



Entrepreneurial orientation and its effect on sustainability decision tradeoffs: The case of sustainable fashion firms



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ABSTRACT

We examined the entrepreneurial orientation and sustainability orientation, a **persistent and conflicting duality, of sustainable entrepreneurs** and their evaluation of competing priorities in sustainability decision making. We conducted an exploratory, mixed-method study of 24 sustainable fashion firms and collected data through structured surveys and rich in-depth interviews. Through our inductive and deductive analysis, we derive **three sustainability decision making profiles (singular, flexible and holistic)** with distinct prioritization logic (nested, ordered and aligned, respectively). We find different configurations of entrepreneurial orientation correspond to the sustainability decision making profiles. We extend the literature by showing how the reflexivity of entrepreneurial orientation interacts with sustainability orientation.

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1. Executive summary

We argue that founders of sustainable enterprises (green, social or both) have a **sustainability orientation (SO)** comprising values that shape formally and informally the decision making processes and policies of the firm and the logic they use to choose between competing priorities. As entrepreneurs they also have an **entrepreneurial orientation (EO)**, an indication of the firm's processes, structures and behavior to exploit opportunities (Lumpkin and Dess, 1996). Sustainable entrepreneurs, touted by the literature to be change agents that have the capabilities to disrupt the established unsustainable order of industries (Hall et al., 2010; Hockerts and Wüstenhagen, 2010), have a dual **orientation and make complicated entrepreneurial and sustainability decision tradeoffs.**

We investigated **how entrepreneurial orientation interacts and effects sustainability decision making** by conducting an exploratory, mixed-method study using a multiple case approach. We used a multi-dimensional measure of entrepreneurial orientation (innovativeness, proactiveness, risk taking and future orientation) and a multi-dimensional measure of sustainability tradeoffs in decision making (economic, social and ecological) and collected data from in-depth interviews. From our data, we derive three types or profiles of sustainability decision making: singular, flexible and holistic. We show that differential configurations of entrepreneurial orientation correspond to specific sustainability decision making profiles and we uncover prioritization logics.

Singular decision making, which is hyperfocused on one sustainability dimension, uses a nested prioritization and corresponds to an EO configuration of high risk taking. Flexible decision making, which accepts greater compromising among the three

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sustainability dimensions, uses an ordered prioritization and corresponds to an EO configuration of high innovativeness and proactiveness. Holistic decision making, which integrates and balances all three sustainability dimensions, uses an aligned prioritization and corresponds to an EO configuration of high proactiveness and risk taking. This paper contributes to the growing literature on sustainable entrepreneurship. The findings have practical implications for sustainable entrepreneurs and for policy makers to provide support and incentives for sustainable entrepreneurship.

2. Introduction

There is increasing agreement that continuous economic growth of established economic systems is unsustainable (Balakrishnan et al., 2003; Pacheco et al., 2010). An emerging branch of literature on sustainable entrepreneurship argues that the Schumpeterian entrepreneurial process can contribute to solving complex social and ecological issues and act as a catalyst for industrial transformation (Cohen and Winn, 2007; Hall et al., 2010; Hockerts and Wüstenhagen, 2010; Muñoz and Dimov, 2015; Parrish, 2010; Schaltegger and Hansen, 2013). This breed of entrepreneur, the sustainable entrepreneur, is dually oriented – on one side towards entrepreneurial growth and on the other towards sustainable development.

The notion that entrepreneurship can contribute to solving complex social and ecological issues is very promising but debated in the literature (Hall et al., 2010). Like all entrepreneurs, the sustainable entrepreneur has an entrepreneurial orientation, a disposition or ability to recognize and exploit entrepreneurial opportunities (Lumpkin and Dess, 1996). Yet, the sustainable entrepreneur also has a sustainability¹ orientation, a conviction to grow his business in the most ecologically and socially responsible way possible. Sustainable entrepreneurs are thought to challenge the established industrial order through the innovation of more sustainable practices (e.g. alternative technologies, waste conservation policies, recycled materials) and effect enduring change and transformation (Hall et al., 2010; Hockerts and Wüstenhagen, 2010; Tilley and Young, 2006). The combination of an entrepreneurial orientation (EO) and a sustainability orientation (SO) presents a duality of interdependent and conflicting values and is not easily reconciled (Dean and McMullen, 2007; York and Venkataraman, 2010).

There is an assumption from an economics perspective that entrepreneurs are driven by self-interest, profit-seeking motives (Parrish, 2010). Sustainable entrepreneurship contrasts with this economics perspective and places shared, societal interest on par with private self-interest (Freeman et al., 2004; Porter and Kramer, 2011). The duality of entrepreneurial orientation and sustainability orientation creates a paradox for the sustainable entrepreneur. The recognition, evaluation and exploitation of entrepreneurial opportunities are complicated decision making judgments about the expected benefits and impacts in the three sustainability dimensions: economic, ecological or social (Byggeth and Hochschorner, 2006; Elkington, 1994; Figge and Hahn, 2012).

We argue that even though EO and SO may have conflicting orientations, there is interdependency in that EO influences the recognition, interpretation and evaluation of sustainability decision alternatives (Hahn et al., 2014). First, this is because founders of sustainable enterprises (green, social or both) have values that imprint and shape formally and informally the decision making processes and policies of the firm (Mathias et al., 2015) and their entrepreneurial orientation (Suddaby et al., 2015). Second, decision making tradeoffs in sustainability dimensions are unavoidable and sustainable entrepreneurs make decisions on multi-faceted entrepreneurial opportunities and risks (Hahn et al., 2010). We posit that entrepreneurial orientation, as an indication of the firm's processes, structures and behavior to exploit opportunities, can help us understand in more depth how sustainable entrepreneurs manage this paradox of entrepreneurial enterprising within the boundaries of economic, ecological and social responsibility. It is important to gain more insight into how they manage this persistent dual orientation to understand the scope, limitations and promise of the systematic, transformative sustainability change they can initiate, accomplish and sustain.

Our study is an exploratory, mixed-method study of 24 sustainable fashion firms. We collected data about entrepreneurial orientation and sustainability tradeoffs using Likert scale questions and held in-depth interviews. We conducted a cluster analysis based on four entrepreneurial orientations (innovativeness, proactiveness, riskiness and futurity) and three sustainability dimensions (ecological, social and economic). We categorized the competing priorities in sustainability decisions and identified the underlying entrepreneurial processes, structures and attitudes associated with making sustainability decisions.

From our findings, we derive three types or profiles of sustainability decision making: singular, flexible and holistic. We show that differential configurations of entrepreneurial orientation correspond to specific sustainability decision making profiles and we uncover prioritization logics. Singular decision making, which is hyperfocused on one sustainability dimension, uses a nested prioritization and corresponds to an EO configuration of high risk taking. Flexible decision making, which accepts greater compromising among the three sustainability dimensions, uses an ordered prioritization and corresponds to an EO configuration of high innovativeness and proactiveness. Holistic decision making, which integrates and balances all three sustainability dimensions, uses an aligned prioritization and corresponds to an EO configuration of high proactiveness and risk taking.

We provide the theoretical background in the next section, followed by the methodology and findings. In the discussion, we present the three sustainability decision making profiles and discuss the implications of our findings for the relevant literature, practitioners and policy makers.

¹ We use the term sustainability in reference to all three sustainability pillars: economic, ecological and social (Elkington, 1994).

3. Theoretical background

3.1. Imprinting of sustainability orientation

There is much literature, including the entrepreneurship literature, that shows that founders and their environments leave a lasting imprint on organizations (Marquis and Tilcsik, 2013; Stinchcombe, 1965). It is argued that imprinting occurs in new ventures because of the founding conditions – the unique backgrounds of the founders and their social and political environments – and has persistent long lasting effects on firm development even in the midst of environmental changes (Mathias et al., 2015; Milanov and Fernhaber, 2009; Stinchcombe, 1965).

From an imprinting perspective, founders' attitudes, beliefs and convictions, in other words their values, about sustainability are imprinted on new ventures and shape sustainability orientation in an enduring and persistent manner (Fauchart and Gruber, 2011; Schaltegger and Wagner, 2011). Accordingly, this influences their decision making. For instance, in the sustainable, social or green entrepreneurship literature, entrepreneurs are motivated differently. The goal of the ecopreneur is to preserve nature (Dean and McMullen, 2007) and pursue opportunities to resolve highly uncertain ecological problems with ambiguous outcomes. Ecopreneurs are most likely to act and innovate when profits can be gained, suggesting that ecopreneurs establish for-profit ventures (York and Venkataraman, 2010). However, economic profit or growth provides only a partial explanation of their motivation; Meek et al. (2010) show that social norms and government incentives also motivate ecopreneurship. For social entrepreneurs, the goal is to enhance social wealth and the venture may be more mission-driven than profit-driven (Mair and Marti, 2006; Peredo and McLean, 2006). The social entrepreneur may create social wealth with no, or little, economic wealth (e.g. charity, non-profits) or may create social as well as economic wealth (for-profit) (Zahra et al., 2009).

The initial imprinting of a firm's structural organizational features not only guides its decision making (Mathias et al., 2015) but can also constrain it, limiting the firm's sensemaking of opportunities that fall outside of its imprinted values (Suddaby et al., 2015). Thus, we argue that the founders' imprinting of sustainability orientation has a lasting influence on the sustainability decision making of the firm.

3.2. Reflexivity of entrepreneurial orientation

We also draw on entrepreneurial orientation (EO) – the firm's processes, structures and behavior used to pursue innovative and risky (entrepreneurial) opportunities (Covin and Lumpkin, 2011; Lumpkin and Dess, 1996; Miller, 1983) – to elucidate sustainability decision making. EO captures innovativeness (the tendency to experiment and depart from established practice), proactiveness (the propensity to act aggressively towards rivals and take initiative) and risk taking (the willingness to assume high risks for high rewards or losses) (Lumpkin and Dess, 1996; Lumpkin and Dess, 2001). As a collection of processes, structures and behavior over time, it follows that imprinting from the founder and environment also influences the formation of an entrepreneurial orientation (Suddaby et al., 2015), especially in first-generation firms (Cruz and Nordqvist, 2012; Jaskiewicz et al., 2015).

Numerous studies have shown that high EO leads to improved firm performance over time (Anderson et al., 2009; Green et al., 2008; Lumpkin and Dess, 2001; Wiklund and Shepherd, 2003) and also has positive effects on increased stakeholder values (Shahzad et al., 2016). But, there are inconclusive empirical results between EO and firm performance (Wiklund, 1999). Wiklund and Shepherd (2005) found that configurations of EO dimensions have differential advantages, suggesting that EO differs depending on distinctive firm characteristics or strategies (Li et al., 2014; Naldi et al., 2007; Tan, 2008).

Referring to the literature on sustainable entrepreneurship, which overlaps with the green and social entrepreneurship, it claims that entrepreneurial action is needed to identify opportunities, create innovations and generate economic rents while addressing ecological and social challenges (Cohen and Winn, 2007; Shepherd and Patzelt, 2011). Thus, sustainable entrepreneurs (including social and green entrepreneurs) have a dual entrepreneurial and sustainability orientation, each with a set of organizational and societal priorities that creates a tension in decision making. Entrepreneurial orientation provides reflexivity (Suddaby et al., 2015), the ability of the entrepreneur to assess the constraints of the environment and envision or construct alternative opportunities or “new social realities”, enabling the entrepreneur to act with agency in shaping the social, political and economic conditions, or engage in institutional entrepreneurship (Hardy and Maguire, 2008; Maguire et al., 2004). This coincides with the literature that argues that sustainable entrepreneurs create and change institutions and social norms to positively influence ecological and social impact (Meek, Pacheco and York, 2010; Pacheco et al., 2010).

The reflexivity that manifests in entrepreneurial orientation is essential to the decision making of sustainable entrepreneurs. Imprinting guides entrepreneurial and sustainability orientations, firm identity and development, but also constrains on individual and collective levels the perception of opportunities available to the firm (Suddaby et al., 2015). EO, specifically the reflexivity in entrepreneurial orientation, allows sustainable entrepreneurs to create and evaluate complicated and ambiguous decision alternatives of tradeoffs between sustainability values and entrepreneurial opportunities.

3.3. Competing priorities in sustainability decision making

Like other types of entrepreneurs, sustainable entrepreneurs make choices in allocating resources and pursuing activities to achieve their strategic organizational goals. Their dual orientation suggests that strategic choices or decisions involve competing tensions not only between entrepreneurial and sustainability orientations but also between the three specific dimensions of

sustainability. These decision making tensions, or tradeoffs, entail compromising (Byggeth and Hochschorner, 2006) or satisfying, choosing between two or more possible alternatives that best align with organizational goals (Simon, 1955; Winter, 2000). The search, evaluation and selection of alternatives, and ultimately decisions, constitute a dynamic entrepreneurial process and co-evolve with experimentation (Winter, 2000).

The literature on sustainability gives the impression that there are win-win situations that motivate sustainable entrepreneurs (Parrish, 2010); however win-win situations in sustainability are too simplistic (Hahn et al., 2010) and tradeoffs are more the rule rather than the exception (Byggeth and Hochschorner, 2006; Delmas and Blass, 2010; Figge and Hahn, 2012; Moeller et al., 2011; Pinkse and Kolk, 2010). From empirical studies, we know that sustainable-oriented entrepreneurs reach limits in their entrepreneurial intentions, accepting lower profits and growth, but contrastingly also decrease their sustainability orientation when they gain business knowledge (Kuckertz and Wagner, 2010). Moreover, tradeoffs do not necessarily lead to less favorable outcomes; relatively lower economic performance may result in greater sustainability (Hahn et al., 2010).

Parrish (2010) argues that sustainable entrepreneurs interpret decision making tensions, these competing priorities, with 'perpetual reasoning' rather than an integrative process of decision making (Gibson, 2006). From a study by Wu and Pagell (2011), organizations manage decision making uncertainty (e.g. incomplete information and ambiguous outcomes) in sustainable supply chain management by adopting heuristics, or simple decision making rules, to make choices that align with their organizational goals. Despite the increasing interest in sustainability in practice and sustainable entrepreneurship, we know very little about sustainable entrepreneurs, the dual orientation that drives them and the logics they use in deciding between competing priorities.

Following the call in the literature, we aim to shed light on the sustainability decision making and tradeoffs of sustainable entrepreneurs (Hall and Wagner, 2012; Margolis and Walsh, 2003; Shepherd and Patzelt, 2011). Scholars have not yet investigated the relation between entrepreneurial and sustainability orientations, providing a rich research opportunity to gain insight about sustainability decision making through established entrepreneurship theory and frameworks (Dacin et al., 2010). While prior studies have provided insight separately into entrepreneurial orientation, sustainable entrepreneurship and sustainability orientation, few have bridged the gap in the literature and linked entrepreneurial orientation to sustainable entrepreneurship. This is noteworthy since sustainable entrepreneurship involves pursuing simultaneously organizational and sustainability goals and making complicated decisions with competing priorities. Our study addresses this gap in the literature and asks how entrepreneurial orientation effects sustainability decision tradeoffs.

4. Methodology

Our study adopts an exploratory mixed-method approach, combining a multiple-case study (Eisenhardt, 1989; Yin, 1994) and qualitative and quantitative analysis, to study entrepreneurial orientation and sustainable entrepreneurship. A mixed-method approach is appropriate given the lack of empirical studies on sustainable entrepreneurship and our aim to extend theory and uncover the mechanisms underlying decision making tradeoffs rather than examining relations between performance outcomes. Our research design adheres to a hybrid approach that is methodologically fit for 'intermediate research' (Edmondson and McManus, 2007), an explanatory type of research located on a spectrum between nascent and mature research fields. Our research aim is to show whether entrepreneurial orientation, a well-established construct in the field of entrepreneurship, can illuminate patterns of decision making behavior in sustainable entrepreneurship, a new and largely under researched field.

4.1. Empirical setting and case selection

Our research context is the apparel/fashion industry. Since the 1970s, apparel or textile production has become increasingly fragmented and outsourced to foreign suppliers (Gereffi, 1999), exacerbating control and transparency issues and leading to the decline of apparel/textile manufacturing in developed countries (Lane and Probert, 2009). The industry faces sustainability issues in all three sustainability dimensions (Dorado and Ventresca, 2013) throughout the value chain (Brito et al., 2008). Economically, the consistent competitive pressure to reduce prices is particularly strong. Ecologically, textile production has various impacts from excessive use of water in growing cotton crops to the chemical pollutants in dyeing and finishing of fabrics; the latter also poses challenges for worker safety if not properly managed. Socially, the fragmentation of the supply chain and widespread use of subcontracting makes it difficult for firms to manage working conditions of suppliers and exposes them to multiple risks in labor practices, such as the use of child labor, excessive overtime or forced labor. Increasing focus on these issues has given way to greater public scrutiny of textile production practices by consumers and non-governmental organizations (NGOs), such as Clean Clothes Campaign and Greenpeace that increasingly pressure apparel firms to become more ecologically and socially responsible.

Moreover, trends in fast fashion that have shortened product life cycles have lead to increasing consumption and excess waste without an industry infrastructure to recycle and reuse discarded textiles. The current fashion economic system encourages over-consumption as it is driven by speed, trends and planned product obsolescence. Scholars suggest that if fashion consumption grows at its current rate, it poses threats to the quality of life for future generations (Cataldi et al., 2010). Sustainability, although a constraint, also represents opportunities in the apparel/textile industry to make substantial changes to processes and routines internally to the firm and externally in the supply chain (Ertekin and Atik, 2015).

The conditions in the industry have spawned many niche 'sustainable fashion' firms, providing an excellent research setting for our exploratory study. For these firms, sustainability is a strategic asset but at the same time might inhibit them from

Table 1

Overview of sample cases.

| Case | Product segment | Country | Firm age (years) | Nr. of founders | Still in business in 2016 | Interviews |
|------|---------------------|---------|------------------|-----------------|---------------------------|------------|
| 1 | Women's dresses | NL | 2 | 1 | Yes | 2 |
| 2 | Women's casual wear | NL | 3 | 2 | Yes | 1 |
| 3 | Children's wear | NL | 6 | 1 | Yes | 1 |
| 4 | Web shop | NL | 8 | 2 | Yes | 1 |
| 5 | Web shop | NL | 7 | 2 | Yes | 1 |
| 6 | Casual wear | NL | 9 | 1 | Yes | 2 |
| 7 | Handbags | NL | 1 | 1 | No | 1 |
| 8 | Women's casual wear | NL | 32 | 1 | Yes | 3 |
| 9 | Women's casual wear | NL | 9 | 1 | Yes | 3 |
| 11 | Jeans | UK | 8 | 2 | Yes | 1 |
| 12 | Women's casual wear | FR | 2 | 2 | Yes | 2 |
| 13 | T-shirts | UK | 2 | 1 | Yes | 1 |
| 14 | Work clothing | NL | 2 | 1 | Yes | 1 |
| 15 | Women's casual wear | NL | 2 | 2 | Yes | 1 |
| 16 | Jeans | NL | 4 | 1 | Yes | 3 |
| 17 | Textiles | NL | 27 | 1 | Yes | 1 |
| 18 | Women's casual wear | NL | 5 | 1 | Yes | 1 |
| 19 | Women's casual wear | GY | 7 | 2 | Yes | 1 |
| 20 | Children's wear | NL | 2 | 1 | Yes | 1 |
| 21 | Knitted products | NL | 2 | 2 | Yes | 1 |
| 22 | Women's casual wear | NL | 10 | 1 | Yes | 2 |
| 24 | Women's casual wear | NL | 2 | 1 | Yes | 2 |
| 25 | Women's casual wear | UK | 2 | 1 | Yes | 1 |
| 26 | Women's casual wear | BE | 7 | 1 | No | 1 |

NL = Netherlands, UK = United Kingdom, FR = France, GY = Germany, BE = Belgium.

growth. They seek to implement sustainable practices throughout the supply chain (Brito et al., 2008), but also through sustainability by design (Fletcher, 2008; Fletcher and Grose, 2012), or new concepts such as slow fashion (Clark, 2008; Ertekin and Atik, 2015; Fletcher, 2010). These ventures are often owned and managed by their original founders, facilitating the collection of rich data.

To select cases, we applied a convenience sampling approach to compile a list of sustainable fashion firms. We used a list of firms that exhibited at a sustainable fashion fair in the Netherlands and complemented the list with firms found from web searches using specific key words: sustainable fashion, sustainability apparel, eco-friendly fashion, socially responsible fashion. We reached a sample size of 26 sustainable fashion firms but discarded two cases due to incomplete data, giving us a sample size of 24 (see Table 1). Our sampled firms are small firms, the majority having less than 10 employees.

4.2. Data collection and analysis

We gathered information through telephone interviews with the founders, production managers or corporate sustainability managers of the 24 firms. We asked structured questions about the firm (founding date, size, sales turnover, entrepreneurial orientation), the founders (education, previous employment, motivation), and sustainability decision making challenges and tradeoffs. We devised questions on EO by using prior literature and employed a multi-dimensional approach (Covin and Slevin, 1989; Li et al., 2014). Following Tan (2008), the questions on entrepreneurial orientation included innovativeness, proactiveness, risk taking and futurity. We included questions on ecological, social and economic tradeoffs (Venkataraman, 1989; Kuckertz and Wagner, 2010; Elkington, 1994). We used Likert scales to capture the different aspects of entrepreneurial orientation and sustainability orientation. Simultaneously and subsequently to the telephone surveys, we conducted semi-structured in-depth interviews with a subsample of firms in order to better understand sustainability decision making tradeoffs. Additionally, we drew on information from archival data, firm documents, press articles, publicly available corporate sustainability reports and benchmarking reports from the Fair Wear Foundation² for data and triangulation (Denzin, 1978).

The data analysis involved iterative qualitative and quantitative analysis. We coded the transcribed interviews by selecting phrases, sentences or groups of sentences that provided information about sustainability orientation and entrepreneurial orientation. From the transcripts we also created case narratives and in combination with the coded constructs of SO and EO we searched for patterns within and across cases and for emergent themes of sustainability decision tradeoffs. From this qualitative data analysis, we identified and categorized the prioritization of sustainability dimensions and the processes, structures and behaviors of EO.

² Fair Wear Foundation is a non-profit organization that provides advice and support to its member firms on textile factory working conditions and conducts audits of textile factories in various countries. Members are particularly small firms that do not have the resources, knowledge or network to manage suppliers on their own.

Table 2

Survey questions and factor loadings.

| | Loadings | | | |
|--|----------|--------|--------|--------|
| Entrepreneurial orientation | | | | |
| Innovativeness (INN) | | | | |
| We always look for new opportunities and introduce new products to the market. | 0.836 | 0.184 | 0.190 | 0.074 |
| Investments that will provide us with a competitive advantage are emphasized. | 0.779 | −0.020 | 0.071 | 0.090 |
| When making strategic decisions we respond to opportunities quickly. | 0.664 | 0.187 | 0.006 | −0.136 |
| Pro-activeness (PRO) | | | | |
| New projects are approved without an approval process of various stages. | 0.034 | 0.973 | −0.162 | 0.160 |
| We always strive to improve our position in the market and simultaneously challenge our competitors. | 0.216 | 0.508 | 0.182 | −0.063 |
| Risk orientation (RISK) | | | | |
| We act on opportunities regardless of the uncertainty of the outcome. | 0.074 | 0.049 | 0.207 | 0.974 |
| The strategic decisions we make with a focus on investment include high risk and high return. | −0.033 | 0.005 | −0.123 | 0.575 |
| Future orientation (FUT) | | | | |
| Long term profitability gains precedence over short term profitability. | 0.052 | −0.080 | 0.991 | 0.082 |
| We think about the future when making strategic decisions. | 0.311 | 0.323 | 0.485 | −0.158 |
| Sustainability decision tradeoffs | | | | |
| Economic (ECON) | | | | |
| We often face the challenge of being less sustainable but make more money. | 0.968 | 0.033 | 0.247 | |
| We would accept less profit rather than offer less sustainable products. | 0.253 | −0.022 | 0.005 | |
| Social (SOC) | | | | |
| We (would) work with people who share the same values instead of individuals who are less willing to act sustainably. | −0.127 | 0.883 | −0.028 | |
| We (would) choose high delivery and transport costs to support local communities in emerging countries rather than produce locally or nearby. | −0.511 | 0.360 | 0.242 | |
| Ecological (ECO) | | | | |
| We (would) use less sustainable production methods and materials if it saves costs. | −0.274 | −0.395 | 0.707 | |
| We sometimes use airfreight to transport goods instead of sea freight. | 0.027 | 0.351 | 0.584 | |
| When consumer demand is greater than our production capacity, we choose a less environmentally sustainable factory and offer a less sustainable product. | 0.150 | −0.001 | 0.476 | |

We analyzed the descriptive statistics from the structured questions and conducted an explorative factor analysis and cluster analysis. We used a rotated varimax factor analysis and the maximum likelihood method. For item commonality we used 0.4 as a cut-off point.³ Table 2 summarizes the results of the factor analyses.⁴ Standardized factors were used in the cluster analysis to separately explore the relation between the dimensions of EO and SO, from which three distinct clusters⁵ emerged (see Fig. 1 in Section 6). As we iterated between the cluster analysis, pattern matching and sensemaking analysis, we uncovered a deeper explanation of the characteristics and features of sustainability orientation and entrepreneurial orientation and the link between them. We validated our interpretation of the clusters and data with a selection of firms in our sample and with experts in the industry (Wallendorf and Belk, 1989). The latter included consultants specialized in textile sustainability and representatives from the Dutch association of apparel and textile firms.

5. Findings

We start with the qualitative analysis of the rich data from the in-depth interviews and documentation. We first provide the data on the competing priorities in the sustainability dimensions and then the underlying processes, structures and behavior of entrepreneurial orientation.

5.1. Competing sustainability priorities

Using the three dimensions of sustainability, there are nine possible sustainability decision tradeoffs. We used quotations from our data to categorize the prioritization of the sustainability dimension in the tradeoff decision (see Table 3). A simple count of sustainability tradeoffs shows that tradeoffs occur primarily across the sustainability dimensions (the prioritized dimension is underlined in Table 3). However, we also have evidence of tradeoffs occurring within dimensions (the shaded boxes in

³ Although 0.8 is often regarded as indicating high commonality, social science methodologists find that this is unlikely to occur in real data and therefore magnitudes of 0.4 are justified to assume relatedness (Costello and Osborne, 2005; Meek et al., 2010).

⁴ Two items in Table 2 have lower loadings than 0.4. Despite the low commonality we decided to keep the factors due to the fact that they were related and loaded highest on the factor. In separate analyses we dropped the items to see whether more meaningful clusters would emerge which was not the case.

⁵ To visually display the clusters, the standardized factor scores of the case companies were averaged per cluster.

Table 3

Count of sustainability tradeoffs.

| Prioritized dimension ^a | Compromised dimension | | |
|------------------------------------|---------------------------------|-------------------------------|-----------------------------------|
| | Economic | Social | Ecological |
| | <u>Economic-Economic</u> 0 | <u>Economic-Social</u> 8 | <u>Economic-Ecological</u> 7 |
| | <u>Social-Economic</u> 8 | <u>Social-Social</u> 3 | <u>Social-Ecological</u> 0 |
| Economic | <u>Ecological-Economic</u> 4 | <u>Ecological-Social</u> 1 | <u>Ecological-Ecological</u> 5 |

^aThe sustainability dimension that was prioritized in cross-dimension tradeoffs is underlined. The within-dimension tradeoff possibilities are shaded.

Table 3). Below we highlight selected quotations to illustrate these tradeoff priorities and provide a selection of quotations in Appendix A.

Along the economic dimension, our data shows a prioritization of the economic dimension above the social and ecological dimensions. Focusing first on economic-social compromises, one of the underlying reasons for making this tradeoff and prioritizing the economic dimension centers on sustaining a competitive pricing level, as cited by several of our cases. Case 5 provides an example of this pricing rationale and the compromise made on the social dimension:

One of the most difficult decisions was terminating one of our suppliers. They were taken over by a wholesaler and the price levels increased greatly. The same products cost much, much more and the price in the store would be too high. The demand would definitely sag. We couldn't change the supplier's mind and were forced to end the relationship. (Case 5)

Another reason to prioritize the economic dimension above the social dimension is due to coordination and control of the supplier. The founder of Case 1 indicated that she would have liked to work with artisan suppliers and local communities but that communication and transportation difficulties prevented her from doing so.

At first I thought if I get my fabrics in India it would be great if Indian women could earn something with it as well. But then I had to find a place that I could also control and check the work environment. It's a bit weird if you go for 100% recycled material and child labor would be involved ... I don't have the scale or size to organize this well. I had to [produce] closer to my home ... (Case 1)

Similarly, firms gave primarily a pricing rationale for prioritizing the economic dimension above the ecological dimension. However, this tradeoff decision was more closely tied to scale as they stated the higher cost of more organic or ecologically produced material at the volumes they were purchasing was unaffordable.

We have a 'sand suit' for small children and [we needed a] textile with more density [and] coating so that no sand, dirt or mud gets through ... we had to make a choice and tradeoff, well actually there was not really an option to find that specific fabric organically. Well okay you can, but then we have to buy large quantities. And if your company is big enough and can afford it that would be an option. But in our case it was not, so we had to look for another option ... we are just a small company you cannot do everything as you please, everything is financially related. (Case 3)

... Using ecologically produced material for a small brand is really hard to do. The minimum quantity is too high and it's too much to purchase ... I prefer to only use sustainably produced material but because I don't have the volume or scale this material is very costly. I would like to work more with sustainably produced fabrics, but this is not very realistic for a small brand because we can only buy in small quantities. (Case 24)

There was also evidence in our data that the economic dimension was prioritized above the ecological one for quality. The firms referred primarily to design aspects of quality, such as durability or texture (look and feel) of a fabric or material. Cases 8 and 16 provide evidence of placing quality paramount; an eco-friendly material of lesser quality is not an option for these firms because of brand reputation and image. To maintain quality standards, compromises in the ecological dimension were accepted.

If they [buyers] can choose between a shirt from organic cotton and regular cotton, and the quality is the same but the price just a few cents higher, then they choose for the organic variant. If the quality is less, then that's another story. Because quality goes above everything else ... You don't want to compromise quality for sustainable fabric. (Case 8)

[For] recycled cotton [it] is very difficult to make the fibers longer ... We have to make tradeoffs. But on quality we do not want to make tradeoffs because our slogan is 'quality wear for the next era'. In order to maintain the quality [of the cotton], we mix it. (Case 16)

Moving on to the social dimension, our data shows prioritization of the social dimension over primarily the economic dimension. There are also instances in our data that show that satisficing occurs between two alternatives within the social dimension. A good example of this is from Case 6 who terminated a relationship with a Turkish supplier because “they were unwilling to be transparent about labor practices” and presumably continued relationships with suppliers who did comply with their transparency requirements. However, from our data, the locus of this tradeoff is between the social and economic dimensions. The following quotes illustrate this.

[We are] not growing very fast but rather paying attention to the social aspect. We could grow faster but then we would probably lose sight of our social purpose. (Case 21)

[We do] not negotiate on prices but want our suppliers to come with realistic prices that cover production costs. This could mean that [we] decide to take less margin on a product. If there are delays, [we] do not apply a penalty to suppliers for delayed delivery, even though [we] might need to sell at a discount to clients because of the late delivery. (Case 16)

In the ecological dimension, we have four cases (8, 13, 16 and 22) that showed a clear conviction to prioritize the ecological dimension. These firms had very strong policies about sustainability or visible sustainability positioning (e.g. eco-friendly) and could not credibly compromise the ecological dimension. Also, in this dimension some tradeoffs were confined within the ecological dimension between two (or more) ecological alternatives. Case 22 clearly explained the dilemma in deciding between ecological alternatives.

The most difficult decision is between sustainably produced yarn (think about bamboo) versus less sustainably produced yarns (viscose or polyamide). I tried first bamboo but discovered that the sustainability in wear was poor. The bamboo yarns pilled more quickly ... eventually I decided to use a polyamide/viscose yarn blend ... this yarn lasted longer in wear. (Case 22)

Other quotations from Cases 13 and 16 showed how a strong conviction to ecological principles led to compromises in the economic dimension, namely profitability.

... Choosing cheaper fabrics and less sustainable printing we could get more profit ... We decided not to do so with the goal to prove that working ethically is possible. (Case 13)

It is unthinkable that [we] produce a product that is not [ecologically] sustainable. Profit never takes precedent over sustainability. [We] take some economic risks in lower margins. We'll try a new wash (or something) knowing it's more expensive but we won't put the product in the market at an unreasonable price. It has to be a commercial price, something that will sell but we would sacrifice margin. (Case 16)

5.2. Processes, structures and behavior of entrepreneurial orientation

We also used our qualitative data to uncover underlying processes, structures and behavior of the entrepreneurial orientation of our sampled firms. From our analysis, primarily processes and attitudes related to the EO dimensions of innovativeness, proactivity, risk taking and futurity emerged (Table 4). We see that the boundaries of EO dimensions are unclear and that processes in one dimension may involve attitudes from others. For example, some innovation processes may require attitudes of proactiveness, risk taking and futurity. Appendix B summarizes quotations from the data to support the identification of these underlying EO processes, structures and related attitudes.

In the innovative dimension, we identified several distinct processes and attitudes related to search, experimentation, product development and design. Nearly all of our cases engaged in varying degrees of search, either for materials or for suppliers. Case 6 provides an example of how the search process is embedded in sustainability values:

I only considered working with suppliers that fit with our [sustainability] mission. I should emphasize again that we first searched for the right suppliers and then started [the company]. Our mission is from inside out and not a trendy wave or twist. (Case 6)

Table 4
Identified processes, structures and attitudes of EO.

| | Innovativeness | Proactiveness | Risk taking |
|--------------------|--|--|---|
| Processes | Search Experimentation Product development Design | Supplier monitoring, controlling | Supplier compliance Quality control |
| Attitude (towards) | Search Design modularity Material quality | Market opportunities Supplier collaboration Supplier switching | Margin and pricing Production delays Brand reputation/image |
| Structure | Coordination and organization | Supplier management systems Supplier engagement | Supplier management systems Supplier engagement |

Experimentation was captured in quotations from Cases 14, 16, 22, and 24. For example, Case 22 gave an indication of her experimentation with bamboo yarns and eco-friendly leather as well as with 3D printing. Case 16 stated that they also experimented with 3D printing and tried “greener washes” in their denim finishing production. Search and experimentation are processes that are closely integrated, especially when related to materials. A central aspect to this dimension is the firm's attitude towards these innovative processes. For example, Case 16 stated, “...we try to innovate together with the factories we currently are working with”, which shows an attitude towards search and experimentation.

Beyond search and experimentation, we uncovered processes, structures and attitudes towards product development and design. Case 3 provides an indication of attitude towards product development and design processes.

Our 'green' philosophy of no waste is supported by this way of producing. We design and develop in close harmony with our factory; this is visible in the end result. (Case 3).

This attitude towards waste reduction was also apparent in other firms and in their product development and design processes. Case 3 recombined and reused leftover stock, essentially turning their products and materials into modular components, or inputs, for new products or collections; whereas, Case 15 created an infrastructure to collect garments and reuse or recycle them.

We are very creative. If in season one you sell 300 of the 1000 products you bought ... We do not want to discount [the rest] ... It is better to think of another sweater or something so that it would be an interesting set to buy. (Case 3)

We started charging a deposit and introduced a lease concept. In this way, all our men's suits come back to us and we can responsibly reuse and recycle them. For years now, this has differentiated us from the rest. (Case 15)

For the proactive dimension, we find that the main processes, structures and attitudes emerging from the data are related to supply chain management and supplier engagement. In our data, supply chain management was also linked to the innovative dimension in some cases, and in other cases it was linked to risk taking, or rather risk management. For example, Case 16 shows how proactive supply chain management is a structure in supporting product development.

Product development takes place in close cooperation with suppliers; the planning is a shared process with frequent feedback and communication. Forecast is shared in the beginning stage after which fabric is reserved. For the factories in Italy and Tunisia, [we] track every stage of production including the moment the fabric arrives, to the washing and finishing. Delays are mostly anticipated and included already in the lead times. [We know] the production capacity of our suppliers, including which production lines are used for our order and the time needed for the different production phases such as stitching, washing and finishing. (Case 16)

Case 6 shows how supply chain management is used to proactively manage sustainability risks.

[We] consistently evaluate the supplier base and discuss progress with suppliers. Two-thirds of production takes place in Portugal at factories that are visited twice a year. Social and environmental compliance are always part of the discussions. [We have a] total production lead-time/work plan sheet to be able to know when decisions need to be made without influencing the production lead-time in a negative way. [We] are in constant communication with our factories ... to make sure there is no delay that might cause production overtime in the factories. (Case 6)

Proactiveness was also captured in attitudes towards market changes and opportunities. Data from documentation on Case 11 explained that the founding of the firm was “born ... out of the frustration of the denim market ... disillusioned with ... disposable high street fashion ...”. Case 8 also exemplifies this proactive attitude in the ability to adapt to market changes:

... If you don't change, then you [don't survive] ... there are so many things that change in the world that you just have to change. The cotton crops need a lot of water, that is a problem and just embrace the change. (Case 8)

In the risk taking dimension, our data shows mainly attitudes towards risk which were embedded in the firms' values towards sustainability, especially risk related to pricing but it also shows processes and structures to manage or reduce sustainability risk. In regards to pricing, quotations from Case 12 and 16 illustrate attitudes that accept high economic risks in order to adhere to their social values.

[We have] calculated for each product a fair price for its workshops, its dealers and for the customer ... [we don't play into] fashion trends [or discount] our collections during sales periods. (Case 12)

[We do] not negotiate on prices but want our suppliers to come with realistic prices that cover production costs. This could mean that [we] decide to take less margin on a product. If there are delays, [we] do not apply a penalty to suppliers for delayed delivery, even though [we] might need to sell at a discount to clients because of the late delivery. (Case 16)

In this risk taking dimension, we also uncovered structures and attitudes towards managing risk through supplier compliance and quality management. We identified these as preventive measures, which is also closely associated with the proactive dimension. Certifications and industry standards⁶ guided the structures in place to manage supplier compliance of sustainably sourced materials. Case 8 explained how they used standards and certifications in managing sustainability risk of chemicals used by suppliers:

It is a little bit of finding a balance between standards for materials that are sourced and for standards or quality that are less common, to test those. And to have the supplier sign a statement that they do not use any restricted chemicals on the REACH list. (Case 8)

There are fewer certifications or standards for managing risk in the social dimension of sustainability. To this end, our data shows that firms rely on a proactive supplier engagement to monitor social conditions of factories. They relied on third parties, as members of associations like Fair Wear Foundation, or on their own resources to visit and monitor supplier sites. However, as Case 1 emphasized “[The work places] looked and felt good but you do not know it for a 100%”. Risk in the social dimension remained uncertain.

Lastly, the futurity dimension is difficult to isolate from the other EO dimensions. The firms in our sample are all long-term oriented which is reflective of their values as sustainable entrepreneurs and enterprises. The evidence from our data shows that this long-term orientation, as an attitude, guided processes and structures in other EO dimensions.

In the innovative dimension, words such as “slow” and “timeless” fashion were used to describe products or collections, indicative of an attitude towards long-lasting products and fashion, less consumption and less waste. The quotation below from Case 2 sums up this attitude:

Long term, imagine after four years pulling something out the closet and saying ‘oh, nice jacket’. It has to have a long life and be timeless. Product and design that is geared to the future. (Case 2)

We also saw this future orientation in the proactive dimension. Our cases hinted at the long-term orientation in their firms’ vision, mission and goals that directs the way that they interpret market opportunities and risks. Case 9 shows the embeddedness of this future orientation in its vision and consequently in its attitude towards pursuing opportunities.

We believe in a better world, more fair, sustainable and beautiful. To wait patiently for others to realize our dream is not in our genes. We are taking the first steps to get the big machine turning. We believe that every contribution on sustainability makes a difference. (Case 9)

This long-term orientation was also apparent as an attitude towards long lasting supplier relations, which connects to the other EO dimensions as well. For example, long-term supplier relations supported processes in experimentation and product design (innovative dimension), as Case 16 exemplifies, “In the future we try to innovate together with the factories we currently are working with.” The data also showed an aversion to switching suppliers, which can be related to the proactive supplier management that our cases engaged in. Case 8 exemplified this attitude, “[We] value long-term relations and don’t change production location easily.”

In short, the future orientation of our sampled firms was an overarching attitude that provided direction and guidance to the other EO dimensions. It is to be expected since we selected our sample of firms based on whether they were sustainable entrepreneurs, by which they would have a predisposition to the long term rather than the short term.

In this section, we presented a selection of our data that supports the identification and categorization of the competing priorities of the three dimensions of sustainability and the underlying processes, structures and related attitudes of entrepreneurial orientation. Additional selected evidence is provided in [Appendices A and B](#).

6. Discussion – linking sustainability and entrepreneurial orientations

From our findings, we derived sustainability decision making profiles that illuminate the persistent duality and interaction of sustainability and entrepreneurial orientations. The cluster analysis we conducted on sustainability orientation and entrepreneurial orientation suggested three clusters of firms ([Fig. 1](#)). Our deeper analysis of the rich, qualitative data showed that these three profiles have distinct sustainability prioritization norms guided by specific EO configurations. We label these three decision making profiles: singular (blue), flexible (red) and holistic (green).

6.1. Sustainability decision making profiles

The singular profile suggests that in making sustainability decision tradeoffs there is a conviction to prioritizing one sustainability dimension above the others. For this profile then, firms are hyperfocused on adhering to their values in one dimension. This could be any of the three dimensions; however in our data, it was the social dimension. The priority placed on this one dimension overrides the other two dimensions, which become nested within the dominant dimension (see [Fig. 2](#)). The entrepreneurial orientation of this group of firms was captured primarily in the proactive and risk taking dimensions. They showed proactiveness in managing and

⁶ The Ecolabel index lists 108 standards for textile production. An example is the Global Organic Textile Standard (GOTS). <http://www.ecolabelindex.com/ecolabels/?st=category,textiles>.

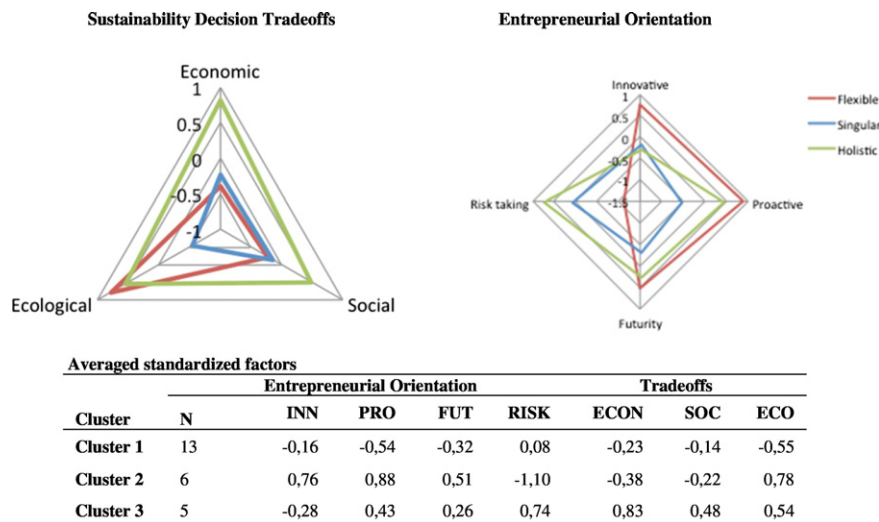


Fig. 1. Visual representation of clusters, hierarchical cluster analysis.

engaging with their supply chain. They also displayed attitudes towards risk taking, especially in accepting lower profitability or growth and compromising the economic dimension. Firms using this type of singular sustainability decision making are bound by their values and strictly adhered to their principles associated with their dominant sustainability dimension.

Case 1 vignette. Case 1 was founded in 2012 as a ‘hobby’. The entrepreneur started her company while working full time as a social worker. The founder is the sole employee. She designs and sells women's dresses from recycled silk that is sourced in India. She engaged in a long search process to find exactly the right material and suppliers and artisan workshops that match her strong sustainability values, especially in the social dimension. The dresses are produced fairly and locally in a sewing studio in the Netherlands. She sells the dresses exclusively through her own web shop. She places a conscious and continuous emphasis on the social value of her products and accepts a slow growth trajectory.

For the profile we call flexible, the sustainability tradeoffs are concentrated primarily on two dimensions and there is a clear order of preferred benefits in sustainability decision tradeoffs. However, this ordering is causally ambiguous, easily changed, or in short, flexible (see Fig. 2). In our data, this profile is clearly centered on the ecological and economic dimensions but theoretically could also center on other dimensions. The ordering logic is reflected in the search and experimentation processes and attitudes of EO, as this cluster of firms showed an EO configuration that emphasized innovativeness and proactiveness. These processes suggest a continuous evaluation of the best options and sustainability compromises that are bounded by requirements for product quality and costs. The product – its materials, design, aesthetic – is not compromised and sustainability decision tradeoffs occur to ensure quality standards and costing levels.

Case 22 vignette. Case 22 is representative of flexible sustainability decision making with ordered prioritization logic. Case 22 was founded in 2004 by a fashion designer. After graduating from the fashion academy, she worked as a stylist for a mid-market supplier to H&M. There are no other employees but she works with interns during peak times in creating and producing collections. She designs and markets casual women's wear and works with suppliers in the Netherlands, Portugal, Italy, Columbia and China. She holds product quality paramount and experiments continuously with sustainable materials and fabrics. She is also aware of reducing waste and reuses overstock and designs and produces long-lasting products. She does not intentionally brand her products as eco-friendly because she feels this has a negative impact on her brand image as a designer but some of her retailers brand her products as ‘eco-friendly’. She continuously changes the order of the dominant sustainability dimension between ecological and economic dependent on the preferred benefits of the decision making tradeoff.

The third type of decision making, holistic, approaches sustainability tradeoffs in a more integrated way. Holistic decision making logic aligns the three sustainability dimensions, recognizing the interdependencies between them (see Fig. 2). Sustainability decision tradeoffs made in one dimension have consequences for another and an aligning logic aims to balance the benefits and impacts equally among the three dimensions. From our data, firms using aligning logic are risk takers and proactive. They have created processes and structures to manage risk, to proactively engage with suppliers and to search and experiment in product development and design.

Case 16 vignette. Case 16 was founded in 2010 and is specialized in denim. The founder had many years of work experience in the industry and started Case 16 with a strong vision about sustainability and quality. There are currently 10 employees. Their products are made from 100% organic cotton or recycled cotton mixed with organic cotton. They work with long-term suppliers in Italy, Spain, Japan and Turkey. Case 16 uses innovative techniques and technology such as ozone and laser technologies in order to reduce the ecological impact of denim finishing. They work closely with their suppliers to experiment and test new technologies to produce ‘greener’ products. In 2014 Case 16 became a member of the Fair Wear Foundation to ensure the social responsibility and compliance of their suppliers and they also visit their suppliers regularly during production runs to monitor the

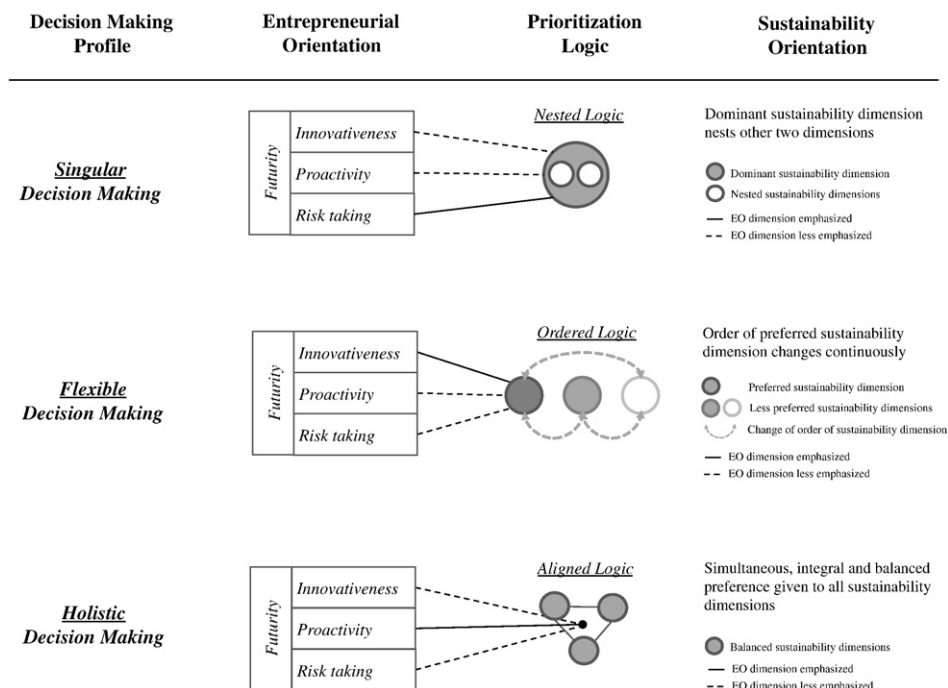


Fig. 2. Sustainability decision making profiles, EO configurations, prioritization logic and SO orientation.

working environments. Case 16 is also growing steadily with a distribution of their products in 250 retailers in 12 countries (mostly Northern Europe) and online.

The different sustainability decision making profiles and corresponding configurations of entrepreneurial orientation provide rationales and act as guidelines for making choices among competing priorities. Entrepreneurial processes, structures and related attitudes, especially those associated with risk taking and proactiveness, create not only the guides for sustainability decision making but also the reflexivity to recognize and cope with the boundaries and limitations of sustainability decision making. The reflexivity in their EO is a key feature of their ability to make choices among the competing priorities in the sustainability dimensions. Fig. 2 visually depicts the link between sustainability and entrepreneurial orientations. The solid lines indicate a strong effect from the corresponding EO dimension and the dotted lines indicate a weak effect. The configuration of EO influences the prioritization logic used in making sustainability decision tradeoffs leading to a distinct sustainability orientation. Table 5 summarizes the decision making profiles and provides features of the firms associated with each one.

Table 5

Features of the sustainability decision making profiles.

| | Singular | Flexible | Holistic |
|---|---------------------|--|-------------------|
| Prioritization logic | Nested | Ordered | Aligned |
| EO configuration | | | |
| Innovativeness | Moderate | High | Moderate |
| Proactiveness | Low | High | High |
| Risk taking | High | Low | High |
| Futurity | Moderate | High | High |
| Case characteristics | | | |
| Nr. of firms in profile | 6 | 13 | 5 |
| Firm age in 2014 | | | |
| Mean | 3.8 | 6.8 | 9.6 ^a |
| Standard deviation | 2.9 | 6.7 | 12.9 ^a |
| Nr. of firms that collaborate with suppliers or competitors | 4 | 7 | 4 |
| Cases from sample | 1, 4, 5, 14, 20, 21 | 2, 3, 6, 7, 11, 13, 15, 17, 18, 19, 22, 25, 26 | 8, 9, 12, 16, 24 |

^a Due to one firm's age of 32 years, the mean age is heavily skewed. If this firm is excluded, the mean age is 4 and the standard deviation 3.5.

6.2. Implications for sustainable, eco and social entrepreneurship

Our study contributes to the literature on sustainable entrepreneurship, including the related streams of eco and social entrepreneurship, by providing insight into understanding the decision making logic these types of entrepreneurs use when making choices between competing priorities (Schaltegger and Wagner, 2011).

The singular decision making profile, which has a dominant sustainability dimension and a nested prioritization logic, confers with the literature in sustainable and social entrepreneurship. Our findings provide support that these enterprises are mission-driven rather than profit-driven and extend theory by showing that indeed sustainable entrepreneurs are more risk taking and proactive individuals and firms. This is congruent with discussions in the literature about social entrepreneurs (Dacin et al., 2010; Zahra et al., 2009).

The flexible profile and ordering rationale of prioritization that is associated with the economic and ecological dimensions in our data aligns with the ecopreneurship literature (York and Venkataraman, 2010), which claims that there are entrepreneurial opportunities in the environmental field that innovative entrepreneurs can exploit to gain economic and non-economic rents (e.g. the preservation of nature) (Dean and McMullen, 2007). EO helps explain this prioritization rationale by drawing attention to trial and error processes and attitudes (e.g. the continuous search and experimentation with new, eco-friendly materials) that support innovation. This configuration of EO, high in innovativeness and proactiveness and low in risk taking, is in line with studies from Li et al. (2014) and Kreiser et al. (2013), both of which show positive effects from innovativeness and proactiveness on, respectively, internationalization scope and perceived sales growth, as well as a negative effect from a high or low position on risk taking.

The holistic profile, with aligned prioritization logic, corresponds to the sustainable entrepreneurship literature as it represents an integrated focus on balanced sustainability tradeoffs (Dean and McMullen, 2007; Hockerts and Wüstenhagen, 2010; York and Venkataraman, 2010). Although the literature is inconclusive about the ability of sustainable entrepreneurs to create systematic transformation of industry practices, our findings point to an EO configuration that emphasizes proactiveness and risk taking and is especially prevalent in the processes involving supplier management and engagement. The strong proactive orientation towards inter-firm relations could generally aid this transformational change and supports the claim by Schaltegger and Hansen (2013) that transformation to sustainable practices is an incremental and co-evolutionary process requiring collective action among actors, including but not limited to sustainable entrepreneurs and incumbent firms.

Our typology of sustainability decision making profiles centers on classifying the logic used to choose among competing priorities and therefore also contributes to the literature on sustainability tradeoffs (Hahn et al., 2010; Hahn et al., 2014; Margolis and Walsh, 2003). The literature on sustainability tradeoffs, viewed from a paradoxical frame, does not systematically emphasize one sustainability dimension over any other, it does not offer unequivocal guidance on which aspect of a sustainability issue to prioritize. Our findings provide a more nuanced view of the complex decision making tensions and interdependencies between the three dimensions of sustainability and the reflexive interaction of EO in recognizing, interpreting and evaluating decision alternatives.

It is also complementary to other typologies in the entrepreneurship literature. For example, the typology from Fauchart and Gruber (2011) uses founder identity to classify new venture creation. Muñoz and Dimov (2015) identify two configurations or paths and conditional factors of sustainable entrepreneurship: conformist and insurgent. These represent two extremes of a continuum where the insurgent has the capability of initiating change. However, the most closely related typology is from Zahra et al. (2009); it classifies social entrepreneurs (social bricoleurs, social constructionists and social engineers) according to the way they search and pursue opportunities and the social wealth they generate. Although there may be some similarities between these typologies, they all examine the phenomenon from different perspectives and offer explanations that illuminate different pieces of the puzzle.

6.3. Implications for entrepreneurial orientation

Our study also makes a contribution to the literature on entrepreneurial orientation. EO has customarily been used as a proxy for entrepreneurial behavior on a firm level and related to firm performance. We make novel use of the EO framework as a vehicle to understand decision making about sustainability decision tradeoffs. In essence, we focus on the sustainability decision as an outcome as opposed to firm performance. In this way, we extend the use of EO as a framework and look at decision making from an entrepreneurial angle and avoid a logic based on profit maximization or resource optimization (Parrish, 2010).

Our deep dive into EO uncovers routines and attitudes and provides novel insights into the EO construct. It unveils how the dimensions interact and potentially influence the development of innovative, proactive or risk taking capabilities. We also build on the notion of reflexivity in EO (Suddaby et al., 2015), showing that on the individual and firm levels attitudes about the social, economic and ecological environment underpin the ability to reflect on opportunities, constraints or impacts of decisions.

6.4. Implications to the literature on sustainable fashion

We also contribute to two tenets of the sustainable fashion literature: slow fashion and sustainable supply chain management. Our findings can be related to the claim from Fletcher (2010) that speed does not intrinsically influence social or ecologically friendly products or production. From our sampled firms, speed was not top of mind when considering the sustainability challenges of their business. On the contrary, some spent a prolonged period of time searching for suppliers or materials or incurred production delays to continue working with trusted suppliers. Slow fashion principles manifested in our firms in the way they designed their products, which was with durable material or classic styles. In effect, they resisted the economic system of the (fast) fashion industry by producing products with long life cycles that potentially reduce consumption and improve sustainability.

Our findings also provide insight into the processes and routines associated with sustainability in the apparel/textile supply chain (Caniato et al., 2012) and correspond with findings from Brito et al. (2008), which identified two groups of fashion firms and stakeholders with distinct attitudes towards sustainability. The first refers to those who resign to external pressure but 'blame' others for sustainability problems. The second refers to those that strive for improvement, respond creatively to the problems and internalize sustainability responsibilities, having an 'integrated' approach. Our findings correspond to the second group, giving greater insights into sustainable strategies and how firms (and other actors) may act and coordinate responsibly, ultimately creating new competences across the supply chain to cope with sustainability challenges.

6.5. Implications for practitioners and policy makers

Our findings have implications for practitioners, particularly in assessing firm entrepreneurial orientation and sustainability orientation. We provide insights into prioritization logics in sustainability decision making and the corresponding entrepreneurial orientation. As sustainable entrepreneurs develop their firms along slow growth trajectories, it becomes important to be aware of the duality of sustainability and entrepreneurial orientations and how that may affect sustainability decision making.

Our findings also have strong implications for policy makers in developing schemes and policies to increase ecological and social benefits. First, fiscal policies (e.g. tax credits) could provide incentives for firms to choose more ecological-friendly material and for consumers to purchase more ecologically sustainable products. Policy makers could also provide more support in the form of grants, contests or networking to increase collaboration between suppliers and firms to produce novel eco-friendly materials or improve production processes. Second, policy makers could stimulate sustainable social and economic development in impoverished regions by incentivizing firms to employ workers that have been marginalized in the labor market, or in emerging markets by providing tax credits or international development funds to firms who work with community cooperatives, small holder farmers and the like. All in all, policy makers could create policy schemes to support and stimulate long-lasting sustainable entrepreneurship by taking into account the slow growth trajectory that is typical for these firms.

6.6. Limitations and future research

Our research was designed to study a group of sustainable entrepreneurs in a specific setting, the apparel/textile industry, which may pose limitations to the generalization of the findings to a broader group of firms and entrepreneurs. However, we believe that the findings are applicable to a wide range of manufacturing industries, and creative, design and knowledge intensive industries, that have complex, fragmented or outsourced production value chains that face multifaceted sustainability challenges. This pertains to various agriculture industries (e.g. cacao, coffee, cotton), durable goods products (e.g. automobiles, computer hardware) and other high technology industries (e.g. renewable energy, nanotechnology).

Our study is an initial step in understanding the microfoundations of sustainable entrepreneurship and there are several future opportunities for research. To start, the field would benefit from increased scrutiny of the relation between sustainable entrepreneurship and innovative activity, for example the incentives and motivations (e.g. the institutional triggers, collective action and legitimacy) for sustainable entrepreneurs to pursue innovative activities to resolve sustainability challenges. Additionally, future studies could explore in more depth EO and associated routines. Another opportunity for future research is to further our understanding of how sustainable oriented firms develop dynamic capabilities and change established practices to more sustainable ones over time. As a nascent field more in-depth qualitative studies are needed as well as more large-scale quantitative studies to uncover causal and relational variable performance.

7. Conclusion

We draw on entrepreneurial orientation to illuminate decision making in sustainable entrepreneurship. We contribute to the literature by showing that sustainable entrepreneurs (inclusive of social and green entrepreneurs) have persistent dual entrepreneurial and sustainability orientations. We derive three sustainability decision making profiles with distinct prioritization logic and corresponding EO configurations. We extend the work in these two literatures by illuminating the relation between sustainability and entrepreneurial orientations and how the reflexivity of EO helps to overcome the competing priorities in economic, social and ecological sustainability. Our findings provide insights to sustainable entrepreneurs that effect the allocation of resources both internal and external to the firm (e.g. strategic partnerships, recruitment, product development) through decision making that is aligned with their sustainability orientation.

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[illegible]

Appendix B. Selected supporting evidence for the identification of EO processes, structures and attitudes.

| Selected evidence from qualitative data | EO dimensions | | | | | |
|--|---------------|-----------|-------------|----------|---------|--------------------|
| | INNOVATIVE | PROACTIVE | RISK TAKING | FUTURITY | PROCESS | STRUCTURE ATTITUDE |
| SEARCH | | | | | | |
| I only considered working with suppliers that fit with our mission. I should emphasize again that we first searched for the right suppliers and then started [the company]. Our mission is from inside out and not a trendy wave or twist. (Case 6) | ● | | | | ● | ● |
| [We have] high quality products that fuse together thoughtful design details with low impact fabrics. But [we] wanted ... more than plain T-shirts with eco-friendly credentials, so [we searched for] a method of digital printing that only uses water based inks. (Case 13) | ● | | | | ● | ● |
| [We] were the first with a recycled denim product. [We] continuously look for ‘greener’ washes, we’re very innovative in that, production processes and methods, such as low impact washes and natural dye techniques, low impact washes, where laser and ozone is used to substitute stonewash and bleach. Sometimes we choose washes/techniques that might be more expensive and accept less margin, also as a way to help suppliers promote their new technology and build scale. (Case 16) | ● | | | | ● | ● |
| EXPERIMENTATION | | | | | | |
| I try to work as much as possible with eco-friendly fibers, I experimented with bamboo yarns for example, I worked with eco-friendly leather ... (Case 22) | ● | | | | ● | |
| I’ve experimented with personalized 3D printed buttons with initials. (Case 24) | ● | | | | ● | ● |
| In the future we try to innovate together with the factories we currently are working with. (Case 16) | ● | | ● | | ● | ● |
| PRODUCT DEVELOPMENT | | | | | | |
| Our ‘green’ philosophy of no waste is supported by this way of producing. We design and develop in close harmony with our factory; this is visible in the end result. Together we achieve innovative knitwear ... (Case 3) | ● | ● | | | | ● |
| [Our products] are timeless and made to last. (Case 12) | ● | | ● | | | ● |
| I am really a big believer in slow fashion, so to not buy every season so many new things but just combining it in a nice way. (Case 22) | ● | | ● | | | ● |
| DESIGN MODULARITY | | | | | | |
| At a certain point there is a lot of stock in your warehouse and you need to use it in a way that it fits your collection, although you do not want this. On the other hand you do not want your stock to pile up so you have to do something like knitting something extra to it so that it can be sold in your collection. Or add another print. (Case 3) | ● | | | | ● | ● |
| I find new ways to combine these yarns and still have a sellable product ... if you keep some things the same then people can see that’s one line and you can still have lots of things but using only unique parts. (Case 22) | ● | | | | ● | |
| I have decided to use fabric and yarn remnants. It is a good alternative and more sustainable and cheaper than when I buy new fabric. (Case 24) | ● | | | | ● | |
| MARKET OPPORTUNITIES | | | | | | |
| ... if you don’t change, then you [don’t survive] ... there are so many things that change in the world that you just have to change. The cotton crops need a lot of water, and that is a problem and just embrace the change. (Case 8) | | ● | | | | ● |
| Because we first became a member of Fair Wear Foundation and then started [our company], sustainability is anchored in our mission and business operations. (Case 6) | | ● | ● | | | ● |
| We believe in a better world, more fair, sustainable and beautiful. To wait patiently for others to realize our dream is not in our genes. We are taking the first steps to get the big machine turning. We believe that every contribution on sustainability makes a difference. (Case 9) | | ● | ● | | | ● |
| SUPPLY CHAIN SYSTEMS | | | | | | |
| In order to re-use a product tomorrow, we should know how we made it today. The Circular Content Management System (CCMS) is a circular track and trace system in which all partners in the supply chain are involved. Raw materials and products ... can be followed through every stage of development. (Case 14) | ● | | | | ● | ● |

[monitoring suppliers] is a constant process ... there are always reasons why at some moment you say, we can't work with this supplier any more. Then we search for a new supplier ... It is a continuous process ... (Case 8)

We source fabrics together with suppliers and we give a list of our quality standards including sustainability. I am now working on structuring this process, for example incorporating the REACH restricted chemicals. (Case 8)

SUPPLIER SWITCHING

[We] produced almost twenty percent of our 2015 orders at a Turkish supplier, but decided to terminate the relationship. [We] asked several times but the supplier did not return a signed questionnaire and they were unwilling to be transparent about their labor practices. Their lack of commitment and communication made us decide to end the business relationship. (Case 6)

[We] work with the same production agent in Portugal for more than 10 years and have long and steady partnerships with their Portuguese suppliers. (Case 6)

[We] value long term relations and don't change production location easily. As a member of Fair Wear Foundation, we can't change suppliers every year. [We] do what we do from years of experience, not by taking a big risk on innovation. We have suppliers that we have worked with for 20 years, but also some that we have worked with four or five years. (Case 8)

SUPPLY CHAIN ENGAGEMENT

[We] consistently evaluate the supplier base and discuss progress with suppliers. Two-thirds of production takes place in Portugal at factories that are visited twice a year. Social and environmental compliance are always part of the discussions. [We have a] total production lead-time/work plan sheet to be able to know when decisions need to be made without influencing the production lead-time in a negative way. [We] are in constant communication with our factories ... to make sure there is no delay that might cause production overtime in the factories. (Case 6)

... it's important that suppliers ... can deliver the quality we want for our brand. ... it is really a question of years of cooperation and making continuous improvements together. (Case 8)

During visits we check whether the products we expect to be made are actually being processed in the production lines. (Case 16)

PRICING / MARGIN POLICIES

We tried a 'Made in England' range in 2011 ... [and] produced a British designed and British made range. The costs involved using the factory, and the net return meant we could not continue this range. (Case 11)

[We have] calculated for each product a fair price for its workshops, its dealers and for the customer ... [we don't play into] fashion trends [or discount] our collections during sales periods.

[We do] not negotiate on prices but want our suppliers to come with realistic prices that cover production costs. This could mean that [we] decide to take less margin on a product. If there are delays, [we] do not apply a penalty to suppliers for delayed delivery, even though [we] might need to sell at a discount to clients because of the late delivery. (Case 16)

QUALITY MANAGEMENT / SUPPLIER COMPLIANCE

We visit especially the fabric suppliers, because that really determines the quality of the clothing ... If you are talking about fabrics from Europe, there are already strict regulations because otherwise the factory would be shut down. So you have already ruled out a lot of risk. But fabrics that are sourced outside of Europe, there is a greater risk there. (Case 8)

It is a little bit of finding a balance between standards for materials that are sourced and for some standards or quality that are less common, to test those. And to have the supplier sign a statement that they do not use any restricted chemicals on the REACH list. (Case 8)

To add new brands to the collection, we look at certifications, how is it produced? If it's not good, then it's not good. The difficult part is the price. (Case 4)

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