustainability-related risk by FT suppliers. FT suppliers will allocate more embedded and permanent resources to PM integration for SSCM so long as they perceive higher level pressure by secondary stakeholders. This rationale is formalized in our second proposition:

> **Proposition 2:** A high degree of secondary stakeholder pressure leads to embedded and permanent resource commitment toward PM integration, whereas a low degree of secondary stakeholder pressure leads to task-based and temporary resource commitment toward PM integration. An embedded and permanent PM integration mechanism is strengthened through liaison function involvement.

Product-related Drivers of PM Integration

Product Visibility and PM Integration. Thus far, we have found that suppliers have different perceptions of primary and secondary stakeholder pressures, which leads to a choice of either more or less

resource-consuming PM integration mechanisms in their SSCM efforts (permanent vs. temporary integration). Beyond stakeholder expectations, we sought to understand why the perceptions of stakeholder pressures varied among FT suppliers and how these additional product-related and process-related drivers affected the choice of PM integration mechanisms.

In the food and beverage industry, sustainable packaging solutions are perceived to be a key differentiator among suppliers. C_P's marketing executive noted the following: "Our customers convey their brand messages on our packaging solutions. Therefore, we must invest in sustainable development and production." In contrast to C_P, the packaging produced by other FT suppliers for other industries does not contribute to the final product's functionality and is much less visible to end consumers compared with a food product's packaging. For instance, D_P produces and markets industrial packaging solutions to a multitude of industrial clients. The broader public is unaware of D_P's role and its potential environmental impact because its metal-, plastic-, and pulp-based packaging solutions are only targeted at industrial clients and are not part of the final product observed by the end consumer. A D_P executive explains: "Our customers place little emphasis on the sustainability of product ingredients because industrial packaging is a price-driven commodity market. The irrelevance of our product to the functionality of the end product equally limits the incentives for us and them [their customers] to engage in sustainable product development and campaigning."

Based on the discussion above, we conclude that suppliers whose products are highly visible to end customers (e.g., A_P B_P, C_P, E_E) engage in embedded and permanent PM integration, while suppliers with limited product visibility (e.g., D_P, F_E, G_E, H_E) invest fewer resources toward PM integration. Theoretically, being outside the public eye's immediate "visual range" means that the OEM's corporate reputation has a limited dependence on FT suppliers. As a result, FT suppliers are rarely the direct targets of NGOs and have limited dependence on their evaluation and reporting (Emerson, 1962; Zietsma & Winn, 2008). The result is limited sustainability-related risk for the FT supplier and its OEM customer, which reduces the magnitude of incentives to implement permanent and embedded PM initiatives. On the other hand, FT suppliers that produce components with high sustainability visibility to end consumers can be vulnerable to secondary stakeholder accusations or even boycotts (Chiu & Sharfman, 2011). In such cases, the FT supplier is more likely to advocate for allocating more resources toward PM integration and to proactively stabilize the relationship with the OEM (Hunt & Davis, 2012). Thus, we propose the following:

Proposition 3a: A high component visibility in the end product leads to embedded and permanent resource commitment toward PM integration, whereas a low component visibility in the end product leads to task-based and temporary resource commitment toward PM integration.

In the context of product visibility, the relative power of primary and secondary stakeholders can have strong positive effects on the FT suppliers' SSCM practices. Higher product visibility enables the broader public (i.e., consumers and NGOs) to understand the FT supplier's role in the value creation process, which in turn increases the pressure on FT suppliers to reduce the environmental and social impact of their upstream supply chain. In essence, visibility causes a reduction of information asymmetries between stakeholders and FT suppliers, which raises the likelihood of detecting deficiencies in suppliers' sustainability claims. Indeed, the role of visibility is not new to the study of stakeholders' sustainability performance expectations (Chiu & Sharfman, 2011). When there is high component visibility, suppliers' corporate citizenship behaviors are subject to more scrutiny, which in turn reduces information asymmetry between firms and their stakeholders (Brammer & Millington, 2006). Among our case companies, an A_P representative stated that the high visibility of its products attracts attention from NGOs and other stakeholders. In contrast, D_P, whose components are not visible, mentioned how it is left out of societal debates on sustainability. In all eight cases, the supplier's component visibility in the end product related to the supplier's judgment about the strength of customer, NGO and end-consumer pressures for sustainability. Thus, we posit that stakeholder pressure is a mediator of the effects of product visibility on PM integration:

Proposition 3b: The effect of supplier component visibility in the end product on resource commitment toward PM integration is mediated through primary and secondary stakeholder pressures.

Instead of a mediating effect, one can argue for a moderating effect of supplier component visibility on the link between stakeholder pressure and resource commitment toward PM integration. A moderating effect implies that product visibility does not lead to higher levels of stakeholder pressure per se, but greater component visibility in the end product enhances the suppliers' willingness to assure alignment of content and scope between its sustainable procurement and sustainable marketing practices. Thus, suppliers facing high levels of visibility are inclined to implement more embedded and permanent PM integration efforts to ensure that ingredients and components are sourced according to

brand and product marketing messages (Kärnä, Hanson & Juslin, 2003; Kirchoff et al., 2011). Hence, we formulate these moderating effects in the following, competing proposition:

Proposition 3c: Supplier component visibility in the end product moderates the positive effect of primary and secondary stakeholder pressures on resource commitment toward PM integration.

Product Sustainability Characteristics and Procurement–Marketing Integration. A second product-related driver of PM integration identified in this analysis was the suppliers' *influence on product sustainability*. Such influences include reductions in material, energy, and costs required to produce the final product. For instance, A_P stressed how its customers demand cost-efficient environmental improvements in its components. For this supplier, cutting costs by decreasing the use of raw materials and energy goes hand in hand with producing in a more environmentally friendly fashion. Using lighter materials and less packaging cuts production costs and leads to more economic transportation and handling. Other FT suppliers echoed these inter-related and complementary facets of product sustainability. E_E and G_E labeled these facets as the "green-in-use" properties of the components they produced. E_E and G_E supplied electronic device and appliance components to OEMs. These two FT suppliers realized that more energy-efficient components enhanced the competitiveness of their customer OEMs' products. The general manager at G_E describes the impact of offering a competitively green product as follows: "Our customers demand innovative products that help them produce more energy-efficient equipment and circuitry. By providing better green features [energy efficiency] than our competitors, we have been able to generate a positive impact on sales." G_E was able to charge a modest price premium to their OEM customers because of the reduced lifecycle costs of the product. Interestingly, G_E engages in sustainable product stewardship despite the fact that its products are rarely visible to the end consumer. At G_E, the procurement function supports the R&D and product management teams in contracting with component subsuppliers based on green product specifications. Similarly, marketing details the component's projected sales volumes and pricing projections based on their knowledge of downstream customers that are then passed onto procurement for contracting.

Actions carried by E_E, G_E, and A_P were not observed in other case companies. For instance, F_E's products hardly affected its customers' "in-use sustainability." As a result, F_E does not acquire sufficient benefits in the marketplace to justify resource commitments toward the required PM integration mechanisms. Thus, we conclude that only a subset of suppliers from both industries perceived that they were able to influence their customers' sustainability performance through the enhanced in-use sustainability properties of their supplier components. However, for E_E, G_E, and A_P, product development or R&D departments direct many such initiatives. Purchasing and marketing serve as auxiliary members to the project. More importantly, the nature of these green innovations and improvements is temporary and project based. As a result, there is no strong justification for permanent and embedded organizational restructuring to accommodate such projects. Thus, we propose the following:

Proposition 4: The influence on product sustainability leads to a task-based, temporary resource commitment toward PM integration that is sufficiently enabled by a technical liaison function.

Process-related Drivers of PSM–Marketing Integration for SSCM

Seven of the eight cases analyzed in this research (all except H_E) pursued sustainability-related certifications. These were industry-specific certifications that were related to subsuppliers and their upstream value creation processes (e.g., Electronic Industry Corporate Citizenship or FSC/PEFC certification) or broader sustainability recognition (e.g., being listed in the Dow Jones Sustainability Index (DJSI)). Across all cases that pursued certifications, stakeholder pressure was mentioned as the key motivator. A_P's marketing director captures this rationale in the following statement: "Certification has become a must in our industry, especially for us, as we are operating on a global scale in countries with heterogeneous stakeholder demand and regulations concerning deforestation, working conditions and environmental, health and safety standards." In particular, certification addresses the social dimension of sustainability, as some issues (e.g., working conditions and community effects) are not observable at the product level. However, these topics still trigger concerns among OEM customers because of their salience with stakeholders (Desai, 2014). It has become apparent that process certifications must be considered as complements to product-oriented PM integration mechanisms. Hence, we propose the following:

Proposition 5a: Stakeholder pressure leads to the pursuit of sustainability certification. Such pursuits mediate the effect of stakeholder-related drivers on the resource commitment toward PM integration mechanisms.

We found additional nuances in how FT suppliers pursue sustainability certifications. One group of

suppliers sought to obtain certifications primarily to signal sufficient assurance to their OEM customers and secondary stakeholders, while a second group pursued a value creation strategy using the certification.

A_P falls into the first group. The need to achieve homogeneous standards for labor-intensive tasks (e.g., wood or pulp production) or potentially environmentally harmful production processes (e.g., bleaching chemicals) inspired A_P to pursue global certification of its own and its suppliers' plants. A_P formed a temporary task force that included procurement and marketing members alongside other department representatives. The company's environmental, health, and safety (EHS) experts headed these teams. However, once the company was certified, the practices were deemed unnecessary and the team was ultimately dismantled. D_P and F_E provided similar reasoning in their pursuit of ISO 14001 and SA 8000 certifications. By attaining these certifications, these FT suppliers sought to limit auditing activities by their OEM customers or at least to limit the resources required to continuously prepare for such audits. These case companies intended to signal their sustainability commitment to customers and stakeholders. Some even went as far as demanding that their upstream suppliers obtain similar certificates to ensure the chain-of-custody principle. D_P's purchasing executive considered "enhancing sourcing from certified suppliers to eliminate our [Firm D_P's] need to continuously conduct and update costly supplier audits."

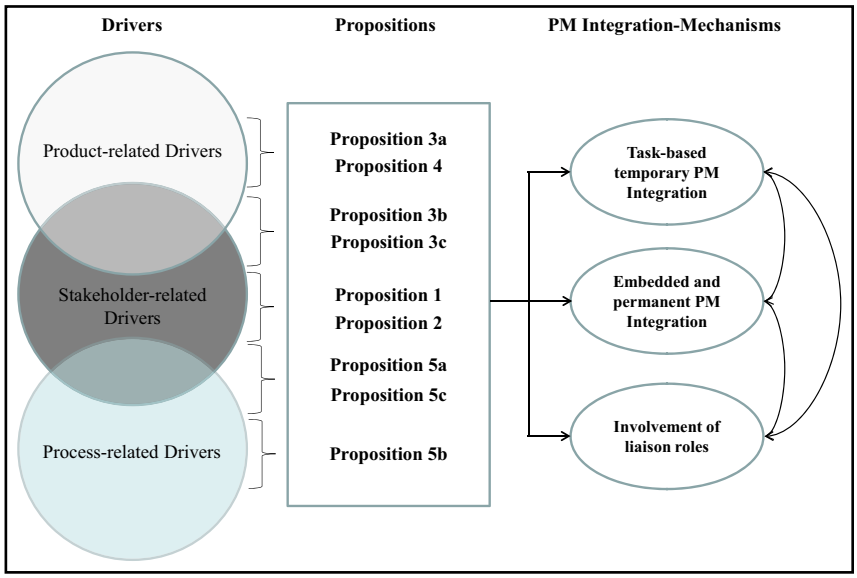
The level of PM integration implemented in these cases is of temporary nature and often abandoned once the desired value statement (the certification) is attained (Hult, 2011; Hunt, 2000). Extant literature suggests that suppliers often commit to enhancing their quality programs or certifications to signal commitment to SSCM and discredit stakeholder accusations. Used as a "smoke screen," the main objective is to reduce transaction costs by refraining from committing too many resources to an unnecessary cause (Lannelongue & González-Benito, 2012; Tate, Dooley & Ellram, 2011). However, such FT suppliers attempt to exploit the imperfect information to direct OEM customers and stakeholders to embellish their own and their subsuppliers' SSCM efforts. Thus, we posit the following:

Proposition 5b: When pursuing sustainability certifications, suppliers seeking to cushion themselves from stakeholder pressures engage in task-based, temporary resource commitment toward PM integration.

Another group (A_P, B_P, and E_E) engaged in similar task forces to obtain certifications. However, the main motivation for this group was to enhance market share using a sustainable customer segmentation strategy. For instance, B_P concentrated on marketing its environmentally friendly raw material mix (FSC or equivalent) to some of its customers. As not all of B_P's customer segments equally valued green certifications, B_P targeted a sustainability-conscious subsegment. This subsegment consisted of industrial buyers of B_P's components that had high visibility to the end consumer. Specifically, B_P sources pulp and paper from both FSC-certified and noncertified suppliers. B_P allocated FSC-certified supplies to food producers that appreciate the sustainability value of FSC-certified packaging solutions. Noncertified volumes were allocated to those with limited concern for FSC-certified packaging such as industrial machinery manufacturers. For its FSC-certified product, B_P even charges a five to seven percent price premium. In doing so, it capitalizes on its access to certified subsuppliers, which stems from past supplier collaboration and continuous supply base development. To practice this strategy, B_P requires an embedded and permanent information exchange between marketing and procurement to ensure that subsupplier volumes are allocated to the right production batches and are linked to the right customers. Similarly, E_E's sustainability executive mentioned how important this market segmentation approach is to his company: "Our industrial customers (e.g., the industrial equipment industry) do not force us to conduct particularly profound upstream sustainability programs with our suppliers, but our customers from the consumer electronics industry push us to implement sustainable procurement practices even with our sub-suppliers." The sustainability-conscious segment of industrial customers is expected to grow in the future (Hunt, 2011; Tate et al., 2011). However, the segmentation approach is not a strategy pursued by all case companies (Table 2 and Figure 3). Indeed, some FT suppliers did not see a need for permanent and embedded PM integration as expressed in Proposition 5b. F_E's marketing manager notes: "Sustainability is not important for our customers in the industrial equipment industry. Moreover, automotive OEMs only require limited documentation of the sustainability performance of sub-suppliers. In both cases, we are not awarded contracts due to extraordinary sustainability commitments."

To conclude, differentiating customers' offers based on subsupplier input requires embedded and permanent PM integration mechanisms. This capability allows suppliers to effectively deploy supplier development and monitoring resources and to channel their benefits to the OEM customers that perceive the highest value from sustainable upstream value creation (Hunt & Davis, 2012). Thus, we propose the following:

FIGURE 4
Standalone and Complementary Effects of Drivers on PM Integration Mechanisms



Proposition 5c: Suppliers that pursue certification for value-capturing market segmentation transfer their task-based, temporary PM integration structures into permanent and embedded resource commitment toward PM integration.

CONCLUSIONS

The propositions between drivers and PM integration mechanisms are summarized in Figure 3. In addition, Figure 4 summarizes the standalone and complementarity effects of the three identified types of drivers on PM integration. To conclude, we elaborate on the theoretical and managerial implications of our findings.

Theoretical Contribution

Our contribution to theory is threefold. First, our findings indicate that five interdependent contextual drivers influence suppliers' PM integration mechanisms for SSCM. They can be grouped into three categories: (1) *stakeholder-related drivers*, (2) *process-related drivers*, and (3) *product-related drivers*. These drivers and their mutual interdependencies lead to either *temporary* or *permanent* PM integration mechanisms, which are summarized in five sets of testable propositions (Figures 3 and 4).

Based on our elaboration of RDT, we identified opportunities for FT suppliers to generate a comparative advantage through effective PM integration. In this context, we find that primary and secondary stakeholder pressures alone do not necessarily provide sufficient grounds for suppliers to develop a business case to justify their proactive commitments to SSCM. Instead, if suppliers identify process-related and product-related drivers that enable them to reap competitive benefits based on concrete customer value propositions, higher resource commitments to proactive PM integration mechanisms are justified. Signaling such commitment through sustainable marketing also requires FT suppliers to ensure a correspondingly high compliance of the activities conducted by upstream subsuppliers. If FT suppliers fail to do so, they risk turning their sustainability claims into liabilities. In this context, PM integration mechanisms ensure stringency in terms of the focus and scope of their respective downstream and upstream sustainability practices. Moreover, we find that a lack of sufficient stakeholder influence and a lack of competitive opportunities at the process or product level actually hindered proactive SSCM practices. From a purely economic perspective, these suppliers have less to gain from such efforts, considering that they operate in a sustainability-obscured environment to begin with (Siegel, 2009).

Second, we provide an empirical contribution to the sustainability-related demand and supply integration literature, which has thus far been studied rather conceptually (Esper, Ellinger, Stank, Flint & Moon, 2009; Kirchoff et al., 2011) or has solely focused on economic drivers and outcomes (Smirnova, Henneberg, Ashnai, Naudé & Mouzas, 2011). Our propositions serve as a starting point for further scholarly inquiry in the field. Specifically, our debate about moderating

and mediating effects of component visibility to end consumers provides concrete avenues for further research. These propositions show that the value attainable from PM integration depends on the specific combination of the contextual drivers that FT suppliers identify. Additionally, we demonstrate that PM integration is an SSCM practice that is capable of turning more sustainability initiatives along the supply chain into economically viable projects for FT suppliers (Pagell & Shevchenko, 2014).

Third, this RDT-enriched empirical research determined that OEM customers' perceived level of sustainability-related risk and the level of attainable benefits from PM integration are tightly interconnected and can provide guidance as to what extent FT suppliers should invest in PM integration mechanisms. We provide empirical support for the link between RDT and the phenomenon of PM integration for SSCM at FT suppliers. FT suppliers should consider their own and their OEM customers' risks and capabilities before engaging in SSCM. While the sampling framework—namely G_E and B_P in the *Enthusiasts* quadrant—suggests that some FT suppliers might be guided by altruistic objectives, our case study results suggest that these are not responses that should be expected from all suppliers. The analysis reveals that higher levels of resource commitment toward sustainability PM integration resulted from either (a) a perceived need to respond to intense stakeholder pressures or (b) perceived competitive opportunities that were associated with product-related and process-related sustainability drivers.

Managerial Contribution

Our study supports the notion that under strong external pressures, FT suppliers face economic risks should they decide to ignore pressures for implementing sustainability standards in the upstream supply chain (Mitchell et al., 1997). Instead of resisting such demands, FT suppliers may achieve competitive advantages in the marketplace by committing to the cause through PM integration (Table 4, Figures 3 and 4). If their components are visible in the end product, they are able to affect their OEM customers' sustainability performance. Alternately, they might be able to identify a sufficiently large customer segment that values consistent sustainability certification across their upstream supply chain. If such circumstances are not present, FT suppliers' sustainability commitment may shift to reducing transaction costs and satisficing responses to secondary stakeholder requests.

Moreover, there are multifaceted gains from pursuing a proactive strategy. FT suppliers that pursue proactive strategies reduce the sustainability-related risk of their OEM customers or contribute to the sustainability performance of their customers' products. Both approaches strengthen their relational ties with these firms (Casciaro & Piskorski, 2005). FT suppliers that promote their capabilities as sustainability gatekeepers for the upstream supply chain demonstrate dependability to their OEM customers. At the same time, these FT suppliers present themselves as dependable partners in sustainability matters, given their sustainability-focused alignment through embedded and permanent PM integration mechanisms.

Moreover, our research provides marketing and procurement managers with a pragmatic model for analyzing their SSCM drivers along the three clusters of drivers (Figure 3). This model reveals how PM integration can be organized in alignment with the contextual motivations and drivers that FT suppliers face. The outlined complementary effects of the highlighted drivers are useful for managerial decision making (Figure 4). We present decision situations in which our case companies sought to generate competitive advantages over competing suppliers based on the stringency of their PM integration mechanisms. Knowledge about the interdependence of sustainable marketing and sustainable procurement activities enables managers with backgrounds in either function to assess their mutual impact and the need for mutual adjustments to assure alignment. Thus, this research provides a springboard for FT suppliers to evaluate competitive potentials of "beyond-compliance" commitment to sustainability and to gain from proactively reducing the sustainability concerns of multiple stakeholders along the supply chain.

Limitations and Further Research

As with all empirical research, our study has limitations, which open an opportunity for further investigation. First, we assessed externally induced sustainability pressures based on the buying firms' perceptions and publicly retrievable information. In this context, we encourage scholars to collect primary data at subsuppliers, OEM customers, and NGOs to investigate sustainability-related pressures and their effects on FT suppliers' sustainability-related decisions. Second, our study was limited to western Europe. Although we applied a theoretical sampling approach and elaborated on established theory to present our case findings, further research should study supplier practices across different industries and firm locations to allow for wider generalization. Moreover, comparing our data from relatively large multinational firms with data obtained at small regional suppliers could generate further insights into the impetus and various PM integration mechanisms for SSCM.

Third, our study investigated supplier processes at a particular point in time. Thus, we are only able to provide a static picture of SSCM drivers and the resulting PM integration mechanisms. A longitudinal

research design would provide further insights into cross-functionality and the associated socialization processes within firms and across supply chain partners. A longitudinal study would help determine whether the expected benefits from choosing embedded over temporary PM integration, or vice versa, did actually materialize over time for suppliers, customers, and NGOs. Thus, the propositions we derived in this article provide a starting point for further academic endeavors in this research area.

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APPENDIX
CORE QUESTIONS OF THE SEMI-STRUCTURED INTERVIEW GUIDELINE

Questions related to interviewee:

1 How long have you been employed at your company and in what position(s)?
2 How are you involved with sustainability at your company? Since when?
3 How do these sustainability matters relate to your firm's supply chain?

Questions related to the company's sustainability demands:

1 How would you describe the development of your customers' demands for sustainable business operations over time? What are the differences among the different buyer groups?
2 Which external and internal factors affect your company's commitment to sustainable business operations?
3 How would you describe your company's overall strategic approach to sustainability? How do customers and other stakeholders affect this approach?
4 How would you describe your company's situation in terms of its position between customers and upstream suppliers in the context of sustainability?

Questions related to marketing:

1 How would you describe the role of your marketing department in terms of your customers' demands for sustainable business operations?
2 How would you describe the importance of a sustainable company and brand image in your industry?
3 How is sustainability integrated into your marketing activities?
4 How does marketing sustainability support your competitive position?

Questions related to procurement and supply management (PSM):

1 How is your company's PSM function affected by internal/external demands for sustainable business operations? How does PSM react?
2 How do you incorporate sustainability expectations in your PSM operations?
3 How did your company's PSM practices change as a consequence of the corporate sustainability program?
4 How does supplier monitoring and development affect downstream operations?

Questions related to cross-functional integration:

1 How do the marketing and PSM functions collaborate to ensure that sustainability-related demands are implemented within your company's supply chain?
2 What (internal/external) factors determine the need for integration between PSM and marketing in terms of sustainability? What are the most important elements?
3 What forms of collaboration are most common between the marketing and PSM departments in terms of sustainable supply chain management?
4 How do you ensure a common working direction between your marketing and PSM departments? Who is responsible for managing the integration processes?