SUSTAINABLE EVALUATION AND VERIFICATION IN SUPPLY CHAINS: ALIGNING AND LEVERAGING ACCOUNTABILITY TO STAKEHOLDERS

ABSTRACT

Firms are now attempting to address expectations and informational needs of multiple (and diverse) stakeholder groups exposed to supply chain externalities. Collectively, these expectations and needs form a multi-faceted view of stakeholder accountability, namely the extent to which a firm justifies behaviors and actions across its extended supply chain to stakeholders. To date, sustainable supply chain management research has largely focused on monitoring as a self-managed set of narrowly defined evaluative activities employed by firms to provide stakeholder accountability. Nonetheless, evidence is emerging that speaks about significant variety as to how firms develop monitoring systems to align with stakeholder expectations and leverage accountability to stakeholders. Drawing from the accounting literature, we synthesize a model that ~~structures~~ proposes how firms might address accountability for sustainability issues in their supply chain. At its core, the construct of sustainable evaluation and verification (SEV) captures three interrelated dimensions: inclusivity, scope, and disclosure. These dimensions characterize how supply chain processes might ~~aim to~~ identify key measures, ~~to~~ collect and process data, and finally, ~~as well as to~~ verify relevance, reliability and accuracy of any disclosed information. As a result, the concept of monitoring is significantly extended, while also considering how different stakeholders can play diverse, active roles as metrics are established, audits are conducted, and information is validated. Also, several antecedents of SEV systems are explored. Finally, the means by which ~~a SEV~~ an SEV system can create competitive advantage are investigated.

Keywords: social responsibility; monitoring; inclusivity; stakeholder engagement.

1. Introduction

The challenge to integrate environmental and social issues into the management of supply chains has grown significantly over the last two decades. To illustrate, Mattel initiated a massive recall of products – made by a supplier in China – after discovering they contained lead paint applied by a second-tier supplier (Story, 2007). McDonald's Europe had to address issues of soybean ~~culture~~ agriculture in Brazil because Greenpeace reported that the firm's sourcing practices contributed to the depletion of the rainforest (Stoll, 2009). More recently, Victoria's Secret was involved in a scandal regarding children picking cotton in Burkina Faso (Simpson, 2011). This new operating context is the cumulative result of diverse demands from multiple

stakeholder groups including investors, consumers, supply chain partners, legislators, and non-governmental organizations (NGOs).

It is not surprising that, in order to address the changing and diverse concerns of a wide variety of stakeholders, firms have adopted a plethora of approaches strategies, which in turn continue to evolve over time. The initial focus on internal operations (Klassen and Whybark, 1999) has broadened into a stronger external orientation (Gualandris and Kalchschmidt, 2014; Pagell and Wu, 2009). As a result, many firms are now attempting to ensure that practices and operations within their plants – as well as those managed by partners operating upstream and downstream in the supply chain – are more sustainable.

Overall, this evolution highlights the importance for firms to address the expectations and informational needs of multiple (and diverse) stakeholder groups exposed to supply chain externalities (Gonzalez-Benito et al., 2011; Hall and Vredenburg, 2003). Collectively, these expectations and needs form a multi-faceted view of *stakeholder accountability*, namely the extent to which a firm justifies behaviors and actions across its extended supply chain to stakeholders (Parmigiani et al., 2011). To date, sustainable supply chain management (SSCM) research has largely focused on monitoring as a set of activities employed by firms to account for sustainable practices and performance in their supply chains (Awaysheh and Klassen, 2010; Vachon and Klassen, 2006). This research, however, tends to presuppose that the "right" performance goals and processes underlie any monitoring practice, with a monolithic group of stakeholders advocating for similar outcomes. Instead, evidence is emerging that speaks about increasing variety as to how firms can align their monitoring and disclosure with stakeholder accountability (Global Reporting Initiative, 2013b).

Moreover, competitive advantage often can emerges by understanding differences in the

marketplace (e.g., aligning supply chain processes with specific customer segments), and we propose that a similar advantage can emerge from astutely responding to some stakeholders, but not all euqallystakeholders. However, any such approach response must take into account both the multiple informational needs noted earlier, and the process by which those needs are met. Thus, our understanding of sustainable monitoring must evolve to consider accounting principles and practices, particularly those pertaining to inclusive assurance procedures (Edgley et al., 2011; O'Dwyer et al., 2011). The literature is only starting to develop an understanding about how firm capabilities and supply chain structures hinder or enable monitoring practices to respond to stakeholders' expectations for material, complete and responsive accounts, and potentially confer a competitive advantage (Vurro et al., 2009; Manetti and Toccafondi, 2012; Perego and Kolk, 2012).

Responding to recent calls for a stronger focus on developing new models and including additional stakeholders in SSCM research (Pagell and Shevchenko, 2014), this paper seeks to make three contributions. First, by leveraging concepts from the accounting literature, we explore the degree to which firms might address stakeholders' expectations leading to a departure from narrower, conventional views of sustainable monitoring. We propose a multi-dimensional construct, termed *sustainable evaluation and verification* (SEV), that encompasses practices that identify key sustainability metrics; collect and process data; verify the reliability and accuracy of any information; assure materiality to each of multiple stakeholders; and subsequently disclose some or all of this information. As such, we seek to integrate and extend the practices and principles embedded in the accounting literature and in such initiatives as the Global Reporting Initiative (GRI) into earlier sustainable supply chain management research.

Second, this conceptual development establishes a foundation to examine a set of

antecedents that influence the characteristics of ~~a SEV~~an SEV system. Specifically, prior research sheds some light on the role of three main factors: firm capabilities, particularly in sustainability-oriented practices and disclosure (Manetti and Toccafondi, 2012; Perego and Kolk, 2012; Reed et al., 2009); expectations of highly salient stakeholders (Mitchell et al., 1997; Parmigiani et al., 2011); and the degree of supply chain integration (Flynn et al., 2010; Kim et al., 2011).

Finally, insights emerge from related literature and anecdotal evidence about the means by which ~~a SEV~~an SEV system is a critical determinant of competitive advantage (Egels-Zanden and Lindholm, 2014; O'Dwyer et al., 2011; Reed, 2008). A synthesis of accounting and SSCM literatures suggests that an inclusive monitoring process – with sufficient scope, followed by a responsive disclosure of material information – enables focal firms to avoid risk, improve efficiency and strengthen their credibility. Of course, a firm can over- or under-achieve relative to stakeholders' expectations, either through strategic intent or misunderstanding.

The remainder of the paper is structured into three major sections. First, based on SSCM and accounting literatures, a new more nuanced, multi-dimensional definition of SEV is presented. Next, we explore the role of three important factors that are proposed to influence the development of ~~a SEV~~an SEV system. Finally, complementary propositions explore the degree to which ~~a SEV~~an SEV system satisfies stakeholders' expectations and informational needs, and its potential competitive implications.

2. Extending our Conceptualization of Monitoring

2.1. Monitoring and its shortcomings

Over the last two decades, managerial and research attention about supply chains has gradually expanded to consider, first, environmental, and then societal aspects. Simultaneously,

discussions have broadened from a simplified 'chain' to a more complicated 'network' of trading firms also known as an extended supply chain. As such, the sustainable supply chain management research is ~~beginning to~~ coalesc~~inge~~ around a general conceptualization of and need for monitoring (Awaysheh and Klassen, 2010; Locke et al., 2007; Klassen and Vachon, 2006), among other practices. Sustainable monitoring includes self-managed activities such as establishing supplier evaluation criteria, gathering of supplier information, and the appraisal of environmental and social performance of incoming goods and the suppliers' operations. These activities aim to control inputs, production processes or outputs through an arm's-length approach that evaluate compliance with a purchasing contract, "voluntary" code of practice, certification system, or regulatory standard.

This conceptualization of sustainable monitoring, however, presents several limitations. First, it tends to assume that data and information coming from different nodes of the extended supply chain are reliable and accurate. Recent scandals, instead, provide evidence of the questionable claims passed along a multi-tiers supply chain. For instance, Levi Strauss and Co. found pre-stamped time cards at a factory in Bangladesh indicating the legal amount of hours allowed (McCafferty, 2005). Simple inspections often miss serious problems (Locke et al., 2007; Egels-Zandén and Lindholm, 2014): two of the factories that collapsed in Rana Plaza (Bangladesh) had recently passed audits commissioned by focal firms (Surawiecki, 2013). Thus, ~~since~~ because supply chain partners appear to be quite adept at gaming the system, our understanding of monitoring must evolve to include proper verification of any data and information (Gray, 2001; Manetti and Becatti, 2009; O'Dwyer et al., 2011).

Second, the existing conceptualization of sustainable monitoring tends to focus on a small set of environmental and social performance indicators (i.e., energy efficiency, pollutants,

worker health and safety, and child labor) when characterizing key processes and main supply chain partners. Narrowly focused monitoring, however, can overlook negative externalities that impact multiple stakeholders, defined as any group or individual who can affect or is affected by the achievement of an organization's objectives (Freeman, 1984). Better scientific understanding and easier stakeholder mobilization around environmental and social externalities gradually have compelled supply chain managers to justify the way they interact with other firms in their supply chain, sometimes ~~accounting~~ being held accountable for issues over which they have little direct control (Hartmann and ~~M~~moeller, 2011; Parmigiani et al., 2011). For example, over the last decade, Apple has faced the rise of multiple important issues, from hazardous materials in electronics devices, to labor exploitation issues in suppliers' facilities, to concerns over "conflict minerals". Thus, we must recognize that the scope of any monitoring effort must be broadened and deepened in the specific (but not all) directions. Thus, accountability must capture ~~so to fully account for~~ sustainability performance that is material to some (but not all) stakeholders (Adams and Evans, 2004; Ball et al., 2000; Gray, 2013).

Finally, the interaction among stakeholders and the firm is fundamentally changing based on concepts like "shared value" (Porter and Kramer, 2011), prompting the need for more nuanced research. In the past, sustainable monitoring has been characterized as self-managed set of evaluative activities. Recent cases, instead, provide evidence that several NGOs are now participating to some degree in the evaluation of supply chain sustainability. For example, both Conservation International and Cooperative for Assistance and Relief Everywhere (CARE) ~~both~~ work with Starbucks ~~for~~ in the certification of its coffee supply chain. Stakeholders' expertise can be leveraged to construct ~~common~~ more thoughtful sustainability objectives (Cooper and Owen, 2007; Edgley et al., 2010; O'Dwyer, 2011) and implement sustainable practices in the

supply chain (Manetti and Toccafondi, 2012; McDonald and Young, 2012; Park and Brorson, 2005). Accordingly, stakeholders should be formally recognized as potentially playing an integral role in monitoring, not solely as an external party applying pressure.

2.2. *Accounting points to a deeper set of interdependent processes*

Certification schemes and international standards are shaping the environmental and social attributes of complex inter-firm interactions across the extended supply chain in product design, process design, technology choices and management practices. For example, certifications such as those of Fairtrade for agricultural products and Forest Stewardship Council (FSC) for harvesting of timber consider specific environmental and social criteria related to raw material supply. Integrative frameworks such as the Global Reporting Initiative (Global Reporting Initiative, 2013a) provide a structured approach to report a variety of key environmental and social indicators. However, ~~earlier~~ sustainable supply chain management research continues to wrestle with how ~~does not fully consider~~ practices and principles might be best aligned ~~embedded~~ with ~~in~~ such initiatives.

Monitoring systems can effectively combine *evaluation*, ~~or~~ encompassing activities of data collection from surveys, audits and data analysis techniques, with *verification*, naemly~~or~~ the subsequent application of scrutinizing techniques that validate the relevance, reliability and accuracy of any information. Lamberton (2005) noted that surveys, audits and data analysis techniques such as sustainable cost accounting, natural capital inventory accounting, and full-cost accounting "are designed to account for performance evaluation relative to the goal assigned" to the firm by its stakeholders. Then, verification must follow, which is performed to enhance "the degree of confidence" of the firm and its stakeholders about the outcome of the evaluation against specific criteria (IFAC, 2012). Accordingly, in 2012 over 46% of firms listed

on GRI's database ha~~d~~s performed some form of assurance (Global Reporting Initiative, 2013b).

In practice, the evaluation process can vary considerably between firms and between supply chains, in terms of "how" openly the process is managed, "what" environmental and social issues are covered, and "what" proportion of the information is ultimately disclosed. Similarly, the verification process might include a varying range of stakeholders with different expectations and knowledge about what data to collect, data quality, or both (Cooper and Owen, 2007; Edgley et al., 2010; Manetti and Toccafondi, 2012). Empirical observation also attests that the scope of verification activities is often too narrow, and the scrutiny and the assurance statement might not reflect stakeholders' informational needs or the breadth of activities in question (Owen and O'Dwyer, 2005). Finally, varying degrees of stakeholder engagement are partially reflected in the heterogeneity of firms' disclosures, which range from vague information to rich information that is relevant and accessible to all stakeholders (Connolly and Hyndman, 2013; Higgins and Walker, 2012).

As elaborated in the following sections, a synthesis of sustainable supply chain management and accounting literatures points to three major dimensions characterizing evaluation and verification processes: inclusivity, scope and disclosure.

2.3. *Inclusivity*

Since the earliest theorizing about corporate social responsibility (Wood, 1991), the stakeholder management literature has emphasized that the *process* of addressing stakeholder concerns about sustainability-related issues is at least as important as any specific *outcome*. Although they provide little direction about the nature of stakeholder engagement, standards and reporting frameworks like ISO 26000, AA1000S, SA8000 and GRI also stress the importance of including multiple stakeholders. Moreover, managerial decision-making can benefit from

drawing on the views of a wide range of stakeholders (Sarkis et al., 2010; Pagell and Wu, 2009). Thus, inclusivity refers to the degree to which a *variety* of diverse stakeholder groups are engaged in the design and execution of sustainable evaluation and verification processes (Ball et al., 2000; Owen et al., 2001; Reed, 2008). Inclusivity is the first dimension of ~~a SEV~~an SEV system and is closely linked to external transparency, defined as the extent to which information about operations and structures of a given supply chain is available to a variety of stakeholders other than supply chain partners (Carter and Roger, 2008). As shown by Figure 1, this definition of inclusivity results in a typology based on a continuum from *few* to *many* stakeholders involved in two tasks for which stakeholder participation is particularly important, i.e., SEV design and SEV execution.

Inclusivity is low when focal firms *walk alone* (Ball et al., 2000; Owen et al., 2001; Reed, 2008). While the number of sustainability reports issued by firms has grown rapidly, few are derived from truly inclusive processes (Edgley et al., 2010; Manetti and Toccafondi, 2012). In many cases, in fact, SEV's processes are managed in a coordinated fashion between auditors (i.e., who conducts audits on the field), assurors (i.e., who validate the information that is going to be disclosed) and the focal firm (i.e., the reporting organization). For example, Kraft and Chiquita selected and worked mainly with Rainforest Alliance, and chose to depend on its evaluation and verification services, without undergoing further consultation with other stakeholder groups. While operationally expedient, this approach presents a ~~low~~modest degree of independence (Ball et al., 2000; Gray, 2013; King, 2007), i.e., the auditor is commissioned not by the ultimate user of the information (investors, communities, other NGOs), but instead, by the principal (the focal firm).

Insert Figure 1 about Here

At high levels of inclusivity, focal firms *engage broadly* with a variety of diverse stakeholder groups playing different decisional and operational roles in SEV's processes (Ball et al., 2000; Owen et al., 2001; Reed, 2008). As to the SEV design, focal firms may obtain advice from different individuals, groups or organizations, who are consulted to clarify the range of relevant environmental and societal esternalities to be evaluated and verified, not only internal to the firm, but also across the extended supply chain (Adams and Evans, 2004; Global Reporting Initiative, 2013). Then, various stakeholder groups can assist with the implementation of audits throughout the extended supply chain on behalf of the firm (Park and Brorson, 2005). Similarly, stakeholders may also be included as independent assurors, which direct focus groups, take notes, encourage managerial response and finally highlight their findings in a public report (King, 2007; Reed et al., 2009). In this sense, inclusivity is instrumental in designing and executing evaluation and verification processes, enabling a more complete and responsive portrayal of outcomes that stakeholders believe to be critical.

To illustrate, Starbucks and Unilever have worked with a variety of local farmers and fishermen, local cooperatives and societal groups such as Conservation International, CARE, Oxfam and World Wildlife Fund (WWF) to prioritize a list of relevant social and environmental issues to be evaluated and verified in their supply chains (Argenti, 2004; Austin, 2000; Wymer and Samu, 2003). Such stakeholders have also worked in the field to gather, process and verify data over product responsibility, social conditions and environmental impact of global operations (Smedley, 2013).

2.4. Scope

The second dimension, scope, captures the range of issues and network of supply chain partners covered byof an SEV system, i.e., the "space" encompassed by evaluation and

verification processes. To begin, management must prioritize the nature and number of different environmental and social issues to be included in evaluation and verification processes (Wood, 1991). For example, data gathering systems and tools may differ in the way they use and integrate product-based (e.g., BPA-free) and process-based (e.g., FSC-certified) indicators pertaining to different sustainability areas such as environment (biodiversity, air and water pollution, energy, recycling), decent working conditions (health and safety, training and education), and human rights (child labor, discrimination).

Then, the supply chain literature classically differentiates between firms based on their relative position in the extended supply chain. Furthermore, control over environmental and social externalities tends to vary based on the position in the supply chain and the number of hand-offs between a supplier and its (in)direct customer (Klassen and Vereecke, 2012; Kim et al., 2011). For example, IBM rolled out its environmental and social management system to approximately 30,000 Tier-1 suppliers in 2010. This system required those suppliers to cascade this program to their own suppliers who indirectly provide materials to IBM (Orts and Spigonardo, 2012). Because of the large number of goods and services provided by many suppliers, initial efforts to evaluate and verify sustainability were concentrated on a subset of key supply chain partners. However, it is important to recognize that a firm's evaluation of toxic substances might flow through multiple tiers upstream and downstream in the supply chain (e.g., Mattel's product contamination); in contrast, analysis of the carbon footprint for the supply chain of some firms a firm's carbon footprint might be narrowed to a single critical tier, namely energy suppliers.

Thus, the scope of a SEVan SEV system varies with the number of of issues covered and the number of connections between supply chain partners considered during any data collection,

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processing and validation. Scope fosters or constraints internal transparency, defined as the extent to which actors within the supply chain have access to information useful to manage their operating performance (Barrett and Oke, 2007).

2.5. Disclosure

Since their first appearance, annual sustainability reports have represented the primary means to address stakeholders' informational needs concerning firms' environmental and social performance (Gray et al., 2006). Through such reports, firms can improve stakeholders' understanding of complex issues, and reduce ~~their~~ potential bias by offering a more nuanced explanation. For example, when disclosing information, firms can present problems in the context of real-world situations, and prompt stakeholders to critically review their pre-conceived impressions, so as to make better-informed decisions (Thomson and Bebbington, 2005). Graphics and consolidated data tables can appeal to reason, and facilitate understanding and persuasion (Higgins and Walker, 2012). Disclosure can occur at multiple stages of SEV'~~s~~ processes (e.g., initially, scope of data collection; and later, specific quantitative findings), while also offering a means for examination and comparison (Global Reporting Initiative, 2013). Therefore, both the design and the execution of evaluation and verification processes can be documented and substantiated by evidence, which improves the perception of trustworthiness of the findings in the report (Higgins and Walker, 2012).

Studies have shown that firms can strategically choose stakeholder management tactics that can lead to gaps between actions and communications (Weaver et al., 1999), or ~~more specifically~~ between gathered information and disclosed information (Ball et al., 2000). For example, focal firms might refrain from reporting information about internal operations and supply chain partners, or choose to communicate information that is material only to a limited set

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of stakeholders. A well-known example is Apple, which held back information about the identity of its key suppliers for a long time (Duhigg and Barboza, 2012). Although releasing limited this gap in information could be defended for created for strategic reasons, such as protecting reputation or avoiding knowledge spillovers, stakeholders perceived less accountability.

In summary, disclosure refers to the degree to which relevant, reliable and accurate data and information about SEV's processes and outcomes is offered in an accessible, comprehensible manner to stakeholders. Thus, disclosure varies from little information to complete and appropriate information on SEV's processes and outcomes. We posit that disclosure - by efficiently revealing material information to the general publicly - complements inclusivity in fostering external transparency of an extended supply chain.

2.6. *Towards an integrative view*

Collectively, a synthesis of related literatures indicates that a minimum of three underlying dimensions – inclusivity, scope and disclosure – collectively characterize a system or set of interdependent and sequential processes that evaluate and verify the environmental and social performance of an extended supply chain. As summarized in Table I, evaluation and verification can be designed and executed by the focal firm alone, or alternatively, together with a variety of diverse stakeholder groups. Furthermore, the collection of data, subsequent validation, and aggregation into key performance indicators might encompass, to varying degrees, different facets of sustainability: one focal firm might concentrate on environmental aspects characterizing products with limited information released to customers, while others emphasize social issues in operations of its first-tier sppliers, and offer detailed information verified by a third-party. Finally, a firm might opt for an accessible, comprehensible disclosure of SEV's processes and their outcomes; others might decide to retain some information.

Given that inclusivity is viewed as foundational for building transparency between a focal firm and its stakeholders (Carter and Roger, 2008; Edgley et al., 2010; Reed, 2008), we propose that inclusivity is intimately linked to scope and, indirectly, to final disclosure. Also, we propose that ~~a SEV~~an SEV system directly determines *'perceived' stakeholder accountability*, defined as the extent to which a firm *is perceived* to justify behaviors and actions in its extended supply chain to stakeholders. Indeed, as a variety of stakeholders actively participate to SEV's processes, they can get material information directly; as scope increases, internal transparency is fostered and the firm efforts to disseminate information in a complete and appropriate manner can also improve. Finally, as disclosure increases, external transparency is improved further and stakeholders might perceive the firm as more responsive to their various informational needs. For example, Corporate Knights, a Canadian media company, ranks the top-100 World's Most Sustainable Firms based on 10 environmental, social and governance performance metrics. When a firm provides information for all the 10 metrics, Corporate Knights rewards it with a favourable accountability score (Coster, 2010) because of its ability and willingness to justify practices and performance. The preceding discussion leads to the following propositions:

Proposition 1a (P1a): Sustainable evaluation and verification systems vary between firms and between supply chains based on their inclusivity, scope and disclosure.

P1b: As inclusivity increases, scope and disclosure of ~~a SEV~~an SEV system tend to increase.

P1c: As inclusivity, scope and disclosure of ~~a SEV~~an SEV system increase, perceived stakeholder accountability tends to increase.

Insert Table I about Here

Overall, this multi-dimensional definition of ~~a SEV~~an SEV system enriches our conceptualization of monitoring in at least three ways. First, a complex combination of

evaluative and validative processes can underlie the monitoring practice. Second, the ideal performance goals and the best processes are not defined in isolation by the focal firm; instead, these must be designed and updated by integrating the views and needs of ~~diverse~~ stakeholder groups. Third, stakeholders can be actively involved in the execution of SEV's processes, thus potentially contributing capabilities to solutions, rather than only applying pressure or imposing constraints.

3. Antecedents of Sustainable Evaluation and Verification

A synthesis of sustainable supply chain management and accounting literatures points toward at least three antecedents that influence the development of ~~a SEV~~an SEV system, and are likely to influence how monitoring in supply chains might occur: firm capabilities, stakeholder salience and supply chain integration. ~~Thus, our exploration focused on three factors that are likely to influence how monitoring in supply chains might occur.~~

3.1. *Firm capabilities*

Prior research has shown that inclusivity and scope of assurance, as well as the amount of sustainability-related information disclosed to the public, vary considerably between firms and between supply chains. Some have suggested a resource-based explanation for such variability based on capabilities (Manetti and Toccafondi, 2012; Perego and Kolk, 2012; Reed et al., 2009). According to this literature, two general types of capabilities are relevant for ~~a SEV~~an SEV system: relational and technical, detailed below. Their presence may be not sufficient to ensure inclusivity, scope and disclosure, but their absence hinders, retards or even constrains the development of these dimensions.

Broadly, relational capabilities include the ability to design contractual and informal mechanisms to share information, increase commitment, and generate common goals between

different entities (Holcomb and Hitt, 2007). In the context of SEV, however, relational capabilities refer more specifically to ambidexterity in dealing with a variety of diverse stakeholder groups (Webb et al., 2010). In order to establish inclusive systems, indeed, firms must be able to i) identify individuals, groups or organizations exposed to supply chain externalities and categorize them according to their values and capabilities; ii) establish two-way communication with them and foster lateral discussion to prioritize goals and design interventions; iii) coordinate their work in the field for the achievement of common objectives (Adams and Evans, 2004; Perego and Kolk, 2012; Reed et al., 2009). Accordingly, drawing from case studies, Pagell and Wu (2009) found that sustainability champions were able to leverage weak ties with a variety of non-traditional supply chain members (NGOs) to collect valuable information about their supply chains. Consider also the case of Starbucks: the firm was able to identify diverse stakeholder groups, use open discussions centered on common values and beliefs to align their objectives, and finally direct work so as to create a truly inclusive system able to promote sustainability throughout the extended supply chain (Argenti, 2004; Austin, 2000).

In contrast, technical capabilities generally link to organizational routines based on an understanding of the science and know-how involved in distributing, producing and sourcing goods and services (Helfat and Raubitschek, 2000). In the context of SEV, technical capabilities refer more specifically to understanding how to design and execute audit assignments, including knowledge about issue-specific measurement methods, scrutinizing techniques and reporting guidelines (Gray and Collison, 2002; Adams and Evans, 2004; Lamberton, 2005). In fact, enlarging the scope of ~~a SEV~~an SEV system requires management to combine, for example, input-output analysis to evaluate the physical flow of materials, energy inputs, and goods and waste outputs, along with qualitative indicators capturing health and safety in supply chain

operations. The accounting literature suggests that improving accountability is often hampered by the lack of knowledge about what constitutes adequate KPIs for capturing social and environmental issues, as well as "best practice" assurance procedures (Gray and Collison, 2002; Adams and McNicholas, 2007; Perego and Kolk, 2012). Thus, the following propositions arise:

> *P2a. As a firm's relational capabilities increase, the inclusivity of its SEV system increases. Indirectly, scope and disclosure also increase.*

> *P2b. As a firm's technical capabilities increase, the scope of its SEV system increases. Indirectly, disclosure also increases.*

3.2. Stakeholder salience

Environmental and social accounting has recognized that multiple stakeholder groups have different competing interests (Edgley et al., 2010). Also, it has been debated that some ~~such~~ stakeholders may be unwilling or unable to clearly articulate their expectations and informational needs beforehand, as these are context and situation specific (Hall and Vredenburg, 2003). For example, in 2007, Apple's image was undermined by the Greenpeace's campaign against hazardous materials in electronics devices (Greenpeace, 2007). In 2011, China Labor Watch contested the computer firm aggressively for perceived labor exploitation issues (Duhigg and Barboza, 2012). The same year the Chinese Institute of Public and Environmental Affair raised concerns about Apple's carbon footprint and environmental pollution violations by supply chain partners. More recently, the U.S. government and other NGOs (Friends of the Earth, 2012) raised concerns over "conflict minerals" and tin mining practices.

~~Little~~ Some evidence ~~, however,~~ is ~~also~~ emerging about ~~on~~ how supply chain theory (and practice) accounts for these differences. In order to establish some sense of priority, stakeholder salience indicates how important a particular stakeholder is for a firm and the management of its supply chain (Mitchell et al., 1997; Parmigiani et al., 2011). A stakeholder's salience tends to

increase with its potential to impose its will (power), the perception of its action to be proper and desirable (legitimacy) and the extent to which its claim should be addressed immediately (urgency). As illustrated by the Apple case, as a firm's supply chain generates negative externalities, such as larger carbon footprint and social costs, one or more groups of stakeholders can respond by increasing pressure at one or more tiers of the supply chain. A focal firm's legitimacy – the appropriateness of its actions within an established set of regulations, norms, values or beliefs (Suchman, 1995) – can be threatened by highly salient stakeholders, as these groups leverage their own legitimacy to criticize a firm's supply chain and make claims that must be addressed urgently. In response, firms might increase inclusivity to these stakeholders and increase the amount of information collected and disclosed (Jones et al., 2013). For example, some electronic firms, such as HP, Philips and Samsung, have interacted with a variety of diverse stakeholders to develop materiality matrixes and to conduct monitoring activities globally (e.g., Philips, 2012). Disclosure also has been improved: in 2012, for the first time, Apple released a list identifying its key suppliers (Duhigg and Barboza, 2012).

Salience does more than just motivate managers to justify their actions and behaviours to a subset of relevant stakeholders; it can be instrumental to design and execute SEVevaluation and verification processes able tothat can respond to the expectations and informational needs of a broader audience. At least in part, sSalience can arise from, at least in part, capabilities stakeholders have developed that help legitimize their own actions (King, 2007; O'Dwyer et al., 2011); such capabilities can then be of help toassist firms when developing SEV's processes. To begin, consider such well-known societal groups as the China Labour Watch, Oxfam, Greenpeace and Greening Australia. Some might be only accredited 'observers' at international organizations (Table II); . Hhowever, others "provide analysis and expertise, serve as early

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warning mechanisms and help monitor and implement international agreements" (Edwards, 2000). Yet others~~As shown by Table II~~, because of their ability to perform effective and timely auditing assignments, ~~certain stakeholder groups~~ can ~~indeed~~ be viewed as 'counsellors'. According to Oxfam (2013), its involvement in Unilever's supply chain has been necessary because self-assessments and site visits performed by the focal firm and its accountants were not always sensitive to worker social vulnerability.

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Other stakeholders build and coordinate impact-oriented coalitions of consumers, civil society groups and governments. Greenpeace, for example, starts its campaigns by engaging with other societal groups to discuss material issues and explore potential solutions. Only later~~,~~ does it ~~does~~ target specific industrial actors, often disrupting practices and hurting performance in supply chains. to bring attention ~~around~~ to specific~~the~~ shortcomings that it has chosen to highlight. Whether ~~Regardless their~~ antagonistic or collaborative in attitude (Argenti, 2004), the relational capabilities of ~~some~~ a few stakeholders enable ~~allow~~ them to potentially play the role of 'coordinators'.

Finally, some stakeholder groups ~~maintain~~ develop a comprehensive set of capabilities that can make them strong candidates for a deeper partnership with. ~~Organizations with such a profile can be good 'partners' of~~ a focal firm. Such a stakeholder group must ~~: while they are capable of~~ have both relational capabilities (e.g., sufficient ambidexterity ~~in~~ to deal~~ing~~ with a variety of other ~~diverse~~ stakeholder groups) and technical capabilities (e.g., ~~, they can even directly accomplish~~perform ~~technical~~ evaluative activities). To illustrate, consider Greening Australia (McDonald and Young, 2012). On the one hand, this NGO was able to develop a

thorough and effective engagement plan to prioritize and address the needs of various stakeholders such as Alcoa, its employees, local communities and government agencies. On the other, it delivered high-quality environmental auditing in the execution phase of this multi-stakeholder initiative.

Thus, the following propositions emerge:

> *P3a: As stakeholder salience increases, inclusivity, scope and disclosure of ~~a SEV~~an SEV system increase.*

> *P3b. Highly salient stakeholders can potentially play four major roles in ~~a SEV~~an SEV system based on their technical and relational capabilities.*

However, highly salient stakeholders do more than just affect the focal firm directly, as their importance also can influence general expectations about materiality, reliability, accuracy, completeness and responsiveness of a firm~~'s account~~ ~~to~~ for a broader range of stakeholders, ~~namely~~ termed *'expected' stakeholder accountability*. As the case of Apple illustrates, the supply chain of some firms can be held to a higher standard than others. Thus, consistent with related literatures (Gray et al., 2006; Parmigiani et al., 2011), legitimate and urgent claims by powerful stakeholders tend to broadly influence other stakeholders' expectations, including consumers and investors.

3.3. Supply chain integration

~~Although s~~Supply chain integration considers three inter-related dimensions, namely customer ~~integration~~, internal ~~integration~~ and supplier integration ~~as three inter-related dimensions~~ (Flynn et al., 2010), and both customer and supplier integration (i.e., external integration) have implications ~~points to a number of key aspects~~ for SEV. When considering an extended supply chain as a single system based on both material and infomrational flows, and contractual relationships, external integration represents the degree to which sourcing-

manufacturing-distributing processes across multiple tiers are structured, linked ~~tightened~~ together and synchronized (Stank et al., 2001). External integration engenders interconnectedness between firms within the extended supply chain (Kim et al., 2011), thus affecting their strategic responses to competitive concerns, threats and opportunities (Oliver, 1991; Vurro et al., 2009).

A focal firm might decide to develop its SEV system to influence ~~impact~~ stakeholders' perceptions and ~~finally~~ obtain stakeholders' support (Eisenhardt, 1989); incentives for greater inclusivity, scope and disclosure, however, can change according to the degree~~level~~ of supply chain integration. Higher degrees of interconnectedness tend to simplify the clear identification of customers and suppliers, reduce information asymmetries throughout the supply chain and increase mutual control (Flynn et al., 2010; Kim et al., 2011). For these reasons, as supply chain integration increases, focal firms can efficiently expand the volume of information gathered and disclosed (Awaysheh and Klassen, 2010; Klassen and Vereecke, 2012; Vachon and Klassen, 2006). Conversely, in case of less ~~dis~~connected process for ~~sourcing,~~ manufacturing and distributing ~~processes~~, ~~internal~~ traceability is hampered (i.e., higher information cost and poorer information quality) and stakeholders outside the supply chain have difficulty assigning clear liability~~ies~~ and tak~~inge~~ action to punish when perceived ~~in case of~~ misconduct occurs (Barnett, 2014). To illustrate, although the U.S. government and NGOs are raising concerns about "conflict minerals" and tin mining practices, electronics firms are resisting the evaluation and tracking of their sources (Friends of the Earth, 2012). Gathering and verifying such information can be very expensive, and has questionable accuracy and reliability because of spot markets and co-mingled supplies ~~and spot markets~~.

Nevertheless, as the degree of interconnectedness between supply chain partners

increases, a point might be reached where inclusivity, scope and disclosure start to diminish. The highest level of integration is a captive supplier/manufacturer/distributor or vertical integration. Building integrated supply chains can positively affect SEV systems, but if taken to this extreme – for a whole variety of competitive reasons unrelated to sustainability – can lead to loss of objectivity and opportunistic behaviors. For example, researchers observed that in highly interconnected chains, while the risk of opportunistic behavior by supply chain partners still exists (Hirsch and Meyer, 2010), focal firms are less likely to objectively acknowledge deterioration, detect cheating and ~~countenance~~ consider alternative views (Awaysheh and Klassen, 2010; Villena et al., 2011). Also, inclusivity is less likely to be leveraged as it increases the likelihood that violations or poor performance of supply chain partners is revealed (O'Dwyer et al., 2011 pp. 50). Therefore, all else being equal, as higher levels of interconnectedness are achieved, focal firms are expected to avoid situations where a large variety of stakeholders beyond customers and suppliers actively participate at the design and execution of SEV's processes. For example, the coffee-supply chain in which Kraft operates is well interconnected, thus monitoring could be facilitated (Parmigiani et al., 2011; Kolk, 2013). Nevertheless, Kraft's inclusivity is limited, evaluation is ~~solely~~ focused solely on environmental issues, and disclosure is inconsistent.

> *P4. As supply chain integration increases, inclusivity, scope and disclosure of ~~a SEV~~an SEV system are expected to initially increase, and then decrease (i.e., curvilinear relationship).*

4. Outcomes of Sustainable Evaluation and Verification

While a wide set of outcomes could conceivably be linked to SEV systems, we will delineate and explore how SEV systems, by impacting stakeholders' perception of a firm's accountability, can indirectly spur three distinct outcomes: risk avoidance, efficiency, and

credibility. Section 4.1 presents the align-with-expectations logic emerging from our review of related literatures. Then, ~~other~~ the three following sections explain how this logic applies in the context of sustainable evaluation and verification. Conceptually, the ~~overall~~ model is presented in Figure 2.

Insert Figure 2 about Here

4.1. *Aligning perceptions with expectations of stakeholder accountability*

Stakeholder theorists argue that the success of a firm depends ~~on the effective management of stakeholders – achieved~~ partly ~~on~~by conforming to the~~ir~~ expectations and informational needs of stakeholders (Eisenhardt, 1989; Freeman, 1984; Mitchell et al., 1997). First, stakeholder groups have expectations about who should be consulted (King, 2007), and how a firm should account for ~~their~~ its acts, omissions and risks (Adams and Evans, 2004; Gray, 2013; Iansen-Rogers and Oelschlaegel, 2005). For instance, NGOs expect their opinions over the reliability and accuracy of evaluation processes to be highly regarded by firms and inform the design of future initiatives (Edgley et al., 2010; Manetti and Becatti, 2009; Owen and O'Dwyer, 2005). Also, it has been suggested that a firm should concentrate its sustainable actions around issues and operations dictated by highly salient stakeholders, so as to reduce the imbalance or divergence between "what a firm does" and "what a firm should do" according to the opinion of its diverse stakeholders (González-Benito et al., 2011; Gray, 2013; Iansen-Rogers and Oelschlaegel, 2005). Finally, GRI's (2013b) latest revision dictates that a firm should communicate issues that substantively influence the understanding and decisions of its stakeholders. The GRI format aligns well with an accounting definition of materiality, i.e., the extent to which disclosed data is relevant and adequate for key ~~a~~ stakeholders to make proper

judgments about the firm (Gray, 2001). The accounting literature goes even further, indicating that fully addressing stakeholders' informational needs also entails an obligation of completeness (i.e., reporting "all" relevant information) and responsiveness (i.e., adapting to current and evolving demands) (Adams and Evans, 2004; Cooper and Owen, 2007; O'Dwyer, 2011). In other words, a focal firm also must ~~also~~ operate in order to fill "the gap between provision [of information] and needs [for information]" (Connolly and Hyndman, 2013; Iansen-Rogers and Oelschlaegel, 2005).

In conclusion, related literatures suggest that only as ~~a SEV~~an SEV system works to increasingly align *perceptions* with *expectations* of stakeholder accountability, a firm can gain competitive advantage. This align-with-expectations logic highlights the point that whether a focal firm succeeds is not only based on hard facts and objective data (i.e., its SEV system), but on the alignment between stakeholders' perceptions and expectations. For example, a stakeholder group may be dissatisfied with ~~a SEV~~an SEV system that provides wide scope and accessible disclosure if this group still perceives that specific concerns are not adequately addressed. Conversely, another group might be very satisfied with ~~a SEV~~an SEV system with limited inclusivity and scope, if the firm is perceived to have done the best job possible under the circumstances.

As we discussed in the previous section, however, a wide variety of factors can potentially impede a firm's willingness or efforts to increasingly align perceptions with expectations of stakeholder accountability. Limited firm capabilities might inhibit the development of ~~a SEV~~an SEV system, constraining any efforts to elevate perceived stakeholder accountability. For example, ~~few~~ limited relational capabilities can impede effective engagement and communication with ~~a variety of~~ diverse stakeholders, or a deficit of technical capabilities

might constrain the scope of evaluation and verification processes to few environmental or social issues for a few key supply chain partners. Also, extensive supply chain integration, by favoring less inclusivity and narrower scope, might also result in a tendency to fall well short of stakeholders' expectations and informational needs.

While likely less common, a firm might actually overachieve with its SEV system, overcoming expected stakeholder accountability. To illustrate, Patagonia is working to construct the Higg Index, a reliable and accurate measure of the environmental impact of the textile supply chain, which will be publicly disclosed (Chouinard, 2013). Among other benefits, the firm touts that consumers will be able to see the detailed impact and history of a pair of jeans by pointing a smartphone at the bar code on a product's label. With this initiative the firm wants to leverage its well-interconnected network of clothing manufacturers and its capabilities to stimulate responsible consumption, which goes well beyond many stakeholders' current expectations.

4.2. *Risk avoidance*

In the context of supply chain management, risk has primarily been addressed as potential negative variation in the distribution of possible supply chain outcomes (Jüttner et al., 2003), based on the likelihood and magnitude of impact. Operational risks (Lewis, 2003) related to delays, distortions and disruptions are among the most studied ~~risk~~ categories of risk in the literature (Sodhi et al., 2012). Delays and distortions can be viewed as recurrent risks that can occur when one or more parameters within the supply chain system, such as lead times and order sizes, stray from their expected value. In contrast, disruptions occur when the supply chain is radically and unexpectedly upset through non-availability of resources or capabilities, such as production or transportation failures (Kleindorfer and Saad, 2005). Applied to sustainability, such risks can encompass, for example, the availability of scarce and non-renewable resources,

product safety, or alternatively, environmental and social harm caused by inattention or sourcing practices.

When stakeholders' perceptions fail to fully align with stakeholders' expectations of accountability, the firm is likely overlooking potential environmental and social risks driven by inattention and opportunism, for example because of low levels of inclusivity. The engagement with some ~~a variety of~~ stakeholders, indeed, can provide an early warning system for emerging sustainability issues, anticipating unexpected negative outcomes before they occur (Manetti and Toccafondi, 2012; Reed, 2008). Also, audit processes executed by independent NGOs and unions throughout the supply chain are more likely to identify abuses and violations in the workplace (Egels-Zanden and Lindholm, 2014).

Differently, as 'perceived' accountability increasingly aligns with 'expected' accountability, SEV's processes likely cover a wider range of material issues and look more deeply into the extended supply chain, thereby providing relevant insights into potential risks. For instance, Puma has developed an Environmental Profit & Loss (E-P&L) system to quantify direct sustainability impacts, as well as those of its suppliers (Balch, 2012). This accounting enabled Puma to map the water intensity of its raw materials against regions where availability of water is limited, either now or possibly in the future.

> *P5a. As perceived accountability increasingly aligns with expected accountability, potential environmental and social risks are increasingly mitigated or avoided.*

It is critical to note that risk avoidance can bring unexpected opportunities for success (Pettit et al., 2013). For instance, FedEx seized opportunity in the aftermath of a strike at UPS in 1997 by filling unmet demand; Dell took advantage of the West Coast port lockout in 2002 to spur demand for LCDs. Accordingly, being able to avoid sustainability-related delays, distortions and disruptions might offer firms an opportunity to steal market share from competitors.

4.3. Efficiency

Taken one step further, not only are risks identified, but inefficiencies also uncovered. For example, Puma's E-P&L allowed the firm to more efficiently use natural resources, yielding a cost savings of €145 million (Balch, 2012). By increasing inclusivity, a focal firm can leverage more capable stakeholders to fulfill specific evaluative and validative tasks, thus benefiting from reliable and relatively inexpensive information over global supply chain operations. Also, by aligning 'perceived' accountability with 'expected' accountability, a firm might raise stakeholders' commitment, thus yielding higher support and richer set of ideas to generate eco-efficiencies (Reed, 2008).

Although alignment might yield greater supply chain efficiency, complex interactions make specific outcomes difficult to predict. For example, the inclusion of a diverse ~~large variety of diverse~~ stakeholders in ~~a SEV~~an SEV system can be time-consuming and costly; participatory processes can likely become "talking shops" that delay decisive action (Reed, 2008). Also, a large SEV's scope might not result directly in enhanced productivity, as externalities are internalized, but still be necessary to satisfy the stakeholders' expectations (Sarkis et al. 2010). To illustrate, the cost of disclosing the sourcing and use "conflict materials" by approximately 6,000 publicly traded firms has been estimated at $3 to $4 billion initially, with on-going annual costs between $207 million to $609 million annually (Davidoff, 2012). Thus, a non-linear relationship is expected.

> *P5b. As perceived accountability increasingly aligns with expected accountability, efficiency is expected to initially increase (low-hanging fruit), and then decrease (i.e., curvilinear relationship).*

Interestingly, efficiency gains derived by aligning perceived accountability with expected accountability might then provide opportunities to compete as a low cost provider or pursue

more aggressive growing strategies. To illustrate, Coca-Cola achieved a 20% reduction of water and energy consumption per unit product during the last decade by having a variety of stakeholders developing and applying specific metrics to measure and track resource consumption in the supply chain (Kumar et al., 2012). This allowed Coca-Cola to maintain market leadership and satisfactory financial performance even if its assets use efficiency was seriously suffering from a series of large acquisitions occurred in 2007.

4.4. Stakeholder credibility

Credibility is high when an information source is fair, tells the whole story, is unbiased, accurate, can be trusted and responds to the receiver's needs (Dando and Swift, 2003; Adams and Evans, 2004). Credibility has both objective and subjective components: while established information reliability and accuracy is important, individual stakeholder groups can adopt different views about the conditions that must be satisfied to perceive reports from a firm or its supply chain as credible. As illustrated in the earlier section on stakeholder salience, different groups of stakeholders have varying interpretations of what the "whole story" might be.

Freeman (1984, p. 162) suggested that firms fail to establish credibility with specific stakeholders when management does not align with their expectations. Thus, signalling a firm's willingness, or efforts to give stakeholders some input into the development of its practices, constitutes an important prerequisite for constructing credibility (Connolly and Hyndman, 2013; Iansen-Rogers and Oelschlaegel, 2005; O'Dwyer et al., 2011). Also, as 'perceived' accountability aligns with 'expected' accountability, more information is might be provided about how the focal firm measures externalities, often with third parties such as NGOs commenting on the quality of such efforts (Deegan et al., 2006; O'Dwyer, 2011). By doing so, the firm provides evidence that accepted techniques and procedures are employed, enhancing its

"procedural legitimacy" (i.e., it is doing things correctly) and benefiting from the "personal legitimacy" of independent parties whose judgment is included in the report (O'Dwyer et al., 2011; O'Dwyer, 2011).

Nevertheless, more might not be universally better: a positive misalignment between 'perceived' accountability and 'expected' accountability might be detrimental for credibility. For instance, there are ways in which inclusivity dynamics may impede minority perspectives from being expressed. Also, expanded inclusivity may hinder rapid progress ~~may be questioned on the basis that~~ if some stakeholders participating in SEV processes lack ~~might not have~~ sufficient expertise or knowledge to meaningfully engage in ~~what are often~~ highly technical debates (Edgley et al., 2010; Reed, 2008). Moreover, if a firm discloses too much information in an attempt to satisfy disparate stakeholders' needs, it is possible that credibility might suffer initially, particularly if clarity and accuracy are limited (for valid scientific reasons)~~penalized~~. In essence, some stakeholder groups might interpret this over-delivery ~~positive misalignment~~ o information as "green washing"; known as the self-promoter paradox, this phenomenon is one of the causes of widespread mistrust between focal firms and their stakeholders (King, 2007; Walker and Wan, 2012). To illustrate, while Wal-Mart continues to communicate its ambitious goals and its sustainability efforts through various forms of corporate and social media, some NGOs perceive this as over-promising or bluffing (Mitchell, 2012), a perception likely to increase uncertainty and confusion, and decrease credibility.

> *P5c. As perceived accountability increasingly aligns with expected accountability, stakeholder credibility is expected to increase.*

Establishing credibility in the relationship with diverse stakeholders can be seen as an order winning criteria yielding higher revenues via stronger stakeholder support or attenuated stakeholder punishment. These outcomes have demanded attention from investors, who are

beginning to recognize the materiality of non-financial factors, as evidenced by the growth of social responsible investment funds (Ambec and Lanoie, 2008). Indeed, credibility has the potential to increase stakeholders' confidence, legitimize a firm's operations and, in turn, safeguard its existence through a continued inflow of funds and other support (Connolly and Hyndman, 2013). In essence, credibility is an enabler of competitive advantage through revenues or founds gains (Table III).

Insert Table III about Here
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5. Implications for Theory and Practice

5.1. Theoretical implications

As we seek to expand our understanding of approaches for more sustainable supply chains~~In taking a step towards contributing to SSCM research~~, our integrative conceptual model prompts a number of ~~provocative~~ challenging considerations. First, the accounting literature suggests that sustainable monitoring can be much more than a *set of evaluative activities* (Awaysheh and Klassen, 2010~~; Klassen and~~ ~~Vachon and Klassen, 2006~~). Focal firms can deploy a *set of interdependent evaluation and verification processes* to create internal and external transparency about supply chain practices and performance, and in turn impact perceptions of stakeholder accountability. Performance evaluation relative to the goal assigned to the firm by its stakeholders comes first (Lamberton, 2005), while verification follows to enhance the degree of confidence of the firm and its stakeholders about the evaluation outcome (Manetti and Becatti, 2009; O'Dwyer et al., 2011). Thus, future studies should incorporate the notion of verification, which represents a departure from prior SSCM research in regards to monitoring.

Second, our study suggests that sustainable monitoring can be much more than a *self-*

managed set of narrowly focused evaluation and verification processes. Indeed, a *variety of*

stakeholder groups can play central and multi-faceted roles ~~along~~ in SEV design and execution

(Cooper and Owen, 2007; Edgley et al., 2010; Owen and O'Dwyer, 2005). Thus, monitoring

systems are expected to vary between firms and supply chains in terms of inclusivity, scope and

disclosure (Ball et al., 2000; Manetti and Toccafondi, 2012; Perego and Kolk, 2012). The design

and execution of evaluation and verification processes require complex and unstructured

decision-making, guided by accounting principles of materiality, reliability, accuracy,

completeness and responsiveness (Adams and Evans, 2004). Future studies can ~~should~~ build

~~up~~on this stakeholder-centric perspective~~, value thinking approach~~ to empirically assess whether

(and how) the presence of a veriety of stakeholders in supply chain decision-making affects

~~facilitates~~ these accounting ~~satisfaction of~~ principles, as ~~such while also impacting~~ well as

~~dimensions of~~ scope and disclosure. ~~Yet~~Moreover, it would be interesting to observe how focal

firms leverage inclusivity to learn and define optimal task-based rules to enhance ~~guiding~~ the

development of sustainable supply chains.

Third, SSCM research presents sustainable monitoring as an *order qualifier*, an arm's-length

approach that evaluates compliance with a voluntary code of practice or regulatory standard. For

instance, Locke et al. (2007) argued that sustainable monitoring alone does not traslate in

environmental and social enhancements throughout the supply chain. Building on this

perspective, our synthesis~~study~~ indicates ~~suggests~~ that limited benefits are likely to ~~outcomes~~

occur with ~~originate from~~ self-managed, narrowly focused monitoring, whereas ~~while~~ to a point,

competitive advantage springs from inclusive SEV processes, with sufficient scope, followed by

a responsive disclosure of material information. Indeed, SEV systems represent a powerful mean

through which firms can reduce their "environmental imbalance" (González-Benito et al., 2011)

and close the "provision-need gap" (Connolly and Hyndman, 2013; Gray et al., 2006; Iansen-Rogers and Oelschlaegel, 2005). As SEV systems work to increasingly align perceived and expected stakeholder accountability, firms can access and leverage stakeholders' expertise and connections to identify and realize supply chains' improvement potential while also boosting their credibility (Egels-Zanden and Lindholm, 2014; Manetti and Toccafondi, 2012; Reed, 2008). However, the development of an SEV system might be pushed to far, hurting performance with excessive overhead, overly complex stakeholder engagement and slow decision-making.

Then, by applying the lenses of Institutional Stakeholder Theory (Eisenhardt, 1989; Mitchell et al., 1997), our conceptual model clarifies the antecedents of SEV systems and,implicitly warns about the following paradox: inclusivity is expected to develop to a lower extent in contexts where it would provide greater benefits to the focal firm and all its stakeholders. In cases where focal firms maintain poor technical capabilities and operate in highly disconnected networks, material environmental and social risks caused by lack of control and free-riding likely exist in the extended supply chain (Klassen and Vereecke, 2012; Vurro et al., 2009). Similarly, if focal firms lack ambidexterity and supply chain partners are highly interconnected, opportunism in the supply chain exists (Hirsch and Meyer, 2010) but poor environmental and social performance are less likely to be objectively acknowledged (Awaysheh and Klassen, 2010; Villena et al., 2011). Under these circumstances, inclusivity is expected to offer important benefits as it brings expertise and connections to bear when establishing metrics, concuting audits and validating information. Nevertheless, based on earlier propositions (P2a,b and P4), focal firms in these circumstances are expected to design and execute SEV systems in isolation, with limited scope and disclosure. Here, further theoretical and empirical investigation is needed in order to refine

our understanding of this paradox and verify its existence. ~~our conceptual model clarifies the antecedents of SEV systems and implicitly warns about the following *paradox*: inclusivity is expected to develop to a lower extent in contexts where it would provide greater benefits to the focal firm and all its stakeholders. In cases where focal firms maintain poor technical capabilities and operate in highly disconnected networks, material risks caused by lack of control and free-riding are likely seating in the extended supply chain (Klassen and Vereecke, 2012; Vurro et al., 2009). Similarly, if focal firms lack ambidexterity and supply chain partners are highly interconnected, opportunism in the supply chain exists (Hirsch and Meyer, 2010) but poor environmental and social performance are less likely to be objectively acknowledged (Awayshes and Klassen, 2010; Villena et al., 2011). Under these circumstances, therefore, inclusivity would be highly beneficial as it brings expertise and connections to bear when establishing metrics, conducting audits and validating information. Nevertheless, based on P2a,b and P4, focal firms will tend to design and execute SEV systems in isolation, limiting scope and disclosure. Here, further theoretical and empirical investigation is needed in order to refine our understanding of this paradox and verify its existence.~~

5.2. *Managerial Implications*

Our model ~~study~~ points to a number of changes in the way SSCM professionals might align and leverage accountability to stakeholders. First, others ~~it has~~ have ~~been~~ observed that managers tend to perceive similar sustainability demand from multiple stakeholder groups (Murillo-Luna et al., 2008). ~~Differently~~However, our synthesis indicates that managers might be better ~~are~~ advised to invest more resources to proactively capture *differences* in expectations and informational needs of multiple and diverse stakeholder groups. Because ~~Since~~ stakeholder groups might have dissimilar ethical and cultural characteristics, ~~they develop~~ competing

interests and diverse sustainability demands can emerge, and managers might inadvertently overlook the most important demandsshould be able to grasp and address (Hall and Vredenburg, 2003; Edgley et al., 2010).

Second, managers must prioritize different product-based and process-based environmental and social issues to be included in evaluation and verification processes (Wood, 1991). Also, , likewise the number of supply chain partners "inspected" must also be carefully considered in light of aligning perceived and expected accountability. However, managers must be cautious about imposing self-managed, narrowly focused monitoring and disclosure simply to reduce arranged. Here, apparent chaos and complexity arising from diverse and competing stakeholders' expectations should not be favored by autocratic managers as ground for the imposition of self-managed, narrowly focused monitoring and disclosure (Ball et al., 2000; Adams and Evans, 2004; Gray, 2013). Similarly, neither poor supply chain interconnectedness, nor high external integration and fear of punishment by stakeholders should translate in managerial defensiveness and limited inclusivity Yet, neither poor supply chain interconnectedness, nor high external integration intertwined with fear of stakeholder punishment should translate in managerial defensiveness and inclusivity inhibition (O'Dwyer et al., 2011). Broader stakeholder engagement where knowledge sharing is sought and dialogue is guided by principles of materiality, reliability, accuracy, completeness and responsiveness will can create allow emergent structure and clarity order from complexity (Connolly and Hyndman, 2013; Manetti and Toccafondi, 2012; Reed, 2008). *Inclusivity in SEV design* can facilitate the identification of environmental and social issues before they become highly relevant (Manetti and Toccafondi, 2012; Reed, 2008) and break down "stakeholder ignorance" as to what needs to be done to evaluate and verify them timely (Edgley et al., 2010). An inclusive SEV design

configures as a learning process for the firm and its stakeholders, with opportunities for mutual understanding and reciprocal adjustments in perceptions (Perego and Kolk, 2012; Thomson and Bebbington, 2005; Edgley et al., 2011).

Third, managers should be aware of the potential implications of outsourcing *SEV execution* to consultants, accountants, supply chain partners or even using their own personnel. These agents m~~ay~~ight lack sufficient technical knowledge and might ~~may~~ uncritically verify the outcome of the evaluative task (Perego and Kolk, 2012). A~~Yet, a~~ttention needs to be paid to the challenging~~problematic~~ relationship between these agents and their principal (managers): if "left out of the game", stakeholder groups might interpret the lack of external trasparency as concealing opportunism and "punish" the firm with an unfavorable accountability score (Ball et al., 2000; Owen et al., 2000; Manetti and Beccatti, 2009). Supply chain managers, thus, could devote significant ~~their~~ attention toward ~~in~~ establishing relationships with stakeholder groups that have ~~having~~ the ability to perform timely and effective evaluation and verification assignments. To guarantee that the general public and supply chain partners will perceive such 'counsellors' as legitimate, fair and reliable, managers could also receive advice from stakeholder groups in the role of 'coordinators', which can be asked to orchestrate the selection on behalf of the focal firm and its other stakeholders. For many~~Thus,~~ managers, rethinking and assigning roles for specific stkeholder groups is a dramatic ~~are advised to initiate a radical~~ change in SEV execution, with ~~giving~~ stakeholders taking active roles along the appointment of auditors, the coordination of field work and the direct accomplishment of evaluative and validative tasks (Adams and Evans, 2004).

The issue of who participates in SEV design and execution is central; thus, we must remind managers that high inclusivity ~~degrees~~ of diverse stakeholder~~s variety~~ might not always

be optimal for achieving ~~delivering~~ strong stakeholder accountability. Inclusivity *should differ* between firms and between supply chains based on the material externalities they generate. SEV design, indeed, must have involvement of those diverse stakeholder groups that aim to ~~at~~ contribut~~ing~~ing to the dialogue that generates a valid and reliable ~~the~~ SEV system (Edgley et al., 2010), rather than just indiscriminately involving more ~~not every~~ stakeholder groups ~~indiscriminately~~. Ideally~~Similarly~~, SEV execution must have involvement of those salient stakeholder groups that have developed complementary capabilities and are capable of adding credibility to the system (O'Dwyer et al., 2011). In other words, ~~a SEV~~an SEV system must be flexible in its inclusivity, as well as in its consequential scope and disclosure, as these should be set in an attempt to guarantee materiality, reliability, accuracy, completeness and responsiveness, thus securing full alignment between perceptions and expectations of stakeholder accountability (Ball et al., 2000; Connolly and Hyndman, 2013; González-Benito et al., 2011).

6. Conclusions

Focal firms exposed to a range of environmental and social concerns are ~~now~~ attempting to address both the informational needs and performance expectations ~~and informational needs~~ of multiple stakeholder groups ~~exposed to supply chain externalities~~. To align and leverage accountability to stakeholders, a synthesis of the accounting and supply chain literatures indicates that monitoring systems must evolve ~~are evolving~~ into much more complex and diverse sustainable evaluation and verification (SEV) systems, with multiple dimensions and ~~various~~ processes ~~and dimensions~~. On the one hand, SEV systems can combine the activities of data collection and processing, with ~~a~~ verification of the materiality, reliability and accuracy of any data and information. On the other hand, such processes can differ in terms of the degree to

which ~~a variety of~~ diverse stakeholder groups are engaged, the range of environmental and social issues assessed, the breadth of the supply chain ~~and~~ network captured~~encompassed~~, and the extent of appropriate information finally reported to all stakeholders. However, it is not only the absolute levels that matter, but also the alignment of the firm's perceived accountability to stakeholder with their expectations. ~~While offering a unique opportunity to align perceptions with expectations of stakeholder accountability and create competitive advantage for the firm,~~ These SEV~~'s~~ dimensions ~~processes and dimensions~~ tend to be driven by ~~adjust to~~ firm capabilities, stakeholder salience and supply chain integration. ~~To conclude, it should be clarified that neither the theoretical nor the managerial suggestions in this paper suffice to solve the issue of stakeholder accountability in extended supply chains.~~ While further empirical research is desparately needed, the model of SEV proposed here provides a clearer conceptual foundation for building specific measures, understanding complex relationships, and integrating additional theory.

~~We do believe, however, that our study has made a strong contribution to a better understanding of complex and diverse sustainable evaluation and verification systems, their antecedents and their competitive implications, thereby enabling SSCM researchers and professionals to work more effectually towards the resolution of this issue.~~

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Figure 1: Inclusivity of a sustainable evaluation and verification (SEV) system
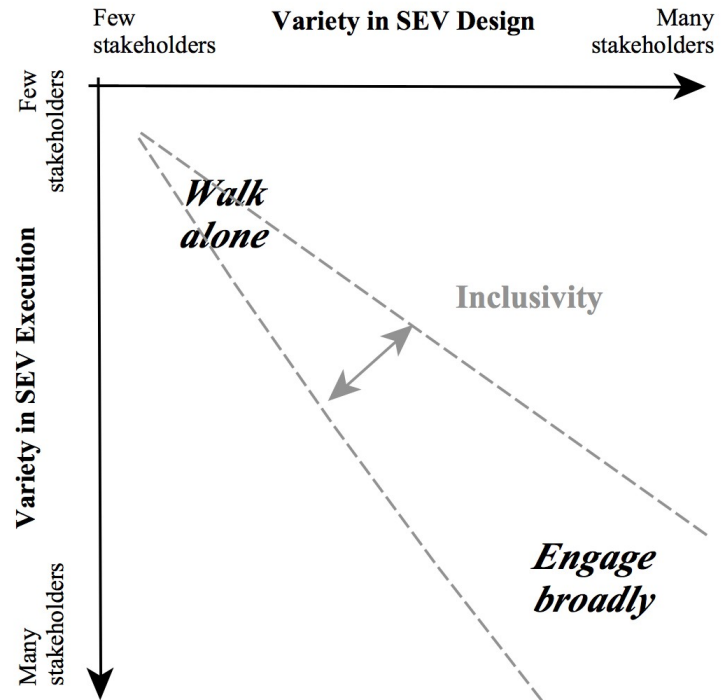
Figure 2: Aligning and leveraging accountability to stakeholders: An integrative view
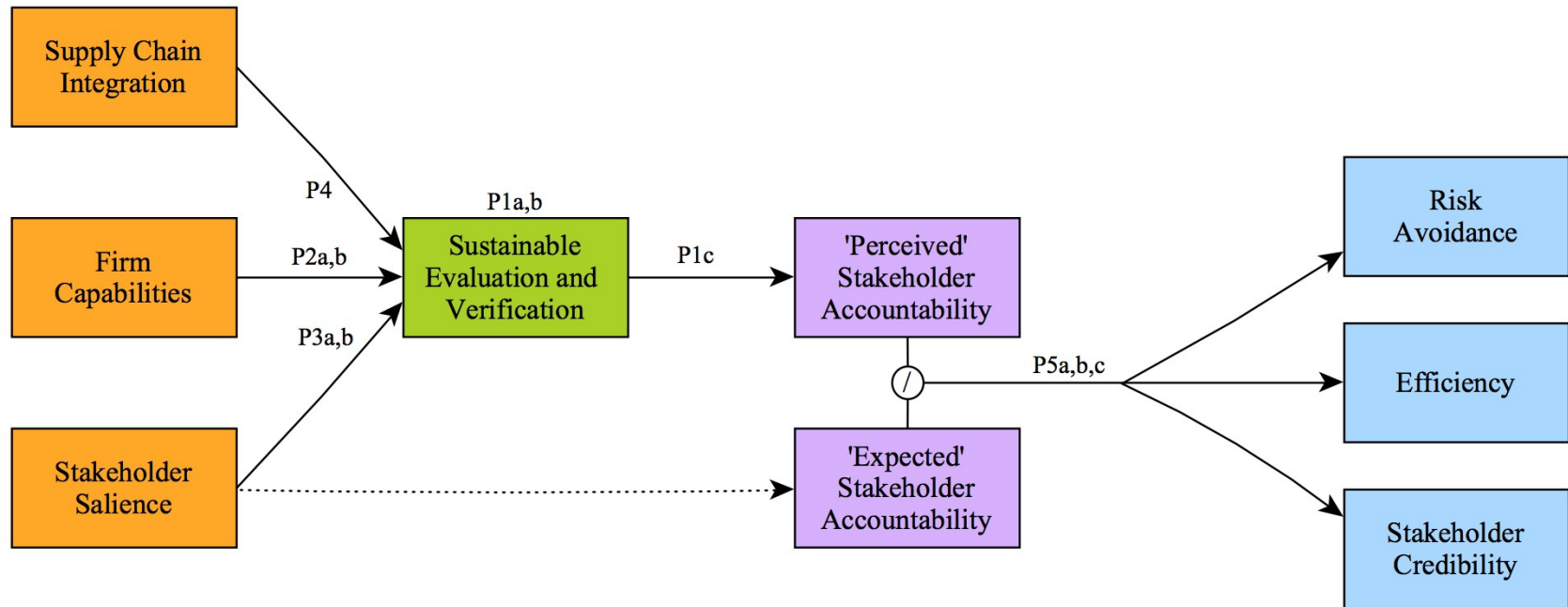
Table I: Interdependent processes and dimensions of ~~a SEV~~ an SEV system

DIMENSIONS

Inclusivity
Scope
Disclosure

(*Walk alone*
to *Engage broadly*)
Range

(*Narrow*
to *Broad*)
Network

(*Few organizations*
to *Extended supply chain*)

(*Little*
to *Complete and appropriate information*)

INTERDEPEDENT PROCESSES

Evaluation
Gathering data; aggregating information; understanding impact.
Data gathering and processing can be designed and executed by the focal firm alone or by the focal firm together with a large variety of diverse stakeholders;
Data gathered and processed can describe environmental and/or social performance characterizing products and/or processes;
Data gathered and processed can cover operations administered by the focal firm and few key partners or by all the inter-related organizations operating in the extended supply chain;
Information about the evaluation process and its outcomes can be retained or can be made fully accessible, comprehensible to stakeholders

Verification
Assuring reliability, accuracy, and materiality.

Assurance can be designed and executed by the focal firm alone or by the focal firm together with a large variety of diverse stakeholders;

Assurance can regard environmental and/or social performance characterizing products and/or processes;

Assurance can cover operations administered by the focal firm and few key partners or by all the inter-related organizations operating in the extended supply chain;

Information about the assurance process and its outcomes can be retained or can be made fully accessible, comprehensible to stakeholders

Table II: Different Roles for Stakeholders in SEV

Relational capabilities

Low
High
Technical
capabilities
Low
Observer
(e.g., China Labor Watch)
Coordinator
(e.g., Greenpeace)

High
Counselor
(e.g., Oxfam)
Partner
(e.g., Greening Australia)

Table III: The link with competitive advantage

Outcomes	Derivative competitive advantage
Risk avoidance based on: - Integrated thinking and anticipation; - Reduced opportunism along the supply chain; - Effective judgment of the availability and quality of natural resources along the supply chain.	Taking advantage of delays, distortions and disruptions affecting competitors' operations.
Efficiency based on: - Managerial awareness pointing to targeted improvements; - Richer set of ideas and options resulting in lower cost solutions; - Transferred costs.	Competing as a low cost provider or pursuing aggressive growing strategies.
Credibility based on: - Efforts to give stakeholders some inputs into the process; - Procedural legitimacy; - Personal legitimacy of independent parties.	Improving stakeholders' willingness to pay and attenuating their punishment.