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Going above and beyond: How sustainability culture and entrepreneurial orientation drive social sustainability supply chain practice adoption

Abstract

Purpose - This paper examines what drives the adoption of different social sustainability supply chain practices. Research has shown certain factors drive the adoption of environmental sustainability practices but few focus on social supply chain practices; delineate which practices are adopted; or what drives their adoption. We examine the facilitative role of sustainability culture to explain the adoption basic social sustainability supply chain practices, consisting of monitoring and management systems and advanced social sustainability supply chain practices, which are new product and process development and strategic supply chain redefinition. We then explore the role played by a firm's entrepreneurial orientation in shaping and reinforcing the relationship between sustainability culture and the adoption of social sustainability supply chain practices.

Design/methodology/approach - A survey of 156 supply chain managers in multiple industries in Ireland was conducted to test the relationship between the variables.

Findings - Our findings show that sustainability culture is positively related to all the practices and entrepreneurial orientation impacts and moderates social sustainability culture only in advanced social sustainability supply chain practice adoption.

Research limitations/implications – As with any survey this is a single point in time with a single respondent, is cross-sectional in nature and conducted in one country. Implications for managers include developing and fostering cultural attributes in the organisation to implement social sustainability supply chain management practices that go beyond monitoring suppliers to behavioural changes in the supply chain with implications beyond the dyad of buyer and supplier to lower tier suppliers and the community surrounding the supply chain.

Originality/value – This is the first time, to the authors' knowledge, that cultural and entrepreneurial variables have been tested for social sustainability supply chain practices giving us new insight into how and why social sustainability supply chain practices are adopted. It also applies a strategic choice theory lens to explore variability in the adoption of different sustainable supply chain practice and presents a view of the role of the supply chain managers as active creators and enactors of their environment.

Key words: Social sustainability; sustainable supply chains; sustainability culture; entrepreneurial orientation

Paper type Research paper

1. Introduction

The issue of sustainability has emerged as a prominent topic in supply chain management over the past decade (Pagell and Wu, 2009; Tate *et al.*, 2010). Defined as 'at worst doing no net harm to natural or social systems while still producing a profit over an extended period of time' (Pagell and Wu, 2009: 39), researchers and managers are increasingly interested in explaining firms' adoption of sustainable supply chain practices (Jorgensen and Knudsen, 2006; Wu *et al.*, 2012) and predicting consequences of their use (Lai and Wong, 2012). The majority of literature examines environmental sustainability in supply chains, although more recent research has begun to focus on social sustainability (Ashby *et al.*, 2012; Awaysheh and Klassen, 2010; Carter and Rogers, 2008). Both environmental and social sustainability are important and truly sustainable organisations include both types of sustainability. However, as there is a

dearth of empirical research on social sustainability supply chain practices and their antecedents (Ehrgott *et al.*, 2011; Pfeffer, 2010; Pullman and Dillard, 2010) this paper examines the adoption of social sustainability supply chain practices to understand what is driving their implementation.

Supply chain researchers predominantly examine the adoption of sustainability practices from a deterministic perspective, particularly through an institutional theory lens (Delmas and Toffell, 2005; Zhu and Sarkis, 2007; Sarkis *et al.*, 2010; Wu *et al.*, 2012; Aguilera-Caracuel and Ortiz-de-Mandojana, 2013). A deterministic view suggests that contextual factors, most notably external environmental factors, predetermine the choice facing a manager. Their argument is that firms must adopt sustainability practices to attain and maintain legitimacy vis-à-vis external stakeholders and the institutionalised requirements of the business environment (Meyer and Rowan, 1977).

More recent research has begun to challenge this deterministic view explores the variation in supply chain management behaviour in responding to these external pressures. For example Grosvold *et al.*, (2014) draw on the idea of decoupling within institutional theory (Meyer and Rowan, 1977) to explain the varying levels of alignment between supply chain management and measurement practices of sustainable supply chains. They show how organisations, with a view to protecting the integrity of their technical core, allow wide variation in stated sustainability policy and actual practice: Showing outward signs of compliance with stakeholder demands but, in reality, making few internal changes. Similarly, Bowen and Aragon-Correa (2014) explore the relational and symbolic dimensions of corporate environmental activities. Their concept of 'symbolic corporate environmentalism' is seen as arising from 'interactions between actors within an institutional field as symbols are produced, understood, and legitimized in institutional processes' (2014:109). Therefore, sustainability activity needs to be seen in an interactional and political sense where different stakeholders compete, collaborate and collude to produce certain outcomes.

We wish to extend the current research trajectory with an exploration of the underlying causes of discretionary behaviour as the supply chain manager is faced with internal and external pressures to become more sustainable. To this end we draw on strategic choice theory (Child, 1972). Child (1972, 1997) examined the level of discretion available to decision makers in choosing the structural arrangements within an organisation. The choice of structure was not merely a rational process of analysing the contingency factors facing an organisation or blindly responding to deterministic demands. Rather, environmental forces acted as limits to the choices managers faced. These strategic decisions reflected the values and preferences of the managers themselves and the ability of these managers to influence and manipulate the context in which their firm operates. The construct of entrepreneurial orientation is used a proxy measure for managerial strategic choice. We suggest that entrepreneurial orientation provides an important window into the nature of strategic decision-making and propose that high levels of entrepreneurial orientation are associated with high levels of proactive social supply chain sustainability practice adoption.

While we argue that entrepreneurial orientation plays an important role in the development and adoption of certain sustainable supply chain practices we also draw on the concept of sustainability culture to further explain inter-firm differences in the adoption of such practices (Beske and Seuring, 2014).

However, not all sustainability practices are the same and although sustainability culture and entrepreneurial orientation may serve as an enabling foundation for a host of such practices it is unclear which ones. Using the SSCM literature addressing social sustainability, we focus on two groups of sustainable supply chain practices. The first is

basic social sustainability supply chain practices, focused on monitoring and coordinating processes, procedures and performance that are already established (Klassen and Vereecke, 2012). The second is advanced social sustainability supply chain practices. These are innovative social sustainability supply chain practices that open up new markets for supply chains (Klassen and Vereecke, 2012) and redefine not only who is in the supply chain but what the supply chain does (Pagell and Wu, 2009). It is suggested that these advanced practices differ not merely in their focus on different elements of social sustainability, but also in their level of commitment to social sustainability. While basic practices provide safeguards for firms to monitor and incentivise social sustainability behaviours, advanced practices entail a willingness to proactively deviate from current operations (McCarthy and Marshall, 2014).

To test these assertions we conducted a survey of 156 senior executives in Irish firms with supply chain sustainability responsibility. We examined how entrepreneurial orientation moderates the path between sustainability culture and social sustainability supply chain practice adoption. In other words, does entrepreneurial orientation lead companies to go above and beyond basic monitoring and what is required of them by law, customer wishes or regulation and engage in behavioural changes such as creating socially-focused products and processes and reconfiguring supply chain strategy to include social issues?

The remainder of the paper is organised as follows: the next section provides the systematic literature review and hypotheses for the research; this is followed by the methods used to carry out the research; after the analysis of the data, we discuss the findings of the research and then conclude the paper with the implications and limitations of the research.

2. Literature background and research hypotheses

2.1. Systematic literature review

In order to understand the current literature on social sustainability practices in supply chains we undertook a systematic literature review (Denyer and Tranfield, 2009). We used three databases Emerald, Scopus and Taylor & Francis. The review took place in December 2014 with no fixed date range. To ensure the relationship with supply chain management we focused the search on thirteen supply chain-related journals: Decision Sciences (DS), International Journal of Operations and Production Management (IJOPM), International Journal of Physical Distribution and Logistics Management (IJPDLM), International Journal of Productivity and Performance Management (IJPMM), International Journal of Production Economics (IJPE), International Journal of Production Research (IJPR), Journal of Business Logistics (JBL), Journal of Operations Management (JOM), Journal of Purchasing and Supply Management (JPSM), Journal of Supply Chain Management (JSCM), Production Planning and Control (PPC), Production and Operations Management (POM), and Supply Chain Management: International Journal (SCMIJ).

In order to find articles that examined social sustainability in the supply chain we examined the title, key words and abstract for search terms: *social** and *suppl** and *sustain** and also *corporate social** and *responsib** and *supp**. The initial search returned 87 relevant articles of which 33 were duplicates. Of the 54 articles left, ten were rejected due to irrelevance. This was due to a lack of focus on social sustainability in the supply chain and instead a focus on quality management (Chen *et al.*, 2014); supply networks (Sloan and O'Reilly, 2013); purchasing and supply (Msimangira, 2003); ethics (Svensson, 2009); disaster relief (Maon *et al.*, 2009); and environmental

sustainability (Chaabane *et al.*, 2011; Defee *et al.*, 2009; Murray, 2000; Ortas *et al.*, 2014; Pagell *et al.*, 2007). Additionally, five papers modelled the impact of CSR without including a definition or explanation of their social sustainability concept and were not deemed appropriate for this literature review (Cruz, 2013; Cruz and Matsypura, 2009; Cruz and Wakolbinger, 2008; Hsueh, 2014; Ni and Li, 2012).

This left a total of 39 articles for inclusion in the literature review. Table I shows the articles included in the systematic literature review ordered by journal. Table I indicates the focus of the article, whether they focus on social sustainability (Social sustainability); sustainability but differentiate between social and environmental sustainability: Sustainability – E&S); sustainability without separating social practices from environmental (Sustainability); CSR but differentiate environmental and social practices (CSR – E&S) and CSR without differentiating social practices (CSR). We also include the method used, whether or not they provide a social sustainability definition or scale development and if they have a supply chain focus.

Table I Articles included in the systematic literature review

	Authors	Date	Journal	Focus	Method	Social definition	Supply chain focus
1	Awaysheh & Klassen	2010	IJOPM	Social sustainability	Survey	x	x
2	Huq *et al.*	2014	IJOPM	Social sustainability	Multiple cases	x	x
3	Carter & Easton	2011	IJPDLM	Sustainability	Literature review	-	x
4	Carter & Rogers	2008	IJPDLM	Sustainability - E&S	Literature review	x	x
5	Perry & Towers	2013	IJPDLM	CSR - E&S	Multiple cases	x	x
6	Klassen & Vereecke	2012	IJPE	Social sustainability	Multiple cases	x	x
7	Lu *et al.*	2012	IJPE	CSR - E&S	Survey	x	x
8	Okongwu *et al.*	2013	IJPMM	Sustainability – E&S	Content analysis	x	x
9	Reefke & Trocchi	2013	IJPMM	Sustainability – E&S	Literature review	x	x
10	Wang & Sarkis	2013	IJPMM	Sustainability – E&S	Database analysis	x	x
11	Dai & Blackhurst	2012	IJPR	Sustainability - E&S	Modelling	x	x
12	Hall *et al.*	2012	IJPR	Sustainability	Multiple cases	-	x
13	Hollos *et al.*	2012	IJPR	Sustainability - E&S	Survey	x	x
14	Wu & Pagell	2011	JOM	Sustainability	Multiple cases	-	x
15	Foerstl *et al.*	2010	JPSM	Sustainability - E&S	Multiple cases	x	x
16	Giunipero *et al.*	2012	JPSM	Sustainability	Delphi	-	x
17	Reuter *et al.*	2012	JPSM	Sustainability	Survey	-	x
18	Bansal & McKnight	2009	JSCM	Sustainability	Literature review	-	x
19	Pagell & Wu	2009	JSCM	Sustainability - E&S	Multiple cases	x	x
20	Pagell *et al.*	2010	JSCM	Sustainability	Multiple cases	-	x
21	Pullman *et al.*	2009	JSCM	Sustainability - E&S	Survey & interviews	x	-
22	Reuter *et al.*	2010	JSCM	Sustainability - E&S	Multiple cases	x	x
23	Tate *et al.*	2010	JSCM	CSR - E&S	Content analysis	x	x
24	Thornton *et al.*	2013	JSCM	CSR - E&S	Survey	x	x
25	MacCarthy & Jayarathne	2012	PPC	Sustainability - E&S	Multiple cases	x	x
26	Marshall *et al.*	2014	PPC	Sustainability - E&S	Survey	x	x
27	Adebanjo *et al.*	2013	SCMIJ	CSR	Single case	-	x
28	Amann *et al.*	2014	SCMIJ	Sustainability - E&S	Content analysis	x	x
29	Andersen & Skjoett-Larsen	2009	SCMIJ	CSR - E&S	Single case	x	x
30	Ashby *et al.*	2012	SCMIJ	Sustainability - E&S	Literature review	x	x
31	Ayuso *et al.*	2013	SCMIJ	CSR - E&S	Survey	x	x
32	Ciliberti *et al.*	2009	SCMIJ	Social sustainability	Multiple cases	x	x
33	Gualandris *et al.*	2014	SCMIJ	Sustainability	Survey	-	x
34	Keating *et al.*	2008	SCMIJ	CSR - E&S	Single case	x	x
35	Lee & Kim	2009	SCMIJ	CSR - E&S	Survey	x	x
36	Lemke & Petersen	2013	SCMIJ	CSR - E&S	Interviews	x	x
37	Pedersen	2009	SCMIJ	CSR - E&S	Survey	x	x
38	Spence & Bourlakis	2009	SCMIJ	CSR - E&S	Single case	x	x
39	Tachizawa & Wong	2014	SCMIJ	Sustainability	Literature review	-	x

The main objective of the literature review papers is to understand the state of

current research in the supply chain with a unanimous verdict that social sustainability is ignored relative to environmental sustainability. The themes from the other papers are either what drives the adoption of sustainable supply chain management practices, the management of sustainability in supply chains, or the outcomes of sustainability practices. Although there is some research on the impact of sustainability practices less has been done on the drivers of sustainability. Only two papers have empirically tested the drivers of social sustainability practices (Awaysheh and Klassen, 2010; Hollos *et al.*, 2012), while a third (Reuter *et al.*, 2012) tested social issues as part of a holistic sustainability construct.

Research thus far has added to sustainable supply chain management (SSCM) theory and in particular social sustainability supply chain management and given us specific antecedents to practice adoption outside of the organisation (Awaysheh and Klassen, 2010; Reuter *et al.*, 2012) and within the firm from the purchasing function perspective (Hollos *et al.*, 2012). What is missing from this body of work is to understand if cultural orientation and strategic choice at the firm level impacts the adoption of social sustainability supply chain practices.

In an effort to synthesise and consolidate the literature review, we develop our research model and offer a typology of two classes of social sustainability supply chain practices adapted from classifications by Awaysheh and Klassen (2010), Hollos *et al.* (2012), Klassen and Vereecke (2012), Marshall *et al.* (2014), Reuter *et al.*, (2010) and Thornton *et al.*, 2013). We label these practices basic and advanced practices. Table II shows the characteristics of these practices.

2.3. Basic social sustainability supply chain practices

The majority of literature shows that basic social sustainability supply chain practices focus on the health and safety of workers in the supply chain (Ashby *et al.*, 2012; Ayuso *et al.*, 2013; Huq *et al.*, 2014; MacCarthy and Jayarathne, 2012; Spence and Bourlakis, 2009), also include codes of conduct to ensure human rights and worker conditions (Awaysheh and Klassen, 2010) and social accountability systems such as SA8000 (Ciliberti *et al.*, 2009). These practices involve monitoring the sustainability compliance of suppliers in the supply chain (Klassen and Vereecke, 2012; Marshall *et al.*, 2014). Many authors have identified that focal firms monitor their supplier's compliance with regulatory social sustainability and corporate social sustainability directives (Huq *et al.*, 2014; Klassen and Vereecke, 2012; Marshall *et al.*, 2014; Perry and Towers, 2013). Social sustainability supply chain monitoring practices are arms-length practices that are used to control and evaluate suppliers (Klassen and Vereecke, 2012). Such practices might focus on minimising risk to the focal company through inspection and control as suppliers who are inspected and audited are less likely to be involved in unsustainable practices and ultimately risk the reputation of the focal firm (Foerstl *et al.*, 2010; Reuter *et al.*, 2010).

The focus and scope of monitoring activities can either be on the customer, supplier, or both. For example, suppliers can be tasked with reporting the safety of their products, materials, components or processes while customers assess the use and misuse of products. Monitoring can be identified as a number of activities including using public documentation in order to judge regulatory compliance, assessing suppliers' conformance to company-specific sustainability practices (MacCarthy and Jayarthne, 2012), and auditing suppliers' sustainability performance (Klassen and Vereecke, 2012; Min and Galle, 2001). One study also found monitoring to have a dark side with suppliers using mock compliance or shifting poor labour practices outside the organisation (Huq *et al.*, 2014).

Several studies have examined sustainability systems as a supply chain sustainability practice (Ciliberti *et al.*, 2009; Marshall *et al.*, 2014). Sustainability management systems are complex systems of best practice that are implemented, often with certification, in order to give a comprehensive structure to sustainability practices in order to minimise impact and to prevent reputational damage (Lee and Kim, 2009; Wiengarten *et al.*, 2013). Recent research has shown that health and safety management systems such as OHSAS 18001 are regarded as a way for companies to improve their performance (Tate *et al.*, 2010). In sustainable supply chains, customers encourage or reward suppliers who gain certification, such as social accountability system SA8000 and OHSAS18001 certification, as part of evaluation and selection criteria (Cilibreti *et al.*, 2009; Pagell and Wu, 2009).

In summary, basic social sustainability supply chain practices involve both monitoring and management systems and are based on evaluating the sustainability processes of suppliers.

2.4. Advanced social sustainability supply chain practices

Advanced social sustainability supply chain practices focus on stakeholder and community benefits in the supply chain through the development of new products and processes (Klassen and Vereecke, 2012) or by redefining the supply chain (Pagell and Wu, 2009). Advanced practices include new products and processes focused on fair trade arrangements (Ashby *et al.*, 2012; Amann *et al.*, 2014; Hollos *et al.*, 2012; Pullman *et al.*, 2009) and engaging the supply chain with non-traditional partners to provide social programmes such as education or health-care to ensure community benefits (Carter and Rogers, 2008; Dai and Blackhurst, 2012; Huq *et al.*, 2014; Keating *et al.*, 2008; Lee and Kim, 2009; Lu *et al.*, 2012; Klassen and Vereecke, 2012; Tate *et al.*, 2010). These practices go beyond monitoring and compliance, to making fundamental changes in the supply chain (Klassen and Vereecke, 2012; Marshall *et al.*, 2014; Perry and Towers, 2013).

Researchers found that design changes to reduce impact that are demanded by regulatory bodies are unlikely to have any economic benefit: only proactive companies will seek and implement fundamental changes to the design of their products and processes and will use this as a learning opportunity to improve performance over the long-term (Perry and Towers, 2013; Sharma and Henriques, 2005). The literature shows that developing new products and processes with a focus on social sustainability or that benefit secondary stakeholders to the firm (including communities and society) can help develop new markets for existing products and services (Awaysheh and Klassen, 2010). Companies also state in their annual reports that working with suppliers to improve product and process designs to increase benefits for society enhances performance (Tate *et al.*, 2010).

Sustainable supply chain strategy redefinition is a fundamental redefinition in the business model of the supply chain towards social outcomes: this redefines and reconceptualises the supply chain not only in who the members of the supply chain are but also what it does from a social systems perspective (Bansal and McKnight, 2009; Pagell and Wu, 2009).

Sharma and Henriques (2005) propose the redefinition of the business as the highest level of sustainability practice maturity, due the strategic nature of the practice and the impact the strategy makes on not just the focal firm but the entire supply chain. Furthermore, new business models based on social sustainability open access to new markets and lead to sustainable competitive advantage (Klassen and Vereecke, 2012; Spence and Bourlakis, 2009).

Focusing the supply chain on social innovation involves embracing new members such as NGOs and community groups as part of the supply chain decision-making process (Hall *et al.*, 2012; Pagell and Wu, 2009). For example, companies focus attention on communities as a means to improve performance and enhance the reputation of the supply chain (Tate *et al.*, 2010). This focus was predicted by Godfrey *et al.*, (2009), as a secondary stakeholder benefit. For example, community projects would give insurance-like benefits to the financial performance of organisations. These projects act as moral capital for the organisation. Companies engage in socially-responsible practices to protect both their reputation and the image of their brands (Awaysheh and Klassen, 2010; Lemke and Pederson, 2013). Additionally, redefining the supply chain through higher levels of transparency, where social sustainability information is made available to the public, leads to an increase in responsible practices (Awaysheh and Klassen, 2010) and ultimately market advantage. Characteristics of basic and advanced practices are shown in Table II.

Table II Characteristics of basic and advanced social sustainability supply chain practices

Basic practices	Advanced practices
• Monitoring suppliers' health and safety compliance	• Product or process redesign focused on benefiting workers
• Auditing suppliers' sustainability compliance	• Product or process redesign focused on reducing health risks for consumers
• Ensuring supplier's OSHAS 18001 certification	• Product or process redesign focused on fair trade
• Ensuring suppliers' SA8000 certification	• Supply chain strategy redefinition focused on fair trade
• Developing work/life balance systems with suppliers	• Supply chain strategy redefinition focused on working with the community
• Developing ethical code of conduct with suppliers	• Supply chain strategy redefinition focused on disclosure of social sustainability data

2.5. Sustainability culture and social sustainability supply chain practices

Very few studies have looked at sustainability culture as an antecedent to social sustainability practice adoption. Sustainability culture is defined as a company's recognition of the impact of the company's activities on society and communities and the need to minimise it, which translates into a philosophy and values that drive the decision-making process of the firm (Fraj-Andrés *et al.*, 2009; Pagell and Wu, 2009). Values that embed sustainability issues are key to developing sustainable cultures and sustainable cultures are reflected in the practices adopted (Pagell and Wu, 2009). Cultures that are sustainability-oriented provide an atmosphere where everyday conversations have a sustainability angle and decisions made in the organisation take a triple bottom line rather than just an economic view. They also have a guiding vision that encompasses sustainable benefits, which are not found in traditional supply chains (Pagell and Wu, 2009).

However, most previous empirical studies focus on sustainability as a holistic concept or on environmental sustainability, finding that organisations with sustainability cultures are more likely to adopt sustainability practices above and beyond regulation (Fraj-Andrés *et al.*, 2009; Pagell and Wu, 2009; Banerjee, 2002). For example, sustainability culture was shown to have a direct positive relationship on the adoption of green supply chain practices including green purchasing and eco-design (Wu *et al.*, 2012). Additionally, conceptual development of sustainability culture predicted that sustainability culture would lead to the adoption of sustainability practices (Linnenluecke and Griffiths, 2009). While Pagell and Wu, 2009, in their study of ten

supply chain sustainability exemplars, found sustainability culture to be an important driver of sustainability practice adoption.

Research on social supply chain sustainability is generally lacking but in one study (Weaver *et al.*, 1999) a social sustainability culture led to an embedded ethics programme, while pressure from outside the firm to adopt an ethics programme, led to resistance and showboating. This means that institutional pressures may not be enough to explain the adoption of social sustainability supply chain practices as firms make a choice about decoupling their espoused and enacted sustainable supply chain activities (Grosvold *et al.*, 2014).

Hollos *et al.* (2012) examined the drivers and outcomes of social sustainability practices with firm performance. They found that a strategic purchasing and supply management orientation drives supplier sustainability cooperation, which in turn drives the adoption of social practices. Furthermore, Reuter *et al.* (2012) ask how managers' reactions to different stakeholders influences supplier selection decisions. They find that where managers focus on shareholders they favour cost over sustainability criteria, while a focus on the public favours sustainability and an ethical culture. Finally, a focus on the customer has a negative impact on sustainability prevalence. This means that stakeholder and cultural orientation is an important driver of the adoption of sustainability practices.

2.5.1. Sustainability culture and basic practices

Once a firm has developed a sustainability culture, it is likely to first engage in implementing sustainability practices within its own organisation (Linnenluecke and Griffiths, 2009). These practices, however, are not only embedded internally but also across the supply chain (Klassen and Vereecke, 2012). Although there are few studies of specific practices directly influenced by sustainability culture, one study found that a focal firm's interest in key suppliers' basic compliance with sustainability practices was directly influenced by the sustainability culture of the focal firm (Fraj-Andrés *et al.*, 2009). Therefore, we suggest that a high sustainability culture is likely to be associated with a high level of activity related to the control and evaluation of suppliers' social sustainability supply chain practices, while a low sustainability culture will result in no monitoring practices as the focal firm is less concerned with the risks associated with supplier's social sustainability supply chain activities.

In the environmental sustainability literature, companies with a strong sustainability culture focus organisational members on specific sustainability issues (Bansal, 2003). One of the most common sustainability practices adopted by firms is implementing an environmental management system such as ISO 14001 (Wiengarten *et al.*, 2012) and once established, buyers pressure their suppliers to adopt their own sustainability management systems (Baden *et al.*, 2009). Using both internal and external environmental management systems organisations benefit from both credibility and environmental outcomes (Darnall *et al.*, 2008). Although research is lacking in the social sustainability area we hypothesise a similar relationship to environmental management systems.

Although there are no studies, to our knowledge, exploring the antecedents of social sustainability management systems, studies show the adoption of social sustainability practices follow from similar antecedents to environmental practices (Pagell and Wu, 2009). The only study of social sustainability certification is by Ciliberti *et al.* (2009). These researchers investigated the implementation of SA8000 and the outcomes of implementation rather than the antecedents. They found that implementation leads to trust and a reduction of information asymmetry. They also stated that one of the

reasons for getting the certification was to show their commitment to sustainability issues. Additionally, Darnall *et al.* (2008) found that companies adopted sustainable management systems due to specific cultural orientation and commitment. We hypothesise that:

Hypothesis 1a: Sustainability culture is positively related to implementing basic social sustainability supply chain practices.

2.5.2. Sustainability culture and advanced practices

Sustainable supply chain theory has directly linked sustainability culture to sustainable new product and process development and supply chain strategy redefinition. Taking a theory-building perspective, Pagell and Wu, (2009), found that exemplar sustainability companies all had a sustainability culture. This to led to triple bottom-line thinking (economic, environmental and social) that permeated the beliefs and decisions of the organisation and extended to the rest of the supply chain. They found that a sustainability orientation led to guiding principles, at a strategic level, and dialogues, at an individual level, guiding decisions and actions including sustainable new product and process development (Pagell and Wu, 2009). This finding has still to be tested empirically.

Supply chain strategy redefinition is such an alteration in the business model and raison d'etre of the firm that it has to be led by a committed firm that is focused on sustainability efforts (Sharma and Henriques, 2005). One study concluded that changing the strategy of the supply chain to focus on eco-centricity, where the firm is regarded as part of the community and willing to protect and benefit the community, occurs when companies have a sustainability culture (Pagell and Wu, 2009). Another study found that highly committed companies focus on social issues and implement radical social innovation that opens up new markets and improves performance (Klassen and Vereecke, 2012). Social innovation in this instance included partnerships with non-traditional supply chain members, providing education and healthcare to the local community and protecting community interests.

What is clear is firms that are more oriented towards a sustainability value system are more likely to change their products, supply chain and industrial ecosystem (Sharma and Henriques, 2005). We suggest that a sustainability culture will be associated with a propensity to drive a fundamental reorientation of the entire supply chain business model towards a social sustainability focus while a low social sustainability culture should lead to a much more incremental and conservative level of social sustainability activity across the supply chain. As such we hypothesise:

Hypothesis 1b: Sustainability culture is positively related to advanced social sustainability supply chain practices.

2.6. Entrepreneurial orientation

Supply chain studies have found that the culture of the firm is important for implementing supply chain management practices (Tummala *et al*., 2006; Cadden *et al.*, 2013) and supply chain sustainability practices (Preuss, 2009; Walker and Jones, 2012). While we begin with the argument that firms with a strong sustainability culture are positively predisposed to engage in all social sustainability supply chain practices, advanced practices also call for readiness and willingness of firms and managers to develop close relationships with suppliers (Gimenez and Tachizawa, 2012; Shub and Stonebaker, 2009) to sense and seize new supply chain opportunities, and to reconfigure

their supply chain operations in response to such opportunities. This suggests a view of managers as proactively engaging with and influencing their environment through social interaction. Defined as the strength of a firm's impetus to innovate, take risks, and aggressively pursue new opportunities (Dess and Lumpkin, 2005), entrepreneurial orientation contributes to a firm's readiness and willingness to engage in social sustainability supply chain practices, particularly those that entail deviating from established practices. So, while a sustainability culture provides a valuable foundation for all practices, when combined with an entrepreneurial orientation, firms are likely to influence other supply chain members' social sustainability practices and embrace new product and process development and strategy redefinition around social issues. Thus, we enrich prior explanations of social sustainability supply chain practices by examining the conjoint influence of sustainability and entrepreneurial orientation.

Entrepreneurial orientation is a proxy measure of managerial strategic choice approach (Child, 1972; 1997), typically viewed as a multidimensional construct that is used to explain the mind-set of firms pursuing new ventures. Entrepreneurial orientation is best represented as a lasting direction of thought that translates into a firm-level disposition to act in a certain predetermined entrepreneurial manner (Covin and Lumpkin, 2011). As a concept it views strategy making as a pattern of actions or decision-making styles that is generalisable across organisations (Dess and Lumpkin, 2005). Entrepreneurial orientation captures a range of dimensions and components including proactiveness, risk taking, competitive aggressiveness, and a tendency towards independent and autonomous action (Miller, 1983; Covin and Lumpkin, 2011). These dimensions permeate the decision-making style and organising practices of a firm's members, work together to enhance a firm's entrepreneurial orientation and performance, and have an important influence on the overall strategic posture of a firm (Covin and Slevin, 1991).

The argument we present here is that a firm with a strong entrepreneurial logic is deemed to exhibit entrepreneurial behaviour (Covin and Lumpkin, 2011). A firm with a strong entrepreneurial orientation will be more likely to moderate the relationship between sustainability culture and the sustainability practices it adopts by engaging in changes in its supply chain through product-market innovation, undertaking relatively risky behaviour, and adopting a first-mover approach to developing and adopting proactive innovations (Miller, 1983). Following this line of argument, we propose that entrepreneurial orientation will moderate the impact of sustainability culture, with a strong entrepreneurial orientation manifesting itself in the adoption of riskier and more proactive social sustainability practices. In this way a focus on entrepreneurial orientation should provide an important window into the preferences and choices made by decision makers.

For basic social sustainability supply chain practices, Foerstl *et al.* (2010) and Reuter *et al.* (2010) argue that the ability to assess the risk of the supplier is a dynamic capability. Gaining capabilities is attractive to the entrepreneurial firm in order to capture competitive advantage. Foerstl *et al.* (2010) conclude that these monitoring capabilities become resource-picking advantages for the customer firm. If the customer has a sustainability culture and has an entrepreneurial orientation, it is proactive and innovative, this will sway the supply chain manager's decision to adopt basic social supply chain practices. Therefore we propose:

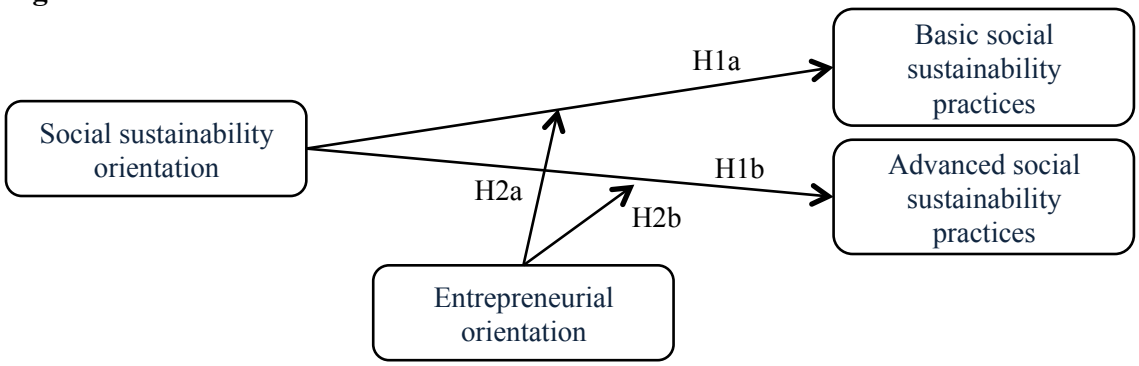
Hypothesis 2a. The path between sustainability culture and basic social sustainability supply chain practices will be moderated by entrepreneurial orientation.

In the social sustainability literature, one study by Hollos *et al.* (2012) looked at the impact of purchasing strategic orientation towards the adoption of sustainable supplier cooperation and social sustainability practices. They found that a strategic purchasing and supply management orientation positively impacts sustainable supplier cooperation and social practices and is a clue that the same may occur at the firm level. They posit that the more the end customer demands are taken into account at a strategic level the more likely a company is to adopt sustainability practices as customers drive sustainability, a finding echoed by Reuter *et al.* (2012). Furthermore, both Klassen and Vereecke (2012) and Pagell and Wu (2009) state that exemplar sustainable supply chain companies will look to open new markets through radical new products and process and redefining the supply chain. If the organisation is more socially sustainable, and if the managers of the organisation are implementing risky or first-mover strategies to make their supply chain more socially sustainable, this will lead to greater advanced practice adoption. As such we hypothesise:

Hypothesis 2b. The path between sustainability culture and advanced social sustainability supply chain practices will be moderated by entrepreneurial orientation.

The model and the hypothesised relationships are given in Figure 1.

Figure 1 Model of the research.



3. Methods

3.1. Sample and data collection

We tested our hypotheses using a survey of managers with supply chain sustainability responsibility in companies based in Ireland. The unit of analysis for our research was the supply chain relationship, which we surveyed to understand the practices adopted across the supply chain (Cao and Zhang, 2011). A number of researchers (Giunipero *et al.*, 2012; Hollos *et al.*, 2014; Lu *et al.*, 2012) also adopted this method of investigating sustainable supply chain practices. Chen and Paulraj (2004) stated 'supplier management initiatives and relationships form the core of supply chain management' (Chen and Paulraj, 2004: p. 127).

An initial list of 1,000 companies was drawn from an established database where all data is verified annually. We selected companies in adherence with three main criteria, company size (50 employees minimum); job function (supply chain manager or equivalent); and industry type. We chose to include medium (50-249 employees) and large-sized companies (>250 employees), as defined by the European Commission (2014), as a method of gaining better insight into sustainable supply chain practices. It has been observed that many small enterprises do not have the resources or capabilities

to implement social sustainability practices (Awaysheh and Klassen, 2010). Additionally there is support in the literature for the claim that size does in fact matter and that larger companies can be more inclined to address CSR issues than smaller ones (Perrini *et al.*, 2007; Elsayed, 2006).

To test our hypotheses our target sample was selected to cover nine industries in Ireland based on the North American Industry Classification System 2007 (NAICS) as outlined in Table III. We chose a cross section of industries to allow for broad application of our findings. As Walton *et al.* (1998) observed, focusing on a specific industry can limit the generalisability of a study and Liu *et al.* (2010) stated that studying firms in manufacturing and service industries reduces noise caused by industry differences. This choice of both manufacturing and service supply chains also ensures results will be directly comparable to future studies (Carter and Easton, 2011). Additionally, the choice of locating the survey in a country whose regulations are the same nationwide and continent-wide removes the effect of differing regulations (Pagell and Gobeli, 2009). As Ireland is an European Union (EU) country it is bound by EU legislation and confronted with strict sustainability laws (Handfield *et al.*, 2002).

Our sample size was reduced upon examination of the dataset received. Duplicates were removed as well as companies whose primary industry did not adhere to our NAICS code specifications. Following this a sample size of 883 companies was obtained.

3.2. Questionnaire administration

We opted for a telephone survey to improve and ensure response rates. The survey was administered between August and September 2012. This helped with the identification of the key informant who was the supply chain sustainability expert in the organisation (usually supply chain, purchasing or operations director or manager) (Cao and Zhang, 2011; Paulraj *et al.*, 2008; Singh *et al.*, 2011). This type of pre-screening leads to better response rates (Cycyota and Harrison, 2006).

We also offered incentives in the form of a full report on completion of the survey and the chance to win a cash voucher, as suggested by Dillman (1978). All calls were made within three weeks and contact was attempted up to a maximum of ten calls to ensure the sample was used completely and correctly (Groves, 1990). The sample size was reduced during the interview process as two companies were no longer trading, three had no dial tone, two were no longer in service and another 13 companies proved to be duplicates. This left a final sample population of 863.

3.3. Social desirability

To avoid a common-rater effect or social desirability, a confidentiality statement was read out at the beginning of the interviews to assure the participant that all data will be treated according to data management best practice (Zhu *et al.*, 2013) and the participant nor the company would not be identified. Respondents were asked to answer questions with regard to the company rather than on a personal level in another effort to reduce social desirability bias (Carter and Jennings, 2004)

3.4. Response rate

The number of complete responses received was 156, giving us an acceptable response rate of 18%. The questionnaire respondents were chief executive officers (.64%), directors (8.33%), supply chain, logistics, purchasing, operations (51.92%) and other managers who were responsible for supply chain sustainability in their company (39.11%). 90% of respondents had held their current role for over two years and on

average had been in that position for 8.2 years. Respondents had spent on average 17.4 years working within their present industry and 14 years with their current employer. High-ranking and established informants tend to be a more reliable source of information (Miller and Roth, 1994)

Respondent companies as shown in Table III are representative of the industrial base of Ireland with an under-representation of retail and wholesale businesses and an over-representation of manufacturing groups, although previous studies have suggested that the adoption of supply chain practices in the manufacturing sector as well as the increased propensity to outsource make it a useful industry to assess adoption and related performance of practices (Chavez *et al.*, 2012). Table IV provides a further illustration of respondents' profiles, which demonstrate a good cross-section of companies. Response rates were high with less than 1.5% of all responses incomplete and mainly pertained to revenue items due to the perceived sensitivity of questions relating to financial information (Tourangeau and Yan 2007).

Table III Industry codes and sub-industries

NAICS Code	Industry	Number of respondents	% respondents	% in database
22	Utilities	7	4.5	0.7
23	Construction	6	3.9	5.9
31	Manufacturing	83	53.2	26.4
42	Wholesale trade	13	8.3	23.7
44-45	Retail trade	10	6.4	31.7
48	Transportation and warehousing	29	18.6	2.7
49	Postal services, couriers and messengers, and warehousing and storage	6	3.9	4.1
517	Telecommunications	1	0.6	2.9
562	Waste management and remediation services	1	0.6	1.9
	Total	156	100	100

Table IV Profile of sample companies

		Frequency	%
Company Age (n=156)	0-5 years	7	4.5
	5-25 years	32	20.5
	25-50	64	41.0
	50-100 years	28	17.9
	100+ years	25	16.0
HQ/Subsidiary (n=154)	HQ	74	47.4
	Subsidiary	80	51.3
Employees numbers (n=155)	<100	36	23.1
	101-1,000	48	30.8
	1,001-10,000	32	20.5
	>100,000	15	9.6
Global sales revenue (€) (n=114)	<10mn	22	14.1
	<100mn	36	23.1
	<1bn	16	10.3
	<10bn	27	17.3
	>10bn	13	8.3

3.5. Non-response bias

While conducting our telephone interviews we were presented with an initial opportunity to assess non-response bias. Although the phone survey has many advantages, the high rate of answering machines was a disadvantage. Messages were left in all cases but the call back rate was very poor. We received 132 refusals, 44 because of company policy and 88 citing that they were too busy. Appointments were made with hundreds of companies but in the majority of cases the relevant contact person again was too busy when re-contacted at the appointed time. In each case, we could find no reason to suggest that these respondents would have answered the questions differently from those that did respond (Singh *et al.*, 2011). However before undertaking further analysis, additional tests for non-response bias were conducted. Due to the short data collection period of this study, all responses were collected within three weeks. We tested non-response bias by comparing the responses that were returned early (responses in the first two weeks n=108) and responses that were returned later (responses received within the third week mainly arising from repeated calls n=48) (Armstrong and Overton, 1977). A t-test of differences was conducted on key variables and no statistically significant differences were identified at $p<0.05$.

3.6. Measures

Based on an extensive literature review we identified suitable, previously tested and validated constructs to include in our model. Respondents were asked to indicate their level of agreement on a 7-point Likert-scale with each item ranging from 1, 'strongly disagree/not at all' to 7, 'strongly agree/fully implemented or developed'. All items, including dropped items, are shown in Appendix 2.

Dependent Variable: Two second-order social supply chain sustainability practice constructs were used to measure the dependent variable. These items were adapted from established scales validated by Marshall *et al.* (2014) and developed from Awaysheh and Klassen (2010), Klassen and Vereecke (2012) and Vachon and Klassen (2006). Basic social sustainability practices incorporate monitoring and management system scales, both scales comprise of three items each. Drawing on concepts from previous studies monitoring practices covers basic elements such as compliance with health and safety requirements (Ashby *et al.*, 2012; Ayuso *et al.*, 2013; Huq *et al.*, 2014; MacCarthy and Jayarathne, 2012; Spence and Bourlakis, 2009) and supplier's sustainability compliance (Klassen and Vereecke, 2012; Marshall *et al.*, 2014). Management systems are a development beyond monitoring and cover practices such as the obtaining of OHSAS 18001 or SA8000 certification as discussed by Ciliberti *et al.* (2009) or designing work/life balance systems (Marshall *et al.*, 2014; Pfeffer, 2010). Advanced social sustainability practices combine social new product and process development and social supply chain strategy redefinition practices. Social new product and process development, informed by Klassen and Vereecke's (2012), was assessed using a three item scale and measure the extent the focal company worked with suppliers toward products or processes focused on benefitting workers in the supply chain, fair trade and reducing health risks for consumers. This scale encapsulates the fundamental design changes as evidenced by Pagell and Wu (2009) and Sharma and Henriques (2005) and takes the proactive nature of these practices into account (Perry and Towers, 2013; Sharma and Henriques, 2005). Building on Pagell and Wu's (2009) findings social supply chain strategy redefinition practices were also measured on three-item scale. Items included fair margins in the supply chain, working with the

community and the disclosure of social sustainability data to the public (Awaysheh and Klassen, 2010).

Independent Variable: Using previously established items and scales (adapted from Fraj-Andrés *et al.*, 2009) we measured the extent to which the focal firm pursues social sustainability culture within its supply chain. The questionnaire includes a seven-item sustainability culture construct, incorporating educating employees on the importance of social sustainability and prioritising social sustainability initiatives, activities and values. Shown in Appendix 2.

Moderator: The moderating variable, entrepreneurial orientation, shown in Appendix 2, was assessed via a seven-item scale adapted from Lumpkin and Dess (2001). This scale includes questions regarding proactiveness, such as your firm initiating actions within your industry; innovation incorporating items around new products and services; as well as the propensity for risk taking.

Controls: In order to account for other theoretically predicted variables, we chose to control for four factors: institutional pressures, industry, company revenue and company age. Institutional pressures consist of regulatory coercive (government or regulatory pressure), mimetic legitimacy (mimicking other companies) and normative pressures (professional norms) as the drivers for implementing sustainability practices are frequently outside the company and induced through institutional pressure (Tate *et al.*, 2010; Waddock, 2008; Wu *et al.*, 2012; Zhu and Sarkis, 2007) or external stakeholder pressure (Reuter *et al.*, 2012; Sharma and Henriques, 2005). We also controlled for industry groups based on the nine main categories listed in Table III to control for certain industry-specific factors such as differences in supply chain length and complexity (Awaysheh and Klassen, 2010; Sánchez and Pérez, 2005). We included revenue (natural logarithm), which can be indicative of size and can impact the adoption of practices (Awaysheh and Klassen, 2010; Grant *et al.*, 2002; Klassen, 2000); and finally company age (natural logarithm), as newer companies may not have the resources or experience to implement sustainability practices (Wiklund, 1999).

4. Results

4.1. Confirmatory factor analysis: Validity and reliability

We followed Anderson and Gerbing's (1988) two-step procedure to empirically test the hypothesised relationships between the focal constructs. In the first step we tested the reliability, validity and unidimensionality of items and variables via confirmatory factor analysis. Items that resulted in a standardised coefficient of less than 0.70 were dropped from the measurement scales in order to obtain a good fit of the model. These dropped measurement variables were not used in the further analysis but are reported in Appendix 2 and highlighted as 'dropped items'. The descriptive statistics as well as the standardised factor loadings of the first and second-order latent variables are presented in the Appendix 1. All path loadings are significant at the $p < 0.01$ level and exceed the critical threshold of 0.5. No cross-loadings could be detected. More importantly, the results of the CFA in Table V suggest that the proposed measurement model has a good overall fit.

Table V Confirmatory factor analysis overall model fit

Model fit criterion	Value	Acceptable range	Source
χ^2	536.952	N/A	
Degrees of freedom (df)	289	N/A	
χ^2/df	1.858	≤ 2.0	Tabachnick and Fidell (2007)
RMSEA	0.074	≤ .07	Steiger (2007)
CFI	0.928	≥ 0.90	Hu and Bentler (1999)
TLI	0.919	≥ 0.90	Bentler and Bonnet (1980)
IFI	0.928	≥ 0.90	Bollen (1989)
SRMR	0.056	≤ .08	Hu and Bentler (1999)
CI	26.8	≤ 30	Cohen et al. (2003)

Following Kline's (2005) recommendation we have reported on the Chi-Square test, the RMSEA, SRMR (as measures of absolute fit indices) as well as the CFI (relative fit indices). We also reported on the Tucker-Lewis Index (TLI) because it estimates the model fit with parameters and the Incremental Fit Index (IFI) because it is also relatively insensitive to sample size.

Chi-square is a traditional method for evaluating model fit. Given our sample size we reported on the relative chi-square (x2/df) as this measure minimises the impact of sample size, our result of 1.858 is close to Tabachnick and Fidell (2007) recommendation of 2.0. RMSEA is regarded as 'one of the most informative fit indices' (Diamantopoulos and Siguaw, 2000: 85) as it is sensitive to the number of estimated parameters. At 0.074 it is close to the boundaries of the more stringent upper limit of 0.07 suggested by Steiger (2007) indicating a good model fit. The SRMR provides the standardised difference between the observed correlation and the predicted correlation. With a value of 0.056 this is within the acceptable value of 0.08 advised by Hu and Bentler (1999). We reported on the Comparative Fit Index (CFI) because this measure takes sample size into account (Byrne, 1998) and is a good measurement even when sample size is small. Our TLI is greater than the Bentler and Bonnet (1980) recommended value of 0.90, indicating a good fit. The IFI value is greater than .90, which is regarded as acceptable. We excluded measures such as the GFI and AGFI due to their sensitivity to sample size (Sharma *et al.*, 2005).

Fit indices suggest a good model fit, nonetheless, we examined the variance inflation factors of each of the predictors in our models, which ranged from 1.043 to 2.094, suggesting the absence of multi-collinearity (Neter *et al.*, 1996). Additionally, the Condition Index (CI), another index of the extent of collinearity, was less than 30, suggesting no significant incidence of collinearity (Cohen *et al.*, 2003).

Scales were tested for internal reliability (CR) and Average Variances Extracted (AVE) and exceeded the accepted threshold of 0.7 and 0.5 (Bagozzi and Yi 2012). The means and standard deviations are reported in Appendix 1. Table VI presents the correlations among the variables. The diagonal in Table VI shows the square root of the AVE for each construct. This is greater than the other cross-correlations supporting the discriminant validity of the measures. The Maximum Shared Variances (MSV) and Average Shared Variances (ASV) are smaller than the average variance extracted for each construct, providing additional evidence for the discriminant validity of the measures.

Table VI Descriptive statistics

	CR	AVE	MSV	ASV	1	2	3	4

Basic social sustainability practices	0.851	0.741	0.624	0.343	*0.861*			
Advanced social sustainability practices	0.864	0.760	0.624	0.390	0.790	*0.872*		
Social Sustainability Culture	0.960	0.773	0.315	0.286	0.532	0.561	*0.879*	
Entrepreneurial Orientation	0.873	0.501	0.260	0.205	0.348	0.482	0.510	*0.708*

The diagonal shows the square root of the AVE

Finally, we tested for common method variance by comparing the proposed measurement models to a one-factor model. As expected the one-factor model showed significantly inferior fit statistics in comparison to our model (CFI = 0.50; TLI = 0.42; RMSEA = 0.19; $\chi 2$/df (1981.41/299) = 6.63). These results suggest that the likelihood of common method variance is low.

4.3. Hypothesis testing

We tested our hypotheses using hierarchical regression analysis, the results of which are shown in Table VII. This research intends to investigate not only if sustainability culture positively affects the adoption of basic and advanced social sustainability supply chain practices, but also if sustainability culture and entrepreneurial orientation interact. The research investigates whether entrepreneurial orientation can act as a moderator in the sustainability culture-social practice adoption relationship. Thus hierarchical regression allows us to specify a fixed order of entry for variables in order to test the effects of certain predictors, independent of the influence of others, and to test for interactions.

Table VII Hierarchical regression results

	Model 1 Basic social sustainability supply chain practices		**Model 2 Advanced social sustainability supply chain practices**	
	β	ΔR^2	β	ΔR^2
Step 1: Controls		.257***		.322***
Social regulatory coercive	.051		-.019	
Social mimetic legitimacy	.121		.367**	
Social normative pressures	.253*		.152	
Groups	.255**		.068	
Revenue (ln)	.280**		.228**	
Company age (ln)	-.034		.107	
Step 2: Main Effect		0.071**		.063**
Sustainability culture (SOS)	.33**		.31***	
Step 3: Moderator Effect	.058			.041**
Entrepreneurial orientation (EO)		0.002	.242**	
Step 4: Interaction Effect	-.035			.022*
Sustainability culture (SO) x Entrepreneurial orientation (EO)		0.001	.159*	
R^2	.33		.45	
F	5.453***		9.011***	

N = 156. Standardised regression parameters are presented

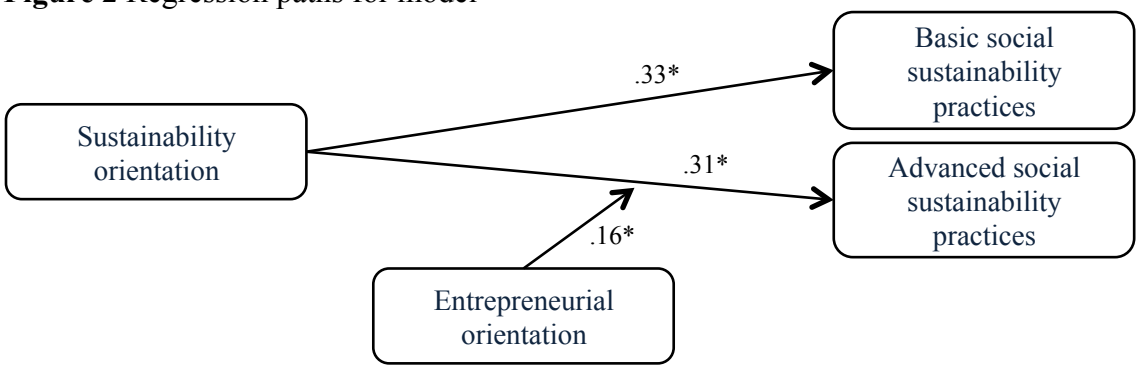
*** p < 0.001 ** p < 0.01 * p < 0.05

All variables were standardised prior to conducting the regression analyses (Cohen *et al.*, 2003). In each model, we entered our variables in four steps. In step 1, and for all models, we regressed adoption practices on each of the six control covariates:

institutional pressures, industrial groups, revenue (natural logarithm), and company age (natural logarithm). In step 2, and for all models, we regressed adoption practices on the main explanatory variable, the sustainability culture scale. In step 3, we regressed adoption practices on the main effect of the moderator, entrepreneurial orientation. Finally, in step 4, we regressed adoption practices on the cross-product interaction term of sustainability culture and entrepreneurial orientation. The standardised regression coefficients (β), the overall variance explained (R^2) and the incremental variance explained (ΔR^2) are presented in Table VII.

The R^2 of the models (which captures variance explained in the dependent variable) ranges from 0.33 for basic social sustainability practices ($p > .05$) to 0.45 for advanced social sustainability practices ($p < .05$). Evidence of moderation exists when interaction terms account for significant incremental (step) variances in a dependent variable, as signified by the value of the β coefficients. For example, for every one standard deviation increase in sustainability culture, adoption of basic social sustainability practices increases by 0.33 standard deviations.

Figure 2 Regression paths for model



* $p < 0.05$

The results of the hypotheses testing are shown in Figure 2. Results regarding our control variables indicate that for basic practices institutional normative pressures, industry groupings and revenue were significant. For advanced practices institutional mimetic pressures and revenue were significant. Company age was not significant.

Hypothesis 1a and 1b predicted that sustainability culture would be positively associated with basic social sustainability practices and advanced social sustainability practices. Sustainability culture is positively associated with basic practices ($\beta = 0.33$, $\Delta R2 = 0.07$, $p < 0.01$) and advanced practices ($\beta = 0.31$, $\Delta R2 = 0.063$, $p < 0.01$), providing support for Hypothesis 1a and 1b.

We next sought to assess the moderating effect of entrepreneurial orientation on the association of sustainability culture and basic social sustainability supply chain practices and advanced social sustainability supply chain practices.

To assess the moderating effect of entrepreneurial orientation, variables were entered into the regression equation following procedures set out by Baron and Kenny (1986). Hypothesis 2a, which predicted that the path between social sustainability culture and basic social sustainability supply chain practices will be moderated by entrepreneurial orientation was not supported as evidenced by the small and statistically insignificant interaction terms. Hypothesis 2b predicted that the path between social sustainability culture and advanced social sustainability supply chain practices would be moderated

by entrepreneurial orientation, which was supported ($\beta = 0.16$, $\Delta R2 = 0.02$, $p < 0.05$).

4.4. Robustness

Because the cross-sectional nature of our design limits the extent to which we can infer causality, we performed an additional analysis to mitigate any potential claims of reverse causality. Following procedures recommended by Landis and Dunlap (2000), we created a model in which we regressed sustainability culture onto the interaction of entrepreneurial orientation and advanced practices. If reverse causality were at play then we would expect that entrepreneurial orientation would also moderate the effects of advanced practices on sustainability culture. The interaction of advanced practices and entrepreneurial orientation was not statistically significant in predicting sustainability culture ($\beta = 0.27$, $p > 0.10$), and concerns about reverse causality are partly, albeit not entirely, alleviated.

5. Discussion

Much of the current literature on sustainable supply chains focuses on environmental sustainability. This paper adds to the SSCM literature by examining the effect of culture and entrepreneurial orientation on the adoption of social sustainability supply chain management practices. In a departure from the current social sustainability supply chain literature, which looks at structural or external forces (Awaysheh and Klassen, 2010; Reuter *et al.*, 2012) or the purchasing function (Hollos *et al.*, 2012) we examined the internal culture and decision-making orientation of the firm and their joint impact on the choice of social sustainability supply chain practice.

The results of our control variables suggest that, as predicted, institutional pressures matter (Tate *et al.*, 2010; Waddock, 2008). Normative pressure, from professional norms or requirements, is significant for basic practice adoption. Mimetic pressure, imitating competitor's behaviours, is significant for advanced practices indicating that companies look to their peers to emulate the adoption of socially new products and supply chains in order to achieve competitive advantage (Foerstl *et al.*, 2010). It is interesting that coercive pressure was not significant perhaps indicating that social supply chain practices have gone beyond regulatory pressure.

Revenue was significant for both sets of practices. Firms with higher revenues have more money to invest in sustainability practices and this is necessary due to the perceived high cost of initial investment in sustainability practices (Guinipero *et al.*, 2012). Finally, industry grouping was significant for basic practices but not advanced practices. Our sample had both service and manufacturing companies involved and the distinction may indicate that industry groupings matter when it comes to monitoring their supply chains (Tate *et al.*, 2010). This was not significant for advanced practices, which may signal that companies are adopting advanced practices at a similar pace regardless of industry. Contrary to previous findings (Wiklund, 1999) company age did not appear to affect adoption of practices.

5.2 Sustainability culture and social sustainability supply chain practices

The results of our study show that both basic and advanced social sustainability supply chain practices are positively related to the strength of a firm's sustainability culture. Our results show a strong positive relationship between a firm's sustainability culture and the adoption of both types of social sustainability supply chain practice. This means that companies with a social sustainability culture and mind-set are more likely to engage in social sustainability practices, which is good for the company and good for

the people inside and outside of the supply chain (Pfeffer, 2010; Pullman *et al.*, 2009).

It does not appear to matter whether a company is involved in monitoring their supply chain or in developing new markets, a sustainability culture is the basis for adopting both sets of activities. These results concur with Pagell and Wu (2009) whose theory-building paper proposed that a sustainability culture is key to driving the adoption of both environmental and social practices. It is also in line with the findings from the environmental sustainability supply chain literature (Fraj-Andrés *et al.*, 2009; Banarjee, 2002). However, this is the first time that a study has showed that despite different sustainability activities, sustainability culture has a similar impact.

5.3 Impact of entrepreneurial orientation

Entrepreneurial orientation has an interesting and variable effect on the relationship between sustainability culture and adoption of sustainability practices. Firstly, entrepreneurial orientation had no significant effect on sustainability culture and basic practices. This is in contrast to our hypothesis that entrepreneurial orientation would impact the relationship between sustainability culture and basic social sustainability supply chain practices. Foerstl *et al.*, (2010) and Reuter *et al.* (2010) found that resource-picking capabilities were produced when customers understood the sustainability processes and compliance of their suppliers. When the company did this over time with incremental adjustment to stakeholder pressures, these monitoring capabilities become dynamic capabilities leading to competitive advantage. However, we conjecture that basic practices are different to advanced practices as monitoring and compliance are important for guarding the reputation of the firm (Lemke and Petersen, 2013), but an entrepreneurial firm is much more likely to adopt practices that will lead to radical innovation and new markets (Klassen and Vereecke, 2012; Pagell and Wu, 2009). Perhaps monitoring capabilities are not seen as advantageous enough for entrepreneurial firms.

As hypothesised, entrepreneurial orientation had a moderating effect on sustainability culture and advanced practices. This supports the view that the given a foundational sustainability culture in a company, the entrepreneurial orientation of the company will positively influence higher-order sustainability practices: Practices that require major behavioural changes and potentially risky strategic re-positioning of the firm and not just incremental or basic monitoring (Garetti and Taisch, 2012). This supports the view that a high entrepreneurial orientation is reflective of a more proactive and innovative approach to interacting with the internal and external environment and engaging in highly levels of proactive strategic choice. Innovative executives take risks and react proactively to the market and will therefore adopt strategies that have a bigger impact in the market. This would seem particularly true when executives rethink their business definition (Sharma and Henriques, 2005) in order to stay ahead of their competitors. By changing the products and/or the strategy of the supply chain the company is adapting to a very different market, reflective of much higher levels of risk in the decision-making process.

We propose that regulation also may be used for the competitive advantage of some entrepreneurially-oriented organisations. Companies can work with regulators to bring in effective sustainability regulation where the organisation has developed capabilities (Nidumolu *et al.*, 2009; Foerstl *et al.*, 2010) and already has first-mover advantage that can be marketed to those companies playing catch-up. Also a company may petition against regulation for a particular sustainability activity if they have developed a niche product that is selling for a high margin where levelling the playing field may disrupt this.

6. Conclusion

Social supply chain practices are heralded as key weapons in the fight for sustainable competitive advantage (Berry *et al.*, 2010; Pfeffer, 2010). By focusing on people inside companies and across supply chains and communities, organisations can reduce absenteeism, health care costs, training costs and replacement costs (Pfeffer, 2010, Pullman *et al.*, 2009). Companies want to provide positive outcomes for people inside and outside their supply chains both morally and for economic benefit but there is still a dearth of research in this area and a lack of translation between academic findings and practical implementation (Ehrgott *et al.*, 2011; Hutchins and Sutherland, 2008). This study has added to the conversation by providing evidence of the culture attributes and strategic choice open to the firm and has shown that both sustainability culture leads to basic social supply chain practices and entrepreneurial orientation impacts the effect of sustainability culture on the adoption of advanced social supply chain practices.

6.1 Implications for theory

This study has produced some interesting findings with clear and important implications for supply chain sustainability theory (Pagell and Wu, 2009). First, we have found support for the premise that sustainability culture will lead to the adoption of social sustainability supply chain practices. This means that similar to the findings for environmental sustainability supply chain practices (Fraj-Andrés *et al.*, 2009) social sustainability supply chain practices are impacted by the culture of the organisation. Secondly, sustainable supply chain theory suggests that sustainable supply chain practices are inherently innovative (Pagell and Wu, 2009). For social sustainability supply chain practices, we would answer both yes and no. At the monitoring and systems level it would appear that the entrepreneurial orientation of key decision makers does not moderate the drive to adopt these practices, perhaps signalling that these practices are not regarded as proactive or innovative but are necessary and reactive responses to external demand or regulation. Therefore, we propose that the adoption of basic sustainability practices appears to reflect the institutionalised pressures of the field: Practices are adopted to legitimise the suppliers and to provide a license to operate. However, for advanced practices the entrepreneurial orientation of the firm clearly plays a strong and positive moderating role in the development and adoption of these practices. These practices are regarded as innovative practices and entrepreneurial firms, who see first mover advantages, new markets or capabilities arising from these activities, will be the first to adopt them. Thus the entrepreneurial orientation of the firm is reflective of the extent to which it proactively enacts its environment (Weick, 1979), which manifests itself in the adoption of different types of supply chain practices. Such a view is compatible with existing supply chain research within an institutional theory frame but extends it in an interesting and distinctive direction.

6.2 Implications for practice

There are a number of managerial implications flowing from these findings. First managers, in companies where sustainability orientation is embedded in the cultural fabric of the organisation, will have a higher propensity to adopt social sustainability monitoring and management system techniques as well as developing new products and processes with a sustainability focus. They will also be more likely to redefine the strategy and business model of the supply chain towards social welfare. Culture is

important as a driver of adoption and managers and policy makers should be aware of this and actively engage in the creation of an appropriate cultural context that is supportive of sustainability practices.

Entrepreneurial orientation provides a window into the innovativeness, proactiveness and risk-propensity within a firm. As a proxy for strategic choice, the moderating impact of entrepreneurial orientation found here brings to the fore the discretionary and political decision making that pervades many organisations and of the 'bounded autonomy' enjoyed by decision makers (Child, 1997:53). Like the work of Bowen and Aragon-Correa (2014), what is stressed here is an interactional and relational view focused on not the absence of external determination between a firm and its environment but an interactive process where choice and constraint are balanced as decision makers interact among themselves and other external parties (Child, 1997:58). Our research shows how the presence of such an orientation distinctively influences the strategic posture of the firm and the type of sustainability practices adopted.

The message for supply chain managers from this perspective is primarily one of remaining open to and highly interconnected with their wider internal and external social network to facilitate appropriate knowledge exchange and learning. Effective supply chain managers need to see themselves not as simple reactors to fixed external demands but as finders and makers of meaning (Smircich and Stubbart, 1985). They need to be good scanner of the internal and external environment, good negotiators and social actors as they interact with external players and engage in social exchange to influence their desired social order, balancing the needs of choice and constraint. Supply chain managers need to focus more on their potential choices, challenging existing frameworks, being open to multiple interpretations, actively creating their operating context and acting by continually testing and experimenting. This reality must feed into criteria for both the selection and development of supply chain managers and calls for their more active engagement at the strategic level of the firm.

6.3 Limitations

The limitations to this study are recognised. Firstly, this study examined a single point in time, was undertaken in one country and was a cross-sectional study. This type of study is limited as it does not reflect the changing dynamics, cultures, decisions and actions of companies and supply chains over a longer period (Dabhilkar *et al.*, 2008) and does not provide depth of analysis in one industry or supply chain and is focused on a single European country.

This study also does not consider the relationship between the suppliers and focal companies and the inhibiting or enabling effect this may have on practice adoption. We also have one respondent per company, and although there was no common method bias detected, further studies could examine multiple respondents from the same organisation. Finally, as the data we used was collected from only one country the generalisability may be limited, again future studies could aim at validating this model in other countries to increase its transferability.

6.4 Future research directions

Future directions for research are that the research could be replicated across a number of different countries with different sustainability regulations and different national cultures to understand if these would impact the findings.

Additionally, entrepreneurial orientation could be tested as distinct variables rather than a holistic construct. This may give more fine-grained detail to the dynamics of sustainability culture and entrepreneurial orientation. A more detailed explanation of

this relationship would require a differentiated use of entrepreneurial orientation measure. More recent studies using entrepreneurial orientation (Rauch *et al.*, 2009; Smart and Conant, 2011) have tended to adopt a more discriminant set of measures exploring the varying effects of the different components of the construct. Such an approach would be helpful in explaining this effect and would provide an interesting insight into how supply chain managers view and act on their perceived business environment, their contingent relationship to performance and clarify the contingent impact of moderating variables such as environment hostility, sage of industry and life cycle. (Lumpkin and Dess, 2001).

An alternative avenue for further research would be to undertake a grounded case-based approach examining the motivations, actions and interactions of supply chain managers located within firms with different levels of entrepreneurial orientation as they engage with internal and external stakeholders and develop their sustainability policies.

Also as entrepreneurial orientation positively moderates sustainability culture and advanced social sustainability supply chain practice adoption further research could investigate this finding using longitudinal case studies to assess how entrepreneurial and sustainability culture manifest and interact to drive change in supply chains. Focusing on one supply chain or a specific sector could provide further insight into managerial decision making and its impact on sustainability practice adoption.

Although it is important to understand the relationships and interaction effects of sustainability culture and entrepreneurial orientation on practice adoption this model could be extended to assess the effect of the increased adoption of social sustainability practices on performance as previous studies have suggested that entrepreneurial orientation has a 'double payoff' (Wiklund, 1999), therefore not only addressing the antecedents to increased social sustainability practice adoption but also the operational or competitive outcomes (Carter and Rogers, 2008; Tate *et al.*, 2010).

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Appendix 1

Table AI Descriptive statistics and standardized factor loadings for all latent constructs

1st & 2nd Order Factors	Items	Standardized factor loadings	p-value	Mean	Standard Deviation
Sustainability Culture	SOS1	0.84	*	5.08	1.615
	SOS2	0.91	0.01	5.18	1.484
	SOS3	0.86	0.01	5.10	1.588
	SOS4	0.96	0.01	4.97	1.751
	SOS5	0.88	0.01	5.03	1.730
	SOS6	0.83	0.01	5.47	1.526
	SOS7	0.86	0.01	5.25	1.627
Entrepreneurial orientation	EO1	0.75	*	5.00	1.584
	EO2	0.83	0.01	5.12	1.538
	EO3	0.82	0.01	5.19	1.422
	EO4	0.72	0.01	5.28	1.501
	EO5	0.62	0.01	5.27	1.560
	EO6	0.59	0.01	4.39	1.625
	EO8	0.58	0.01	4.48	1.551
Basic Practices					
Social Monitoring (0.92*)	SM1	.091	*	4.29	2.150
	SM2	0.85	0.01	3.78	2.229
	SM3	0.92	0.01	3.67	2.102
Social Management Systems (0.79)	SMS1	0.85	*	2.54	1.792
	SMS2	0.97	0.01	2.99	2.112
	SMS3	0.77	0.01	2.47	1.812
Advanced Practices					
Social New Product and Process Development (0.88*)	SNPPD1	0.84	0.01	4.32	2.076
	SNPPD2	0.93	0.01	4.37	1.914
	SNPPD3	0.85	*	4.85	1.968
Social Supply Chain Redefinition (0.86)	SSCR2	0.81	0.01	4.17	2.007
	SSCR3	0.84	0.01	4.14	1.832
	SSCR4	0.93	*	4.32	2.019

In parenthesis: Standardized factor loadings from first to second order constructs
*Fixed Parameter
Note: All items were measured using a 7-point Likert scale where 1 = 'strongly disagree/not at all' to 7 = 'strongly agree/fully implemented or developed'

Appendix 2

Table AII Measurement items

Sustainability Culture (adapted from Fraj-Andrés *et al.*, 2009)
At your firm, you provided information to all employees to understand the importance of social sustainability
You tried to promote social sustainability as a major goal across all departments
Your firm had a clear policy statement urging social sustainability in every area of operations
Social sustainability was a high priority activity in your firm
Social sustainability was a central corporate value in your firm
Your firm had a responsibility to be socially sustainable
Your firm worked hard for an image of social sustainability
Entrepreneurial Orientation (adapted from Lumpkin and Dess, 2001)
In your industry, your firm typically initiated actions, which competitors responded to
In dealing with competitors, your firm was very often the first business to introduce new products or services
In general, the top managers of your firm had a strong tendency to be ahead of others in introducing novel ideas or products
In general, the top managers of your firm favoured a strong emphasis on research and design and innovations
Many new lines of products or services were marketed in the past two years
Changes in product or service lines were usually quite dramatic
In general, the top managers of your firm had a strong inclination for high risk projects (with chances of high returns) (dropped item)
In our industry bold, wide-ranging acts were necessary to achieve the firm's objectives
When confronted with decisions involving uncertainty, your firm typically adopted a bold strategy to exploit opportunities (dropped item)
Basic Social sustainability Supply Chain Practices (adapted from Marshall *et al.*, 2014)
You monitored your key supplier's compliance with your health and safety requirements
You sent health and safety questionnaires to your key supplier in order to monitor their compliance
You monitored your key supplier's commitment to health and safety improvement goals
You conducted audits of the health and safety of their employees (dropped item)
You designed systems for work/family balance across the supply chain with your key supplier
You introduced employee health and safety compliance and auditing systems with your key supplier
You helped your key supplier obtain OHSAS 18001 certification, SA8000 or other management system certification
You developed an ethical code of conduct system with your key supplier (dropped item)
Advanced Social sustainability Supply Chain Practices (adapted from Marshall *et al.*, 2014)
Your company developed new product/processes with your key supplier that reduced health risks for consumers
Your company developed new product/processes with your key supplier that benefited workers throughout the supply chain
Your company developed new product/processes with your key supplier that reduced health and safety hazards for employees
Your company developed new product/processes with your key supplier that provided fair margins to all your suppliers (dropped item)
Your company has changed its supply chain strategy to bring non-governmental organisations (NGOs) and community groups into the supply chain (dropped item)
Your company has changed its supply chain strategy to minimise negative impacts on communities around your supply chain operations
Your company has changed its supply chain strategy to make social sustainability data (ethical code of conduct/ impact on communities) throughout our supply chain available to the public
Your company has changed its supply chain strategy to focus on fair trade throughout the supply chain

Note: All items were measured using a 7-point Likert scale where 1 = 'strongly disagree/not at all' to 7 = 'strongly agree/fully implemented or developed'