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1 UNDERSTANDING SUSTAINABILITY BEHAVIOUR: THE RELATIONSHIP 2 BETWEEN INFORMATION ACQUISITION, PROACTIVITY AND 3 PERFORMANCE

4 5 **Abstract**

6 We use the concept of absorptive capacity to better understand the relationship between
7 sustainability information acquisition, proactivity and performance. A quantitative
8 analysis of a survey of 408 tourism enterprises in Catalonia (Spain) shows that: i)
9 growth-oriented motivations are related to communication with industry-related
10 sources, and to individual and informal channels, while lifestyle motivations are related
11 to communication with other stakeholders; ii) sustainability implementation is related
12 to communication with other stakeholders, to the use of collective and formal channels,
13 and to the perceived usefulness of information; and iii) sustainability performance is
14 related to the introduction of environmental and economic practices, to the use of both
15 industry and broader sources of information, and to the perceived usefulness of
16 information. We suggest that sustainability training and education may be more
17 successful in achieving behaviour change when they are adapted to the absorptive
18 capacity and learning styles of their target audiences.

19
20 **Keywords:** Sustainability information, Absorptive capacity, Sustainability motivations,
21 Sustainability practices, Sustainability performance, SMTEs

22 23 **Highlights**

- 24 • Sustainability drivers can be associated with some information sources and
25 channels
- 26 • Implementation is linked to the perceived usefulness of information
- 27 • Performance relies on the introduction of environmental and economic practices
- 28 • Performance is partly related to information sources and their perceived
29 usefulness
- 30 • Interventions must be tailored according to their target audiences

1. Introduction

Attempts to relate sustainability motivations and practices to each another (Font, Garay, & Jones, 2016, forthcoming; Garay & Font, 2012), and to business performance (Inoue & Lee, 2011; Pereira-Moliner, et al., 2015), have resulted inconclusive, arguably because previous studies do not provide sufficient understanding of the mechanisms that facilitate the processes of learning and behaviour change. Absorptive capacity is a suitable approach to adopt for unpacking the complexities of organisational capabilities and knowledge management. Absorptive capacity refers to the process of acquiring, assimilating, transforming and exploiting external information to enable innovation, with a view to creating competitive advantage (Zahra & George, 2002). This article suggests that an enterprise's absorptive capacity will partly explain the link between its sustainability proactivity and its subsequent performance.

The study of information and knowledge management in tourism is relatively new (Cooper, 2006). Although core concepts of the process of information acquisition, and their impact on performance, are well established, little research has been undertaken specifically in the contexts of tourism or hospitality (Shaw & Williams, 2009; Thomas & Wood, 2014). Moreover, field research has demonstrated the challenges involved in using sustainability innovation models to predict behaviour in small and medium tourism enterprises (SMTes). Implementation of the models can be too time consuming or they are designed primarily for large companies, which have totally different organisational structures (Hallenga-Brink & Brezet, 2005). Different references have included a model for knowledge management (Cooper, 2006), an adaptation of the model of absorptive capacity for tourism (Thomas & Wood, 2015) and the use of international guidance to measure innovation adapted to tourism (Clausen & Madsen, 2014). These studies are all based on the premise that innovation is systemic and interactive, and that firms use external and internal information sources to innovate. In this context, the term 'source' is used to refer to anything or anyone that might inform a person or business about a subject or share knowledge on a specialist topic.

The use of absorptive capacity to understand sustainability strategies is also relatively new. Delmas, Hoffmann and Kuss (2011) highlighted the importance of certain organisational factors as predictors of the adoption of environmental management strategies. They showed that absorptive capacity facilitates the adoption of successful environmental strategies because firms need to combine information from various sources that are often external to them. Absorptive capacity facilitates

competitive advantage from environmental proactivity by saving costs, increasing productivity, improving access to technologies, raising levels of innovation and product-differentiation, and improving image and/or reputation (Porter & Kramer, 2006; Zahra & George, 2002). No studies were found that spoke about socio-cultural or economic proactivity in relation to competitive advantage; therefore, it is worth including these in our study. Delmas, et al. (2011) also found that a firm's ability to generate competitive advantages is directly related to their competitors' ability to replicate their strategy. Therefore, as both absorptive capacity and sustainability proactivity are difficult to imitate (because they depend on complex and often tacit processes), any competitive advantage based on these factors will be harder for rivals to challenge.

Thus, the aim of this study is to understand whether or not sustainability proactivity and sustainability performance are related to the process of sustainability information acquisition. The study focuses only on how sustainability information is acquired as the full process of absorptive capacity is too complex for consideration herein. However, in so doing, the study accepts that only those firms that follow through all four stages of the process will achieve the resultant competitive advantage (Delmas, et al., 2011). While partial, the study's approach allows for a more in-depth focus of the first stage and aims to provide baseline data for subsequent studies on the assimilation, transformation and exploitation stages.

The study focuses on SMTEs because they constitute the majority of the structure of the tourism sector and because, compared to larger businesses, they are generally worse informed (Kuan & Chau, 2001), have less resources (Morrison & Teixeira, 2004) and struggle more to adopt new technologies (Drew, 2003). These factors impede them from accessing relevant information upon which to develop their knowledge capital and, therefore, subsequently hinder their innovation and ability to perform. The study makes the case for three sets of hypotheses, which are subsequently tested to provide evidence. Their partial validation contributes to our understanding of the complexity of sustainability behaviour, while still leaving issues unanswered for further research. The importance of the study resides in its ability to provide the suppliers of sustainability information (usually policy makers, but also NGOs, industry associations, academics etc.) with evidence, not only of industry preferences in relation to different motivations for acting sustainably, but also with explanations of the relations between different sustainability information preferences and the subsequent impact these have on

performance. Such evidence can help the aforementioned suppliers of sustainability information to design more tailored, and therefore impactful, sustainability information provision tools.

2. Sustainability information acquisition, sustainability proactivity and sustainability performance

2.1. The information acquisition stage

Delmas et al. (2011) found that firms that have developed organisational capabilities to acquire new knowledge in their field will be better equipped to acquire knowledge related to environmental practices, and Cohen and Levinthal (1990) showed that the process of sustainability information acquisition in one field can ease the absorption of new knowledge in related fields. Yet SMEs, in general, invest insufficiently in research and development for innovation purposes, including information acquisition (Jones & Craven, 2001), and lack the internal capabilities and resources necessary to monitor environmental issues. Instead, they rely on external sources (Roy & Thérin, 2008; S. Wang & Noe, 2010) to increase internal expertise and build human capital (Karanasios & Burgess, 2008; Perez- Sanchez, Barton, & Bower, 2003) and thus to gain competitive advantages (Analoui & Karami, 2002). The literature classifies external information sources into two categories. The first category includes information sourced from the same industry (customers, suppliers or competitors, and industry data on the monitoring of market changes and technological advances). For Roy and Thérin (2008), scanning market conditions, technological changes, suppliers and/or customers is always a useful exercise as it provides an important source of knowledge. In the second category, authors highlight the importance of research released by institutions outside the industry (laboratories, universities, trade associations, consultants and public bodies) (Cohen & Levinthal, 1990; Soh, 2003).

Hospitality firms are more likely to use information from within the industry rather than from researchers and consultants (Dalley & Hamilton, 2000; Rønningen & Lien, 2014) because such information (be it released from customers, suppliers, or competitors) tends to be readily absorbed by an enterprise as it provides information directly relevant to them (S. Wang & Noe, 2010). Competitors and customers are more credible and influential to hospitality firms than public bodies are (Rothenberg & Becker, 2004) hence sustainability innovation is often induced by the manufacturers of

equipment and raw materials as change requires much more cooperation with suppliers (Hjalager, 1997).

It is important to understand not only the sources of information acquired but also the possible channels that can be used for effective communication, understanding a channel as the means to transmit information. For SMTEs, the most preferred channel through which to acquire information is the internet; in particular, via search engines and websites. This is followed by online newsletters, social media, webinars, blogs and podcasts (King, Breen, & Whitelaw, 2012). The low scores still reported for the latter four suggest that limited adoption of these channels may be less related to technology and more about the nature, structure, organisation and delivery of relevant information. In addition to the internet, Fillis and Wagner (2005) found that businesses are proactive in information seeking, networking and learning from customers. They showed that some traditional face-to-face channels are as useful as online technologies for these purposes. These earlier studies have provided useful reference, but what has remained unstudied to date is an analysis of how sustainability information is acquired in the specific context of SMTEs, hence the objective of this study. The study considers the relationship between sustainability information acquisition and sustainability proactivity, with the latter divided into two constituent elements: sustainability motivations and sustainability practices.

2.2. Sustainability information acquisition and sustainability motivations

The relation between a business' motivations to change and the information sources and channels it has chosen is already clearly acknowledged, as explained further below. One strand of the literature that supports this fact studied how the dichotomy between business-oriented and lifestyle-oriented behaviour impacts on business perspectives (Parker, Redmond, & Simpson, 2009; Reijonen & Komppula, 2007; Walker & Brown, 2004). In the hospitality context, King et al. (2012) showed that owners/managers aiming to grow their business join generic business groupings, while those aiming to build their social capital are influenced by stakeholder legitimisation and take a more relational approach to acquiring information, relying on peers, suppliers and customers (Perrini, 2006). A third group of owner/managers govern their businesses according to a range of non-economic objectives including personal involvement, sustainability and an independent lifestyle (Jennings & Beaver, 1997); for this group, their preferred information sources are often tourism industry associations (King, et al., 2012). While

all owner/managers gather primarily marketing and operational information, the “business growers” proactively gathered information about general management as well as tourism-specific knowledge (King, et al., 2012).

These studies analysed *generic* (as opposed to *sustainability*) business motivations to change across all information types. Therefore, their results require further testing in a sustainability context. However, there are parallels to be drawn between the three categories outlined above for generic motivations to be in business and for motivations to engage in sustainability. For example, economic reasons include seeking cost savings, tax incentives and subsidies, or gaining market appeal (Carroll & Shabana, 2010; Pereira-Moliner, et al., 2015). Societal legitimisation explains acts of engaging in sustainability to respond to stakeholder pressures, and is often valued by those firms seeking to protect their reputation (Tzschentke, Kirk, & Lynch, 2004). A third explanatory frame suggests that much of the pro-sustainability behaviour observed is best explained through habits, values and lifestyle choices rather than conscious actions (Sampaio, Thomas, & Font, 2012; Tzschentke, et al., 2004).

In addition, the perceived usefulness of sustainability information sources must also be considered. In their study of climate change mitigation, Coles, Zschiegner, & Dinan (2013) found that only 18% of businesses believed that their competitors did more to mitigate climate change than they did; this might explain why, despite a preference for industry sources as information sources, the preferred information channel is the internet and not imitation of competitors. Although 64.8% of them said that having best practice examples available to them would encourage them to implement more initiatives, contradictorily, they also said that imitating other businesses was the least reported reason for acting sustainably (16.7%). Hall (2006) explained how owner-managers in New Zealand generally distrust external sources and public calls to act, preferring to learn about climate change from personal experience and customer feedback.

What remains untested is the connection between the process of sustainability information acquisition and the different sustainability motivations, which adds a new component to the models testing the relation between absorptive capacity and sustainability motivations. Following the previous literature, we derive our first set of hypotheses:

H1a: The motivations of SMTEs to introduce sustainability are significantly related to their use of sustainability information sources.

H1b: The motivations of SMTEs to introduce sustainability are significantly related to their use of sustainability information channels.

H1c: The motivations of SMTEs to introduce sustainability are significantly related to the perceived usefulness of the information acquired.

2.3. Sustainability information acquisition and sustainability practices

Building on these hypotheses, we now study how the process of sustainability information acquisition relates to sustainability practices. The range of sustainability practices is already widely reported and codified, with practices generally being categorised within the three dimensions of environmental, social and economic (Elkington, 1997). Much of the literature laments the fact that sustainability practices are chosen to minimise resource consumption as a means to cutting operating costs, rather than for a deeper commitment to the environment and society (Kasim, 2007; Tzschentke, et al., 2004), although there is evidence of sustainable entrepreneurs (Ateljevic & Doorne, 2000; Shaw & Williams, 2004). Sustainability has been considered a form of innovation (Hjalager, 2010; Hunter, 1997) and there is evidence of a relationship between environmental information acquisition and the adoption of innovative practices (King, et al., 2012) that stimulate innovation, competitiveness and knowledge creation (Delmas, et al., 2011; Lawrence, Mauws, Dyck, & Kleysen, 2005).

Hjalager (2010) reported that when sustainable tourism is applied to new issues and new market segments, it may be possible to talk about product innovation. For example, climate change challenges have encouraged some entrepreneurs to reduce their vulnerability and costs, and to improve their image vis-à-vis customers (Gössling, Hall, & Weaver, 2009), although this is not the norm (Coles, Zschiegner, & Dinan, 2014) and clearly more needs to be known about the underlying reasons that trigger such sustainability actions. To date, no studies have considered socio-cultural and/or economic information acquisition either in tourism, or to our knowledge, elsewhere. Camisón and Monfort-Mir (2012) found that the diffusion of innovation among services and tourism enterprises is not characterised by a propensity for the development of new products and processes. They also affirm that innovation in tourism could rely less on the accumulation of internal technological knowledge and more on capabilities for developing knowledge and learning. Some sustainability practices have been considered

organisational innovations; Garay and Font (2012) showed that SMTEs claim that to implement not only environmental, but also social and economic actions, requires organisational adjustments that are only possible if they have the capacity to absorb relevant information.

Using various information sources is key to organisational innovation (Jones & Craven, 2001). Industry sources are relevant as cluster approaches can provide a clearer path to sustainability while also offering support and savings on resources and cost (Char-lee, Becken, & Watt, 2016). Acquiring information from research and consultants may be more difficult than from industry sources, but these provide information that may be previously unknown to the industry and thus, if properly assimilated, may contribute to technological breakthroughs (Julien, Andriambeloson, & Ramangalahy, 2004). Roy and Thérin (2008) found that SMEs with a higher level of environmental commitment tend to source information from both industry and public agencies, although this could be linked to them seeking more complex advice, for example regulation specifics, for which official assistance is needed (Simpson, Taylor, & Barker, 2004). Roy and Thérin (2008) also evidenced how regular environmental scanning can contribute to a firm's capacity to acquire new information and, together with a greater environmental commitment, can lead to greater responsiveness to change. King et al. (2012) reported that the perception of information usefulness is influenced by the overall business motivations. They also found that business growers have a more intensive use of different channels and are more positive about their usefulness.

Sampaio et al. (2012) suggested that the sustainability mastery and efficacy skills of SMTEs will partly explain the perceived usefulness of information. Those with a higher level of environmental commitment (i.e. those with more practices implemented) use both associations and suppliers and public agencies (Roy & Thérin, 2008), yet those with lower skills find the range of sources overwhelming (Rothenberg & Becker, 2004; Worthington & Patton, 2005). For example, Coles, et al. (2014) found that decision-making was driven by clear and coherent business intelligence. Only 26.6% of businesses said that they lacked the information they needed on how to respond to climate change, and they stated that the problem was not a lack of *quantity/availability* but a lack of *coherent* information. Businesses said that the main barrier to them acting was a lack of understanding of which of the vast range of sources were relevant to them (in particular in relation to financial incentives).

Following these points, we shall argue that the sustainability information sources and channels used, and the perceived usefulness of these, partly explain the ability of SMTEs to implement sustainability practices. From here we derive our second set of hypotheses related to sustainability practices:

H2a: Implementation of sustainability practices in SMTEs is significantly related to the use of sustainability information sources

H2b: Implementation of sustainability practices in SMTEs is significantly related to the use of sustainability information channels

H2c: Implementation of sustainability practices in SMTEs is significantly related to the perceived usefulness of the information acquired

2.4. Sustainability information acquisition, sustainability proactivity and sustainability performance

The Schumpeterian view of innovation emphasises the links between problem solving and improved economic performance (Clausen & Madsen, 2014) and, thus, partly explains why some studies conclude that sustainability proactivity increases a firm's performance, while other studies find sustainability hinders performance, or even on other occasions the literature can establish no relationship between the two factors (Garay & Font, 2012; Margolis, Elfenbein, & Walsh, 2007; Pereira-Moliner, et al., 2015). We argue that the sustainability information acquired partly informs the sustainability practices undertaken, which in turn can increase sustainability-related business performance. The dynamic-capability view of absorptive capacity explains how "higher-level" capabilities serve to explain a firm's success or failure, wealth creation and/or competitive advantage over time. Absorptive capacity can explain performance outcomes by acting as a mechanism through which firms can attain innovation and subsequent financial benefits (Zahra & George, 2002).

There is evidence outside the realm of sustainable tourism that the volume and diversity of the information acquired positively impacts a SME's performance, measured in terms of its: speed at commercialising innovations, technological leadership in the industry, increase in sales volume, speed of innovation relative to the leading businesses in its industry, customers' satisfaction with innovations, profit gained from innovations and increase in market share due to innovations (S. Wang & Noe, 2010). Fosfuri and Tribó (2008) reported that absorptive capacity is a source of

competitive advantage in innovation, especially in the presence of efficient internal knowledge. For Kostopoulos et al. (2011), absorptive capacity can be a source of financial advantage by stimulating innovation benefits over time.

The relation between absorptive capacity and innovation is also visible in sustainability studies. For Zahra and George (2002), firms with highly developed absorptive capacity are likely to leverage cost advantages when implementing sustainability practices because of their improved access to a wider variety of technologies and resulting flexibility in capability deployment. Delmas et al. (2011) indicated that absorptive capacity can help to improve assessments of the benefits of new technologies with respect to their ability to reduce potential liability costs, legal fees and/or product take-back costs, or to leverage production efficiencies and waste reduction. But besides eco-savings, absorptive capacity can enable firms to realise differentiation and reputation advantages through proactive environmental strategies (Shrivastava, 1995). Finally, performance generation is also related to the capacity of a business to protect its innovation, because both absorptive capacity and environmental proactivity are related to complex and often tacit processes that are difficult to imitate. From here, we derive our third set of hypotheses:

H3a: Sustainability performance in SMTEs is significantly related to sustainability practices

H3b: Sustainability performance in SMTEs is significantly related to the use of sustainability information sources

H3c: Sustainability performance in SMTEs is significantly related to the use of sustainability information channels

H3d: Sustainability performance in SMTEs is significantly related to the perceived usefulness of the information acquired

3. Method

3.1 Population and sample

The empirical research for this study was conducted during the 2014 winter in Catalonia (Spain), where tourism employs about 200,000 people and accounts for 11% of the GDP, mostly through SMEs (Idescat, 2014). Catalonia is the third most popular tourist region of the European Union, with 72.7 million overnight stays in 2014 (Eurostat, 2015). An online survey was sent to the population for this study, which consisted of

3,879 hospitality enterprises with unique and valid email addresses that were provided by the Catalan government (DIUE, 2014). This population included all types of businesses, ranging from large to micro-enterprises, with an average of 11 employees (hence primarily SMTEs) (Idescat, 2014). A pre-test was conducted on 150 of these enterprises to validate the survey method and then the questionnaire was sent to all the businesses in the sampling frame. Data was collected by e-mail in three rounds including two reminders over a six-week period.

The study aimed to understand SMTEs in particular because the owners/managers are more likely to act on their motivations and use the information acquired than larger firms with more complex organisational structures (Sampaio, et al., 2012; Thomas, Shaw, & Page, 2011). 408 businesses completed the questionnaire correctly (10.5% response rate, 4.59% sampling error). Based on the literature review, our questionnaire included questions on the owner's profile [Gender, Age, Qualifications, Role] (Carroll & Shabana, 2010; Curtis, Conover, & Chui, 2012; Font, et al., forthcoming; Garay & Font, 2012; Kim, Lehto, & Morrison, 2007; Piff, Stancato, Côté, Mendoza-Denton, & Keltner, 2012) and business characteristics [Years since business creation; Affiliation to some brand or chain; Family enterprises; Business type & category; Number of employees; Capacity; Average occupancy; Certifications; Reasons for customers to choose the establishment; Average price in high and low season; Financial performance- current financial health and change over the last two years] (Argandoña & von Weltzien Hoivik, 2009; Caprar & Neville, 2012; De Bakker, 2005; Getz & Carlsen, 2005; King, et al., 2012; Murillo & Lozano, 2006; Perrini, 2006; Porter & Kramer, 2006; Revell, Stokes, & Chen, 2010; Spence, 2007; Thomas & Thomas, 2006; Udayasankar, 2008; Walker & Brown, 2004). Owner and business characteristics were measured using variables with different possible answers. Financial performance situation and perception with a 5 point Likert-scale ("very bad" to "very good"). Table 1 shows the sample is made up primarily of owner-managed, small, family businesses, suffering from seasonality and a low occupancy rate.

Table 1. Sample characteristics

Owner characteristics	Percentage
Gender: Female/Male	55/45
Age: Less than 40/Between 41 and 60/More than 61	27/63/10
Education: Primary/Secondary/Graduate/Postgraduate	5/31/52/12

Business characteristics	Percentage
Years in operation: Less than 10/More than 10	50/50
Family businesses: Yes/No	90/10
Type: Rural/Agritourism/Hotel/Hostel/Campsite	34/16/26/14/10
Full time employees: Less than 5/From 6 to 10/More than 10	74/9/17
Annual occupancy: Less than 25%/26% to 50%/More than 50%	23/42/35
High season: 4 months or less/more than 4 months	79/21
Financial health: Poor/average/good	18/48/34
Financial situation in the last 2 years: has worsened/stayed the same/ improved	25/43/32

Source: Self-produced.

Non-response bias was checked and there were no significant differences regarding the number of rooms (Student's $t = 0.555$; $p = 0.579$) and beds (Student's $t = 0.873$; $p = 0.383$) between the population and the sample. Non-response bias was further checked by dividing the dataset into thirds according to the order of the surveys completed (Armstrong and Overton, 1977). Pearson's Chi Square test and Student's t test between the first and last thirds indicated no statistically significant differences in the mean responses for any of the variables measured. Therefore, non-response bias was presumed not to be a problem in this dataset. As it was not feasible to ask for more than one respondent in any SMTE, we checked for common method variance (Podsakoff & Organ, 1986) using Harman's single factor test. 29 factors were extracted, with the first factor accounting for only 11% of the total variance. As such, the observed relationships among constructs were not mainly accounted for by the systematic variance associated with the measurement technique.

3.2. Measures

As Clausen & Madsen (2014) did, we followed a subjectivist approach of asking the owner/managers about their practices and sources. We checked our approach against the methodology in the Oslo manual (OECD & Eurostat, 2005) to ensure it followed international standards, although our emphasis is specifically on sustainability innovations. Rønningen and Lien (2014) used a similar survey methodology of questionnaire and definitions as that defined in the OECD manual, and found that the OECD definitions of innovation were artificially distinguished and that tourism firms innovated in a more interlinked way.

In the questions about their motivations to introduce sustainability practices (Table 6), the respondents were asked to choose four motivations from among twelve options for consistency with previous studies [References included after review]. The options included economical, legitimisation-based and altruistic motivations that have been directly reported in the literature (Brønn & Vidaver-Cohen, 2009; Chan & Wong, 2006; Font, et al., forthcoming; Kasim, 2007; Kollmuss & Agyeman, 2002; Markus & Kitayama, 1991; Morrow & Rondinelli, 2002; Raviv, Becken, & Hughey, 2013; Shane, Locke, & Collins, 2003; Thapa & Best, 2013; Tzschentke, Kirk, & Lynch, 2008). A dichotomous scale (i.e. 0 - the practice is not developed; 1 - the practice is developed) was used to capture their responses, because introducing a practice had a definite response: it either happened or it did not.

For sustainability practices, unlike the Oslo manual, we did not attempt to define an innovation per se but, instead, we asked the firms to report on 29 possible environmental, social and economic practices (see Table 3) operationalized from the theoretical characterizations presented earlier (Brønn & Vidaver-Cohen, 2009; Chan & Wong, 2006; Font, et al., forthcoming; Kasim, 2007; Kollmuss & Agyeman, 2002; Markus & Kitayama, 1991; Morrow & Rondinelli, 2002; Raviv, et al., 2013; Shane, et al., 2003; Thapa & Best, 2013; Tzschentke, et al., 2008). Again, a dichotomous scale was used to capture their responses.

For the questions that related to the process of sustainability information acquisition and its perceived usefulness (Table 4), we adapted the list of information sources beyond the Oslo manual indications, as per Clausen & Madsen (2014), taking into account diverse theoretical descriptions reported by literature (King, et al., 2012; OECD & Eurostat, 2005; Roy & Thérin, 2008). For these questions, a 5-point Likert scale was used. The Likert scale was useful both to measure the frequency with which respondents were using the diverse sustainability information sources and channels, and to measure the degree of conformity between information sources and channels and the subsequent sustainability performance. Content validity was assured by the literature review and by the expert judgment of academics and hotel professionals, obtained via pilot testing. Construct validity was assessed through a principal component analysis for each sustainability information measure employing Varimax rotation (see Table 2). Principal component analysis uses an orthogonal (linear) transformation to convert a set of observations of possibly correlated variables into a set of values of uncorrelated variables (the principal components). Varimax is a commonly available orthogonal

method of rotation that produces factors that are uncorrelated (Osborne & Costello, 2009). The results of the factor analysis are shown in Table 2, with some of the constructs divided into two factors; the lower level factors are analysed later in this research.

Regarding the factor analysis results, and beginning with sustainability information sources, we analysed generic information sources within the literature (see Table 4). This suggested that large enterprises rely more on internal sources (their own R+D team) and SMEs rely more on external sources (within the same industry and institutions outside the industry). To test the findings of the literature review, in the context of sustainability, we asked respondents to state to what extent they used ten diverse internal and external sources (see Table 4); a 5-point Likert scale question was used. In the factor analysis, to check the construct validity of the sustainability information acquisition sources, the constructs were clear and coherent with the generic information acquisition case in SMEs: the factor analysis excluded the variable related to internal processes (“information acquired from the training of our own team”) and presented two categories within which to group the rest of variables. The first category, “Communication with industry”, was formed from variables that represented communication with the industry sector (for example, customers, suppliers or competitors, and industry data on the monitoring of market changes and technological advances). The second category, “Communication with other organisations”, was formed from variables that represented communication with public and private institutions (communication with academia, research centres, consultants and/or business associations).

Related with channels, we also followed theoretical descriptions reported by literature to ask respondents about the level of intensity of their use of eight diverse channels (see Table 4), with their answers captured using a 5-point Likert scale. Here, the factorial analysis shown in Table 2 obtained two factors; the first one, “Collective and formal”, which grouped variables that related to training in collective and formal events, and the second one, “Individual and informal”, which grouped variables that related to individual online searches (websites, blogs, social media). We had not noted this construct in the literature, but we considered it to have an internal logic. Then, perceived usefulness was measured by a single five point Likert scale variable.

Finally, our questions about sustainability performance (Table 5) were simplified from the Oslo manual (OECD & Eurostat, 2005) since we had not categorised the types

of innovation in the same way; again, we employed a five point Likert scale to test the level of agreement with the achievement of seven different competitive advantages that were reported by literature (King, et al., 2012; OECD & Eurostat, 2005; H. Wang, Choi, & Li, 2008) when introducing sustainability in diverse contexts (tourism and other industries). As Table 2 shows, a single factor grouped all the possible answers of the sustainability performance questions. Regarding the factors, all of them were measured employing the average value of their items.

Criterion-related validity was checked by the correlation between “Economic Practices” (see Table 3) and the latent/factor variables suggested by Table 2. The correlation matrix showed that all the variables were significantly related ($p = 0.000$), providing evidence of criterion-related validity. Finally, reliability was examined using Cronbach's alpha. The minimum advisable value of 0.7 (Nunnally, 1978) was exceeded by every factor, except for “Communication with other organisations” (0.672), which may also be acceptable for explorative studies (Hair, Black, Barry, & Anderson, 2014).

Table 2. Factor analysis to test construct validity and reliability of the perceptual variables

Sources	Factor 1 Communication with industry	Factor 2 Communication with other organisations
• Communication with universities and training centres	0.117	0.785
• Communication with public bodies	0.127	0.711
• Communication with business associations	0.264	0.621
• Communication with private consultants	0.337	0.571
• Monitoring market changes	0.779	0.085
• Monitoring technological advances	0.700	0.273
• Communication with our suppliers	0.700	0.272
• Communication with our clients	0.682	0.136
• Communication with our competitors	0.619	0.416
<i>Eigenvalue per factor</i>	3.772	1.058
<i>Accumulated % of variance explained</i>	29.436%	53.662%
<i>Correlation matrix determinant</i>	0.083	
<i>Kaiser-Meyer-Olkin Index</i>	0.858	
<i>Bartlett's significance test of sphericity</i>	0.000	
<i>Cronbach's</i>	0.791	0.672
Channels	Factor 1 Collective & Formal	Factor 2 Individual & Informal
• Business forums and corporate events	0.807	0.040
• Meetings in business networks	0.804	0.093
• Training, workshops and seminars	0.742	0.095
• Seminars on the web	0.548	0.432
• Internet search engines like Google	-0.100	0.804
• Social networks on the internet	0.047	0.751
• Blogs / Wikipedia	0.273	0.684

• Websites of specific organisations	0.246	0.636
<i>Eigenvalue per factor</i>	3.005	1.579
<i>Accumulated % of variance explained</i>	28.693%	57.308%
<i>Correlation matrix determinant</i>	0.146	
<i>Kaiser-Meyer-Olkin Index</i>	0.791	
<i>Bartlett's significance test of sphericity</i>	0.000	
<i>Cronbach's α</i>	0.744	0.717
Sustainability Performance	Factor 1	
Since introducing sustainability practices we:		
• compete well alongside the industry leaders	0.803	
• meet our sales expectations	0.790	
• have a higher market value	0.782	
• comply better with customer expectations	0.751	
• are more innovative in the industry	0.739	
• can market faster	0.734	
• get more benefits	0.687	
• reduce our management costs	0.578	
<i>Eigenvalue per factor</i>	4.334	
<i>Accumulated % of variance explained</i>	54.172%	
<i>Correlation matrix determinant</i>	0.029	
<i>Kaiser-Meyer-Olkin Index</i>	0.887	
<i>Bartlett's significance test of sphericity</i>	0.000	
<i>Cronbach's α</i>	0.875	

Source: Self-produced.

4. Findings

Table 3 shows the environmental, social and economic practices reported by these enterprises. We must remember that these items were measured using a dichotomous scale (i.e. 0 - the practice is not developed; 1 - the practice is developed) and here we present the mean, standard deviation and percentage. Inevitably there is an element of social desirability bias in self-reports of this type, but what is important for this study is to gauge the relative consistency in the answers with previous studies of comparable samples (Garay & Font, 2013). The results show a greater propensity to report practices that are now commonplace (e.g. recycling waste), save money (e.g. saving energy and water), pass responsibility to others (e.g. encouraging customers to act), or that are quite generic (e.g. supporting local development).

Table 3. Sustainability practices (%)

Environmental	Percentage
Recycle waste	85.5
Encourage customers to save energy and/or water	70.0
Save energy and water	69.5
Encourage customers to contribute to environmental protection	38.6
Implement and use of alternative energy sources	35.9
Use products that respect the environment	35.6
Choose suppliers that demonstrate their environmental responsibility	27.8

Promote consumption of organic products among customers	27.0
Evaluate the environmental impact of the establishment	22.4
Social	
Support local development and heritage conservation	65.8
Actively foster respect for the language of the territory	61.7
Foster civic attitudes among the clientele	60.0
Promote gender equality	55.0
Have facilities for disabled people	37.3
Implement practices to reconcile work and family life	32.2
Collaborate in social projects	31.7
Choose suppliers that demonstrate their social responsibility	22.1
Evaluate the social impact of the establishment	18.7
Encourage customers to contribute to social initiatives	12.0
Provide employment for people with disabilities	04.9
Economic	
Promote local products among customers	75.9
Contract preferentially people who live locally	59.0
Choose suppliers that promote local development	53.8
Offer employee salaries that are not below the industry average	50.6
Evaluate the economic impact of the establishment	27.8
Encourage customers to contribute to solidarity initiatives	12.5

Source: Self-produced.

The main motivations for introducing sustainability practices (see Table 6) are altruistic (environment protection 83.3%; lifestyle 63.1%; commitment to society 56.3%) and business related (cost reduction 65.4%; image and marketing improvements 43.2%). All other reasons have lower percentages but, collectively, they are of importance, for example to comply with legal requirements set by the administration; to improve the monitoring/control of the operation of the business; to access new information and to obtain grants. Table 4 shows the data in relation to the sources and channels used to acquire the information. The most reported sources of information are industry-related (such as reports on technological changes and communication with clients), whereas communication with academics and consultants are the least favoured, which is consistent with the findings of previous studies (Cohen & Levinthal, 1990; Dalley & Hamilton, 2000; Soh, 2003). The knowledge sources found to be important in our study follow the general patterns of those found by Clausen and Madsen (2014), namely that customers are far more important to the businesses than are consultants or researchers. However, Clausen and Madsen (2014) studied sources for innovation overall and not specifically for sustainability; they found other firms to be more important sources than governments and industry associations, whereas our study, specifically for sustainability, finds these to be in the opposite order.

Table 4. Sustainability information sources and channels, and their perceived usefulness

(1= totally disagree to 5= totally agree)

Sources	Mean	S.D.
Reports on technological changes	2.7	1.1
Communications with clients	2.6	1.1
Communications with public bodies	2.6	1.0
Communications with business associations	2.6	1.2
Communications with our internal training team	2.5	1.1
Communications with suppliers	2.5	1.1
Reports on market changes	2.4	1.0
Communications with competitors	2.3	1.0
Communications with private consultants	2.1	1.1
Communications with universities and training centres	2.0	1.0
Channels		
Internet search engines like Google	3.0	0.1
Magazines and newspapers	2.9	0.0
Local and regional tourist brochures	2.7	-0.1
Training workshops and seminars	2.7	0.0
Websites of specific organisations	2.7	0.0
Online newsletters	2.6	0.0
Internet social networks	2.5	0.1
Meetings in business networks	2.4	0.0
Business forums and corporate events	2.3	0.0
Academic studies	2.3	0.2
Telephone contacts	2.1	0.2
Blogs / Wikis	2.1	-0.1
Web seminars	1.8	-0.1
Podcasts	1.6	-0.2
Perceived usefulness	3.0	0.8

Source: Self-produced.

There is evidence of preference for external sources to increase internal expertise (Perez- Sanchez, et al., 2003), but our method of data collection did not allow us to understand the extent to which this contributes to building human capital (Karanasios & Burgess, 2008). We find that the most reported information channels for SMTEs are the internet and face-to-face business networking, as is suggested in the literature (Fillis & Wagner, 2005; King, et al., 2012) but most of the respondents were neutral (neither agreed nor disagreed) with the majority of the statements. Respondents perceive these sources to be “somewhat useful”, but also with a score of only three out of five this suggests there is substantial room for improvement.

Table 5 shows the data on sustainability performance linked to business performance. It can be seen that most of the respondents think they have obtained some improvement as a result of implementation of sustainability practices. In fact, the level of agreement is especially high, with all of the answers above 3 out of 5 in the Likert Scale and half of them above 3.5. It is worth noting that amongst these improvements

are some advanced approaches to sustainability, involving innovation, market value improvements and customer orientation. In contrast to the aspects relating to implementation of sustainability practices, improvements related to the reduction of costs, generation of benefits and other operational aspects appear in the background (although obtaining a relevant level of agreement).

Table 5. Sustainability performance

(1= totally disagree to 5= totally agree)

Since introducing sustainability practices we:	Mean	S.D.
Comply better with customer expectations	3.6	0.9
Have a higher market value	3.6	0.9
Are more innovative in the industry	3.5	0.9
Reduce our management costs	3.5	1.0
Compete well alongside the industry leaders	3.3	0.9
Get more benefits/profits	3.2	1.0
Meet our sales expectations	3.2	0.9
Can market faster	3.0	0.9

Source: Self-produced.

We now look in more detail at the relationships between sustainability motivations and the information acquisition variables (sources, channels and perceived usefulness). We find that the motivations of SMTE owners/managers to introduce sustainability practices are related to their use of sustainability information sources and channels, and the perceived usefulness of the resultant information acquired. We employ logistic regressions to analyse whether the two factors on sources (communication with sources *within* the industry versus communication with sources *external to* the industry), the two factors on channels (collective and formal channels versus individual and informal channels) and the perceived usefulness of information acquired (measured in a 5-point Likert scale question) are significantly related to the respondents' motivations towards sustainability (these items are dichotomous, where 0 means no, and 1 means yes). Logistics regression measures the relationship between a categorical dependent variable and one or more independent variables. In our case, the dependent variables are the different respondents' motivations towards sustainability and the independent variables are factors conformed by the sources, channels and perceived usefulness.

Table 6 shows a significant positive relationship between the lifestyle motivation and the "communicate with other organisations" factor, and a significant negative relationship with the "communicate with industry". The cost motivation is significantly

and positively related to "communicate with industry" and the legitimisation motivation "to meet legal requirements from the administration" is significantly and negatively related to the "communicating with other organisations" factor. We find evidence that some sources of information do relate to the motivations for acting, as was expected from findings in the literature (Font, et al., forthcoming; King, et al., 2012; Walker & Brown, 2004). As only three of the 14 motivations ("for personal questions / my lifestyle", "to reduce costs" and "to meet legal requirements from the administration") are related with factors on sustainability information sources, H1a is rejected.

H1b is also rejected. We had expected to find some significant relationships between the channels to acquire sustainability information and the motivations to be sustainable, as King et al. (2012) had found that growth-oriented businesses had a more intensive use of most channels. However, our data could not confirm all of King et al.'s (2012) findings; instead, we found only a significant negative relationship between a growth-oriented motivation (to reduce costs) and a factor variable grouping basically informal channels (internet search engines, blogs/wikis, social networks and websites). Finally, H1c is also rejected, as most of the motivations are not significantly related to the perceived usefulness of the information acquired. Table 6 shows how respondents with a motivation for environmental protection perceive the information acquired and channels used as more useful, in keeping with an overall more optimistic perception of their business performance (Garay & Font, 2012) and a higher sense of sustainability mastery and self-efficacy (Sampaio, et al., 2012).

580 **Table 6. Regression analysis to relate sustainability motivations with channels, sources and perceived usefulness of the sustainability**
581 **information acquired.**

582 Results of logistic regression analyses. β and Wald values, and significance

	Sources						Channels								
	Communication within industry			Communication with non-industry organisations			Collective & Formal			Individual & Informal			Perceived Usefulness		
Motivations	β	Wald	Sign.	β	Wald	Sign.	β	Wald	Sign.	β	Wald	Sign.	β	Wald	Sign.
To protect the environment	0.254	0.944	0.331	-0.296	1.837	0.175	0.169	0.576	0.448	0.18	0.010	0.921	0.348	3.625	0.057
For my commitment to society	-0.181	0.883	0.347	0.148	0.784	0.376	0.104	0.410	0.522	0.091	0.433	0.511	0.127	0.878	0.349
For personal questions / my lifestyle	-0.561	7.595	0.006	0.383	4.708	0.030	0.048	0.081	0.776	0.124	0.746	0.388	-0.03	0.001	0.981
To reduce costs	0.346	2.972	0.085	-0.049	0.80	0.778	-0.113	0.447	0.504	-0.292	4.058	0.044	-0.080	0.321	0.571
For image / marketing	0.146	0.579	0.447	0.013	0.006	0.937	0.084	0.271	0.603	-0.110	0.632	0.427	-0.10	0.006	0.939
To access new information / advice / networks	-0.230	0.754	0.385	0.003	0.000	0.989	0.242	1.158	0.282	0.129	0.460	0.498	-0.219	1.338	0.247
To apply for grants	0.409	1.882	0.170	-0.282	1.146	0.284	-0.288	1.297	0.255	0.111	0.271	0.603	0.160	0.579	0.447
To improve operational monitoring / control	0.392	2.285	0.131	-0.283	1.528	0.216	-0.157	0.508	0.476	0.189	1.031	0.310	-0.033	0.032	0.858
To meet legal requirements from the administration	0.192	0.756	0.385	-0.380	3.976	0.046	-0.152	0.676	0.411	-0.029	0.035	0.853	-0.171	1.246	0.264
To meet the requirements specified by the group I belong to	-0.417	1.519	0.218	0.455	2.466	0.116	0.147	0.262	0.609	-0.048	0.039	0.844	-0.067	0.081	0.776
To meet the requirements specified by a tour operator	-0.591	0.261	0.610	-0.492	0.322	0.570	-0.349	0.153	0.696	-0.994	1.413	0.235	0.305	0.241	0.624
Because it was easy	-0.459	2.144	0.143	0.368	1.969	0.161	-0.132	0.252	0.616	0.025	0.012	0.911	-0.041	0.036	0.849

583 Source: Self-produced. Note: All VIF < 5 and all condition indexes < 15. Therefore, there are not multicollinearity problems.

Next, we consider whether sustainability practices (environmental, social and economic) are related to the sustainability information sources (H2a) and channels (H2b) and the perceived usefulness of the information acquired (H2c), as seen in Table 7. As commented above, sustainability practices (see Table 3) were measured as dichotomous items and then their percentages were calculated. In order to test hypotheses 2a, 2b and 2c, we have transformed these dichotomous items into scalar composites or constructs (environmental, social and economic practices). As these three constructs are each formed from a different number of items, we decided to calculate the average of each measured case in our dataset. Consequently, each case may have any value between 0 and 1. As a result, we achieve three scalar constructs, with comparable average values. Therefore, as environmental, social and economic practices are scalar constructs and they are the dependent variables of the hypotheses 2a, 2b and 2c, multiple regression analysis is used to test these three hypotheses and the results are shown in Table 7.

H2a is partially confirmed, as environmental, social and economic practices are positively and significantly related to “communication with other organisations” (i.e. the factor related to communication with business associations, private consultants and public institutions, universities and research centres). H2b is also partially confirmed as all three practices are also related to “collective & formal” information channels (i.e. the factor that includes collective, mostly face to face events and relates to more formal, regulated channels). The results suggest that formal, regulated channels have a more positive influence on sustainable implementation than have individual, informal learning or e-learning channels. Finally, H2c is also confirmed as environmental, social and economic practices are related to the businesses’ perceptions of the usefulness of the information they found.

Table 7. Regression analysis to relate sustainability practices with sources, channels and the perceived usefulness of the sustainability information acquired.

Results of lineal regression analyses. β values, significance, R^2 and F-ANOVAs

		Sources				Channels							
		Communication within industry		Communication with non-industry organisations		Collective & Formal		Individual & Informal					
Dependent variables	β	t	β	t	β	t	β	t	β	t	R^2	F	

Environmental practices	-0.066	-1.023	0.120	2.072*	0.156	2.645**	0.074	1.471	0.296	6.136***	0.180	17.458***
Social practices	-0.038	-0.579	0.114	1.925†	0.175	2.913**	-0.015	-0.298	0.263	5.328***	0.145	13.484***
Economic practices	0.010	0.144	0.126	2.088*	0.102	1.657†	-0.051	-0.975	0.234	4.665***	0.113	10.152***

Source: Self-produced. Note: *** $p \leq 0.001$; ** $0.001 < p \leq 0.01$; * $0.01 < p \leq 0.05$; † $0.05 \leq p < 0.10$. All VIF < 5 and all condition indexes < 15. Therefore, there are no multicollinearity problems.

Finally, we move on to consider whether the sustainability performance factor, which groups all the performance variables (see Table 2), is related to the implementation of sustainability practices (H3a), the sources (H3b) and channels (H3c) of sustainability information acquired and its perceived usefulness (H3d). A multiple regression analysis is used to test these four hypotheses and the results are shown in Table 8. H3a is rejected, as sustainability performance does not have a significant ($p \leq 0.05$) positive relationship with the introduction of environmental, social or economic practices. H3b is partially supported, as sustainability performance is significantly and positively related to the ‘communication within industry sources’ factor. H3c is rejected, as sustainability performance is not significantly related to any of the factors grouping channels. Finally, H3d is also confirmed, as sustainability performance has a significant positive relationship with the perceived usefulness of information, in line with the literature (Hanna and Walsh, 2002; Lawrence et al., 2005).

Table 8. Regression analysis to relate sustainability performance with sustainability practices, sources, channels and perceived usefulness.

Results of lineal regressions analyses. β values, significance, R^2 and F-ANOVAs

Independent variables		Sustainability performance	
		β	t
Practices	Environmental	0.096	1.695
	Social	0.031	0.472
	Economic	0.107	1.824
Sources	Communication within industry	0.127	1.979*
	Communication with non-industry organisations	0.107	1.842
Channels	Collective & formal	-0.002	-0.031
	Individual & informal	0.027	0.538
Perceived usefulness	Perceived usefulness	0.193	3.815***
R^2	0.205		
F	12.734***		

Source: Self-produced. Note: *** $p \leq 0.001$; ** $0.001 < p \leq 0.01$; * $0.01 < p \leq 0.05$. All VIF < 5 and all condition indexes < 15. Therefore, there are no multicollinearity problems.

5. Conclusions

This study has tested the relationship between the first stage of absorptive capacity (the channels, sources and impacts of the acquisition of information on sustainability) and the motivations of businesses to be more sustainable, the resultant sustainability practices and how these translate into sustainability-induced business performance. Below is a summary of the findings of this study, plus some limitations and suggestions for future related research.

In terms of information acquisition, owners/managers prefer industry-related sources, and internet and face-to-face channels. They also use specific magazines and brochures to acquire sustainability information and they consider social networking to be important. We find that lifestyle motivations are positively related to communication with non-industry organisations, while growth-oriented motivations are positively related to communication with organisations within the industry, and negatively related to the use of individual and informal information channels. Respondents with a motivation for environmental protection perceive the information acquired and channels used as more useful than those with other motivations. Implementing sustainability practices is positively related to: i) communication with non-industry organisations, ii) the use of collective and formal information channels, and iii) the perceived usefulness of sustainability information. Consequently, policy makers would want to evaluate the links between perceived usefulness and actual implementation of practices of government-funded interventions. Finally, sustainability performance is related to: i) the ‘communication within industry sources’ factor, and ii) the perceived usefulness of sustainability information.

Further research is therefore needed to understand the socio-cognitive processes that will facilitate or impede individuals to transform acquired knowledge, which is a limitation of this study. Further relationships between information acquisition, proactivity and performance will be understood when research unpacks additional stages of absorptive capacity. We then relates the sources and processes of acquiring of new knowledge and motivations to learn, which we analysed here, to the capability of these individuals to internalise and transform such knowledge to achieve competitive advantages. We need to further understand the reasons behind the relationships between some sustainability motivations and some information sources and channels, which were not conclusive in this study. Further research would be useful to study how specific sustainability practices are embedded in organisational cultures, and to understand the appropriateness of information sources and channels. The latter stages of

absorptive capacity would aim to unpack the relations between sustainability performance and organisational competitiveness, which would rely on more contextualised research for specific firms, since different sustainability actions can impact on competitiveness in multiple ways, from resource efficiency to market gains.

A further limitation is that, so far, we have relied on self-reported quantitative data, and more nuanced behavioural analysis is needed next, which is arguably only achievable with case studies that would afford a more realistic evaluation of the mechanisms that explain behaviour change (Pawson & Tilley, 1997). This would require theory development through qualitative data (Manzano, 2016) to test how the information acquired informs the latter stages of absorptive capacity that help to refine the adaptation of this concept to tourism, hospitality and events (Thomas & Wood, 2014, 2015). Behaviour change campaigns are essentially social engineering attempts and we require more nuanced data if we are to understand the reasons for their relative success. This would include a better understanding of the context in which campaigns are implemented and the characteristics that individuals (and the organisations they work within) bring to the mechanism used to influence learning (Pawson & Tilley, 1997). Finally, we must include some other kind of limitations. First, because the sustainability practices were measured as dichotomous variables; in the future, it would be interesting to employ a wider range scale to measure them. Second, because, although the study focuses on SMTEs, the sample includes some large enterprises (specifically 3.7% of the sample); future studies should consider a population exclusively based on SMTEs.

The main takeaway message from this study is that the designers of behaviour change campaigns need to be aware that the format of sustainability information provided will favour certain types of businesses and discourage others from acquiring knowledge. For example, sustainability information obtained from communication within the tourism industry will encourage acquiring knowledge in businesses managed by people motivated to reduce costs but will discourage the same in businesses with lifestyle managers. This inequity by design favours businesses that are already better prepared at the expense of those that are, arguably, the intended targets for the intervention. The lessons learned from this study can be used to inform the design and delivery of sustainability marketing and communication methods for SMTEs; in future, the designers should aim to reduce the entry barriers to learners with a lower level of self-efficacy and mastery, and provide multiple learning platforms to allow

collaborative and situated learning (Lave & Wenger, 1991). These factors will be considered in subsequent publications.

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