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Toward A Place-Based Understanding of Business Sustainability: The Role of Green Competitors and Green Locales in Firms' Voluntary Environmental Engagement

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ABSTRACT
Management research has extensively considered *who*, *what*, *when*, *why*, *which* and *how* aspects pertaining to firms' voluntary environmental practices, yet the *where* aspect, which would consider the role of a firm's location on its environmental practices, has received remarkably less attention. We explore three research questions relating social and physical attributes of a firm's location with its engagement in a voluntary environmental program (VEP). Drawing on a sample of hotels participating in a Costa Rican VEP, we find that the number of VEP certified competitors (i.e. green competitors) and firm proximity to a sacrosanct environment (i.e. a green locale) are positively related to a firm's level of VEP engagement. We also find an interaction effect such that the relationship between the number of VEP certified competitors and the level of VEP engagement is positively moderated by firm proximity to a green locale. We argue that firms' voluntary environmental engagement can be enhanced by developing green clusters amid green corridors. Copyright © 2017 John Wiley & Sons, Ltd and ERP Environment

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Introduction

Extensive management research has addressed questions such as *who* is likely to adopt voluntary environmental initiatives (Arora and Cason, 1996; Carballo-Penela and Castromán-Diz, 2015; Henriques and Sadorsky, 1999), *what* initiatives appeal to firms and *why* (Bansal and Roth, 2000; Ervin *et al.*, 2013; Michael *et al.*, 2010), *when* and *how* firms implement such initiatives (Brouhle and Harrington, 2009; Delmas and

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Montes-Sancho, 2010; Lewis *et al.*, 2015; Russo, 2009), and *which* initiatives are more effective than others (Delmas and Terlaak, 2001; González-Benito and González-Benito, 2005; Kurapatskie and Darnall, 2013; Montiel and Husted, 2009). In contrast, the *where* aspect, which would consider the role of a firm's place (i.e. the social and physical attributes of its geographic location) in its voluntary environmental engagement, has remained notably less well understood in the extant literature (Shrivastava and Kennelly, 2013). Does the *where* aspect matter to firms' voluntary environmental engagement? Fields such as economics (Fujita *et al.*, 2001), psychology (Gifford, 2007) and geography (Leitão and Ahern, 2002) explicitly consider the role of place with regard to environmental management, suggesting that it may indeed matter. For example, extensive research in the area of environmental economics has explored the ecological footprint concept (Rees, 1992), which assesses the consumption of food, housing, transportation etc. across spatial domains (Van den Bergh and Verbruggen, 1999; Wackernagel and Rees, 1998). In the management literature, however, place seems to remain hidden underneath dominant theoretical perspectives on firm environmental engagement. For instance, the resource-based view of the firm, a dominant theoretical lens often used to explain firms' voluntary environmental engagement, is linked to the *where* aspect at many levels. Resources are essentially tied to the context surrounding a firm, which, in turn, is profoundly shaped by where the firm is located. Similarly, institutional theory, another dominant theoretical lens in this area, highlights the ways in which a firm's voluntary environmental engagement is contingent upon its social, economic and political contexts, all of which are tied to where the firm is located (Rivera, 2010). Business strategy and the environment scholars have recently argued for deeper and broader consideration of place, particularly geographic location, in examining firms' voluntary environmental engagement (Galbreath, 2014; Linnenluecke *et al.*, 2012; Winn *et al.*, 2011).

While such a place-based approach to understanding environmental management has been popular in other disciplines, it is important to note that the concept of place is inherently complex (Cresswell, 2004). It may manifest in multidimensional ways, many of which remain ill defined and therefore challenging to operationalize. Place encompasses both physical and social attributes (Gieryn, 2000; Rodman, 1992), involving both built and natural environments (Shrivastava and Kennelly, 2013). Such broad conceptualizations have indeed stimulated inspiring thoughts among management scholars, yet a somewhat indeterminate nature of these conceptualizations seems to also have prevented scholars from developing testable underlying research questions.

This paper attempts to bridge this gap. In so doing, it draws on literatures in institutional theory and economic geography to explore three research questions. First, it explores the effect of a social attribute of place on firms' voluntary environmental engagement. Specifically, it examines whether firms' voluntary engagement is affected by surrounding progressive environments – areas with greater numbers of environmentally engaged competing firms. Second, this paper explores the effect of a physical attribute of place on firms' voluntary environmental engagement. Specifically, it examines whether firms' voluntary environmental engagement is affected by proximity to sacrosanct environments – areas too precious to be interfered with because of their ecological importance and sensitivity (Lai *et al.*, 2016). Third, this paper explores the combined effect of a place's social and physical attributes on firms' voluntary environmental engagement.

We empirically execute this study in the Costa Rican tourism context for the following reasons. First, the question of place is especially pertinent within the tourism industry, as tourism is inherently place based, therefore offering an apt study context. Costa Rica's thriving tourism industry is centered around its world renowned national park system, which comprises one-fourth of the country's total landmass (World Bank, 2016), and prominent ecotourism sector, which promotes place through local, natural environments. Second, voluntary environmental engagement is prevalent among Costa Rican tourism firms, thus offering an information rich study context. For instance, Costa Rica's Certification for Sustainable Tourism (CST), a voluntary environmental program (VEP), has grown considerably among Costa Rican hotels and tour operators over the past two decades (Laitamaki *et al.*, 2016). Third, tourism is an important sector for environmental sustainability globally (Karatzoglou and Spilanis, 2010) and is crucial to better understanding the dynamics underlying firms' voluntary environmental engagement, particularly in developing countries that are ecologically paramount. While heavily polluting industries have received immense attention and scrutiny in the management literature, service industries, such as tourism, have been referred to as 'the silent destroyers of the environment' (Hutchinson, 1996, p. 14), and have received notably less attention.

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The rest of this paper is organized as follows. First, we briefly discuss VEPs and how they have expanded in developed and developing countries. Second, we present a theoretical framework and develop testable hypotheses. Third, we examine VEPs in the Costa Rican context. Fourth, we describe the empirical procedures used to test our hypotheses and present our results. After this, we discuss these results, particularly with respect to their theoretical and policy implications. We conclude the paper by outlining our main contributions and study limitations.

Voluntary Environmental Programs

Voluntary environmental programs (VEPs) have emerged as a novel approach to environmental governance worldwide (Darnall and Edwards, 2006). Previously, governments enforced environmental regulations typically through a command-and-control approach. Over the past couple of decades, however, governments have increasingly collaborated with the private sector and third-party organizations to develop and implement VEPs (Moon *et al.*, 2014). VEPs essentially require participating firms to adopt proactive environmental practices. Participating firms earn certification for their superior environmental performance, which they may then leverage in the marketplace (Potoski and Prakash, 2005). Participation in a VEP could allow firms to develop competitively valuable capabilities (Khanna *et al.*, 2007).

As VEPs provide marketplace advantages for the private sector while mitigating regulatory burden for governments, they have proliferated as an alternative environmental governance mechanism. For example, the US Environmental Protection Agency (EPA) currently offers 57 VEPs (US EPA, 2016). VEPs span numerous and diverse industries, including forestry, fisheries, coffee, food production and tourism (Cashore, 2002). Further, VEPs have proliferated in both developed and developing countries (Lyon and Maxwell, 1999; Blackman *et al.*, 2010) as an accepted way for firms to signal superior environmental performance, although the majority of research is conducted in developed countries, where VEPs typically complement regulation and intend to encourage beyond-compliance performance (Darnall and Carmin, 2005). In contrast, VEPs in developing countries primarily seek to address sustainable development (Picard, 2015) and noncompliance with existing regulation (Blackman *et al.*, 2010). Further, due to weak environmental regulations and institutions, demand for VEPs in developing countries is increasing (Boiral and Gendron, 2011).

The majority of extant research related to VEPs has examined why firms do or do not participate in a VEP (Prakash and Potoski, 2012). However, the level of engagement among those who choose to participate is an under-researched topic. We contend that it is important to develop an understanding about what could potentially drive higher levels of engagement among participants of a VEP. We explore this question in the context of 'place' and deduce hypotheses in the subsequent section to examine how social and physical attributes of a place may separately and together influence a firm's level of VEP engagement.

Theoretical Development and Hypotheses

How might a firm's level of engagement in a VEP be influenced by the place in which it operates? Previous research indicates that the social and physical attributes of a firm's location may have a profound impact on the firm's environmental strategies (Starik and Rands, 1995; Tuan, 1977). Similarly, some literature has also alluded to the role that place may play in the adoption of voluntary environmental certifications (Tuppura *et al.*, 2015), but specific relationships have not been established. We explore three effects embedded in place (i.e. social and physical attributes of a geographic location) that may influence firms' level of VEP engagement. First, we consider the effect of progressive social environments – *number of green competitors* – on firms' level of engagement in a VEP. Second, we explore the effect of proximate sacrosanct physical environments – *proximity to a green locale* – on firms' level of engagement in a VEP. Third, we integrate the former two effects to examine whether or not social and physical attributes of place – *number of green competitors* and *proximity to a green locale* – have a combined effect on firms' level of VEP engagement. Below, we discuss each of these in turn.

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Progressive Social Environments – Number of Green Competitors

Firms seek legitimacy, defined as 'a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions' (Suchman, 1995, p. 574), by conforming to the prevailing environmental practices within their institutional field (Hoffman, 1999). In this vein, Marshall *et al.* (2005) found that, as the issue of environmentalism gained legitimacy across the US wine industry, competitive pressures became a primary driver of voluntary environmental practices among competing wineries. Greater numbers of competing firms in a population strengthen the legitimacy of shared practices, especially when firms deal with complexity or uncertainty (Aldrich and Wiedenmayer, 1993), which are inherent to environmental issues (Starik, 1995). Legitimacy of shared practices is also strengthened through mimetic isomorphism when firms strive to imitate surrounding competitors (Greve, 1998).

Arguments for legitimating higher levels of voluntary environmental engagement among competing firms are also rooted in the field of economic geography, particularly in studies related to knowledge spillovers. Knowledge spillovers are defined as 'knowledge externalities bounded in space' (Breschi and Lissoni, 2001, p. 975), and extensive research in this realm suggests that geographically proximate firms benefit from knowledge spillovers (Boschma, 2005; Polanyi, 1966). Geographic proximity literally brings firms together, promotes information contacts and communication and facilitates knowledge exchange (Arrow, 1992), notably the exchange of tacit knowledge (Storper and Venables, 2004), which is relatively difficult to diffuse over long distances (Gertler, 2003). We suggest that a greater number of knowledge sources may induce mimetic isomorphism among competitors, which in turn legitimizes shared environmental practices.

In terms of VEPs, whether or not a firm participates is indeed a complex decision. However, the level at which a firm chooses to participate is likely even more complex, as higher levels of engagement in a VEP require greater levels of tacit knowledge. As argued above, a greater number of VEP participants will foster the development of this tacit knowledge and stimulate higher levels of engagement in a VEP. Therefore, we hypothesize the following.

H1: *The greater the number of VEP certified competitors surrounding a firm, the greater the firm's level of VEP engagement.*

Sacrosanct Physical Environments – Proximity to a Green Locale

Sacrosanct environments encompass protected areas considered too valuable to be interfered with because of their conservational importance and ecological sensitivity (Lai *et al.*, 2016). Firm proximity to a sacrosanct environment is likely to increase institutional pressures for environmental legitimacy. Vastag *et al.* (1996) suggests that firms, because of their impact on the natural environment, face pressure from external stakeholders based on exogenous environmental risks, such as the ecological characteristics of the environment in which they operate. More specifically, firms proximate to sacrosanct environments face increased pressure from stakeholders and are thus more likely to adopt proactive environmental strategies (González-Benito and González-Benito, 2006, 2010).

Research in economic geography suggests that the ability of firms to develop and implement environmental strategies is significantly influenced by the environment in which they operate (Störmer, 2008). As the implementation of proactive environmental strategies often requires the formation and transfer of complex, tacit knowledge (Reed *et al.*, 2009), this literature suggests that spatial proximity among sources of environment related knowledge is key to the distribution, interpretation and application of such environmental knowledge (Gibbs, 2000). For example, Saxena (2005) found that interactions between Peak District National Park authorities and local firms triggered key learning dynamics and enhanced firms' ability to improve their environmental practices. Firms proximate to the national park had greater access to key environmental knowledge sources and were more likely to collaborate with environmental nongovernmental organizations, suggesting that sacrosanct physical environments provide valuable sources of knowledge and help firms resolve complex social–ecological issues (Reed, 2008).

As such, we propose that firm proximity to a sacrosanct environment will promote enhanced environmental knowledge formation and follow-up actions. Consequently, we anticipate that firm proximity to a sacrosanct environment will be positively related to a firm's level of engagement in a VEP. Further, consistent with related

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social–ecological studies, we anticipate a distance decay effect, which suggests that the effect of proximity on a firm's level of VEP engagement will decline as the distance from the nearest sacrosanct environment increases (Martin-Lopez *et al.*, 2007; Rolfe and Windle, 2012). Therefore, the effect we anticipate would be curvilinear in nature. Formally, we propose the following.

H2: *Geographic proximity to a sacrosanct environment will have a positive, curvilinear effect on a firm's level of VEP engagement.*

Interaction of Progressive Social Environments and Sacrosanct Physical Environments – Green Competitors and Green Locales

Place is a multidimensional concept. While place may be understood partially by its social attributes and partially by its physical attributes, the two are not mutually exclusive, but are rather intertwined. Clearly, physical attributes of a place are influenced by social features, just as social attributes of a place are influenced by physical features. Thus, social and physical attributes may interact with one another. González-Benito and González-Benito (2006) propose a model of firm environmental proactivity to argue not only that a firm's environmental practices are affected by the number of progressive competitors and the firm's geographic location, but also that these factors affect the intensity of stakeholder pressures, as well as the degree to which a firm perceives these pressures. These scholars suggest that a firm's surrounding environment may moderate the relationship between a firm's perception of stakeholder pressures and environmental proactivity. In the context of the present study, this may suggest that a focal firm's proximity to a sacrosanct environment could positively moderate the relationship between a progressive social environment and the firm's level of VEP engagement.

This proposed effect is analogous to studies in economic geography, which suggest that physical proximity to knowledge sources is not a sufficient condition for learning to occur (Maskell, 2001); rather, the effect of geographic proximity on learning, through spillover benefits from a greater number of competitors, must also be considered. For example, although firms proximate to sacrosanct environments may identify with the aspiration to develop proactive environmental strategies, they may not have the know-how to do so. It may be that these firms lack the cognitive capabilities necessary to understand how to implement the strategies required in order to achieve greater levels of voluntary environmental engagement. Boschma (2005) suggests that geographic proximity has a positive effect on the relationships between other dimensions of proximity and a firm's strategies. This may implicitly suggest that geographic proximity to sacrosanct environments may strengthen the relationship between a progressive social environment and a firm's voluntary environmental engagement. In the context of this study, it means that the relationship between the number of VEP certified competitors and a firm's level of engagement in a VEP is strengthened by firm proximity to a sacrosanct environment. Thus, we propose our third hypothesis.

H3: *Geographic proximity to a sacrosanct environment will positively moderate the relationship between the number of VEP certified competitors surrounding a firm and the firm's level of VEP engagement.*

VEPs and the Costa Rican Tourism Sector

Costa Rica's tourism sector has experienced tremendous economic growth over the last several decades. Hosting approximately two million tourists annually, the tourism sector generates more than $2 billion in revenue each year and employs 13.1% of the population (Monge-González *et al.*, 2010). Due to the sector's substantial and rapid expansion, Costa Rica's natural environment has suffered noticeable degradation (Eagles, 2002). As a result, the Costa Rican government collaborated with private actors in the tourism sector and academic institutions to develop the CST program. The Costa Rican Tourism Board (ICT) manages the CST program to respond to environmental problems resulting from expanding tourism activities, motivates sustainable tourism, and limits free-riding of misleading ecotourism businesses (ICT, 2013; Monge-González *et al.*, 2010). The CST program is the first performance based VEP implemented within a developing country (Rivera, 2002).

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The objective of the CST program is to promote and certify the implementation of proactive environmental practices among tourism firms operating in Costa Rica (Rivera, 2002, 2004). Enrollment in the CST program is voluntary and free. The certification process is conducted by third party auditors, who assess firms' voluntary environmental practices based on 153 questions covering 20 distinct categories within four sustainability areas (CST, 2016). The four sustainability areas include (1) physical–biological environment (evaluates interaction between the firm and the surrounding natural environment), (2) infrastructure and services (evaluates management policies and practices related to sustainability), (3) external clients (evaluates interaction between the firm and its customers pertaining to customer participation in sustainable activities) and (4) socio-economic environment (evaluates interaction between the firm and its community pertaining to community participation in sustainable practices). Each question is weighted on a scale of one to three, where a score of three represents the most salient sustainability questions. For instance, within the physical–biological area, a firm that encourages its clients to visit sacrosanct environments gains one point while a firm that uses alternative and renewable energy sources gains three points. The final score is based on the lowest score obtained among the four sustainability areas. For example, if a firm is awarded 50 points in the physical–biological environment area and 20 points in the infrastructure and services area, the maximum final score will not exceed 20 points. This method is used to motivate firms to balance each of the four sustainability areas. Firms are awarded one to five leaves based on their final scores. Table 1 illustrates the point requirements associated with each level of engagement in the CST program. Firms that score below 20 points are not awarded certification. Only firms that achieve a minimum of 95 points in each of the four sustainability categories are awarded five leaves, the highest level of CST certification. Certification is awarded for two years and can be maintained by repeating the certification and auditing process every other year.

Sample and Methodology

Data Sources and Sample Size

The sample selected for this study comprises the Costa Rican hotel sector and includes a panel of 110 CST certified hotels registered with the Costa Rica Ministry of Tourism between 2001 and 2008. As a popular tourism destination, Costa Rica presents an apt setting for this study. Since Costa Rican hotels must register with the Ministry of Tourism in order to obtain tax incentives, our sample is likely to be comprehensive, although it is possible that some smaller hotels did not register and are therefore not included in the study. Excluding the hotels that were not

Engagement Score	Leaves Awarded
20 to 39%	
40 to 59%	
60 to 79%	
80 to 94%	
95 to 100%	

Table 1. Levels of CST engagement

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certified in any of the eight years, we obtained 387 hotel-year observations that were used in our analyses. Figure 1 depicts the growth in CST participation (total number of firms participating in the CST program each year) and engagement (number of firms attaining higher levels of engagement in the CST program each year).

Locations of all CST certified hotels and prominent sacrosanct environments (i.e. national parks, wildlife refuges and biological reserves) were determined using Google Maps. This information provided measures for (a) the number of CST certified competitors surrounding a sacrosanct environment and (b) hotel proximity to each sacrosanct environment. In terms of the selection of sacrosanct environments considered for this study, we include prominent, road accessible protected areas publicized by the Costa Rican Tourism Board (ICT, 2013). Thus, smaller sacrosanct environments that attract few tourists are excluded from our study. Overall, this study includes 33 national parks, six wildlife refuges, three biological reserves and one national monument, for a total of 43 sacrosanct environments. The driving distance between each hotel and each sacrosanct environment entrance is calculated using Google Maps. Because Costa Rica does not have a standard system of addresses, not all sacrosanct environment entrances could be mapped definitively with Google Maps. In such instances, the locations of sacrosanct environment entrances are estimated based on publicly available information. Data related to hotel characteristics, including hotel size and quality, are obtained from the Costa Rican Tourism Board (ICT, 2013).

Measures

Dependent Variable

The CST program differentiates participants based on varying levels of environmental sustainability (CST, 2016). Each CST participant may be awarded a certification level of one to five leaves, where one leaf indicates a low level of engagement and five leaves indicate a high level of engagement. *Level of VEP engagement* is correspondingly coded as an ordinal variable: 1, one CST leaf; 2, two CST leaves; 3, three CST leaves; 4, four CST leaves; 5, five CST leaves.

Independent Variables

We measure the *number of VEP certified competitors* as the number of CST certified hotels surrounding a sacrosanct environment (i.e. national park, wildlife refuge, biological reserve etc.) proximate to the focal firm. This operationalization is consistent with previous studies suggesting that Costa Rican hotels often compete based on proximity to these sacrosanct environments (Rivera, 2002). To estimate the number of competing CST certified hotels for each sacrosanct environment, we first grouped CST participants so that each CST participant was assigned to the closest sacrosanct environment. For example, Hotel A is assigned to Sacrosanct Environment B because it is more proximate to Sacrosanct Environment B than any other sacrosanct environment. The number of CST certified competitors for each hotel is measured as the annual number of other hotels participating in the CST program that are assigned to the same sacrosanct environment. All hotels were assigned to a sacrosanct environment within 100 km (62 miles). Previous research suggests that spatial effects disappear beyond a radius of 100 km (Coval and Moskowitz, 1999; Desmet and Fafchamps, 2005); related studies suggest using 100 km as a robust cut-off (Husted *et al.*, 2015).

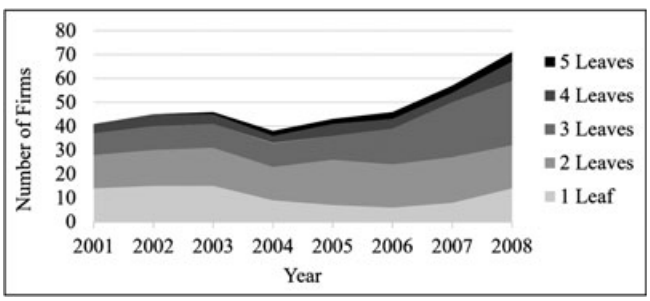

Figure 1. Firms' levels of CST participation and engagement

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To measure *proximity to a sacrosanct environment*, we calculate the logarithm of the driving distance in kilometers plus one (to avoid dropping hotels located within a sacrosanct environment) between each hotel and the most proximate sacrosanct environment. Using the log transformation of distance is consistent with related studies (e.g. Broekel and Boschma, 2012; Trexler and Travis, 1993) and prevents outliers from potentially skewing the estimation. A squared term is used to capture nonlinear effects.

Control Variables

Previous studies indicate that firm size is positively related to environmental performance (Tarí *et al.*, 2010). Therefore, we include *firm size* as a control variable. Firm size is measured by the number of rooms within each hotel that participates in the CST program (Hung *et al.*, 2010).

Firm quality, measured here as the star rating of each CST participant, is controlled for because research has suggested a positive relationship between the quality level of a hotel and environmental performance (Mensah, 2014). Star ratings are obtained from the Costa Rican Ministry of Tourism.

Environmental regulations have been decentralized across Costa Rica, therefore, we control for the effect of differing regulatory edicts on hotels' environmental engagement. Environmental jurisdiction data was obtained from the Costa Rica National System of Conservation Areas (SINAC, 2013). Each designated SINAC area comprises an independent board of directors to oversee regulatory decision making, set policies, and plan and implement processes to improve environmental management (Basurto and Jiménez-Pérez, 2013). Thus, *environmental jurisdiction* is measured as a categorical variable (1–9) to capture the nine environmental jurisdictions included in our sample.

Analysis

The dependent variable, level of VEP engagement, consists of five ordinal levels. Therefore, we estimate an ordinal probit regression model controlling for year fixed effects (Greene, 2007). Ordinal probit regression models are suitable to examine the effects of multiple independent variables on a dependent variable consisting of three or more ordered categories (Long and Freese, 2006). Thus, the model takes the following form:

$$y_{it}* = \alpha_i + x_{it}'\beta + \varepsilon_{it}$$

where subscripts i and t denote firm and year, y* is the ordered dependent variable, α represents threshold parameters estimated by the data to match probabilities with each discrete outcome, x' represents the vector of explanatory variables, β represents the parameter vectors and ε is an error term. We use robust standard errors to address concerns for serial correlation and heteroscedasticity.

Results

Descriptive statistics, including a correlation matrix, are reported in Table 2. The parameter estimates and marginal effects are reported in Table 3. Variance inflation factors (VIFs) are calculated and are well below the critical value ($VIF_{\text{number of certified competitors}} = 3.64$ and $VIF_{\text{proximity to a sacrosanct environment}} = 1.35$), thus ruling out the potential for multicollinearity.

The coefficient for the *number of VEP certified competitors* is positive and statistically significant, suggesting that the number of VEP participants surrounding a firm is positively related to firms' level of VEP engagement. This provides *support for* H1. The coefficient for *proximity to a sacrosanct environment* is negative and statistically significant, indicating that geographic proximity to a green locale is positively related to firms' level of VEP engagement. Further, the coefficient for *proximity to a sacrosanct environment-squared* is positive and statistically significant. The negative *proximity to a sacrosanct environment* coefficient and positive *proximity to a sacrosanct environment-squared* coefficient suggest that proximity has a positive and nonlinear (diminishing) effect on firms' level of VEP engagement, and thus provides *support for* H2. The coefficient for the moderation variable (*number of VEP certified*

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	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1	Level of VEP Engagement	*2.37*	*1.06*	1								
2	Number of VEP Certified Competitors	*8.80*	*8.98*	0.06	1							
3	Proximity to a Sancrosanct Environment	*2.87*	*1.00*	0.01	0.15***	1						
4	Firm Size	*63.89*	*74.86*	0.02	0.08	0.14***	1					
5	Firm Quality: 1 Star Rating	*0.06*	*0.23*	-0.01	0.12**	0.03	-0.16***	1				
6	Firm Quality: 2 Star Rating	*0.10*	*0.30*	-0.20***	-0.09*	0.01	-0.20***	-0.08	1			
7	Firm Quality: 3 Star Rating	*0.39*	*0.49*	-0.18***	-0.08	-0.15***	-0.34***	-0.20***	-0.27***	1		
8	Firm Quality: 4 Star Rating	*0.38*	*0.49*	0.22	0.07	0.09	0.38	-0.19	-0.26	-0.63	1	
9	Firm Quality: 5 Star Rating	*0.07*	*0.26*	0.17***	0.01	0.08	0.30***	-0.07	-0.09*	-0.22***	-0.22***	1
10	Environmental Jurisdiction 1	*0.11*	*0.31*	0.02	-0.26***	-0.19***	-0.10**	-0.09*	-0.04	0.17***	-0.12**	0.03
11	Environmental Jurisdiction 2	*0.03*	*0.17*	-0.15***	-0.21***	0.12**	0.18***	-0.04	-0.06	-0.08	0.11**	0.07
12	Environmental Jurisdiction 3	*0.44*	*0.50*	0.06	0.78***	0.25***	0.10*	0.10*	-0.21***	-0.07	0.17***	-0.03
13	Environmental Jurisdiction 4	*0.01*	*0.09*	0.02	-0.14***	-0.01	0.03	-0.02	0.07	-0.07	-0.01	0.09*
14	Environmental Jurisdiction 5	*0.06*	*0.23*	0.04	-0.16***	-0.21***	-0.14***	-0.06	0.29***	0.08	-0.19***	-0.07
15	Environmental Jurisdiction 6	*0.01*	*0.07*	-0.10**	-0.25***	0.18***	-0.04	0.10**	0.27***	-0.04	-0.21***	0.06
16	Environmental Jurisdiction 7	*0.03*	*0.17*	-0.12**	-0.2***	-0.32***	0.04	-0.09*	-0.12**	-0.01	0.15***	-0.04
17	Environmental Jurisdiction 8	*0.20*	*0.40*	0.31***	-0.27***	-0.02	-0.08*	-0.04	-0.06	-0.04	0.12**	-0.05
18	Environmental Jurisdiction 9	*0.12*	*0.33*	0.04	-0.11**	-0.02	-0.04	-0.02	-0.02	0.09*	-0.06	-0.02

	Variable (Continued)	Mean	S.D.	10	11	12	13	14	15	16	17	18
10	Environmental Jurisdiction 1	*0.11*	*0.31*	1								
11	Environmental Jurisdiction 2	*0.03*	*0.17*	-0.06	1							
12	Environmental Jurisdiction 3	*0.44*	*0.50*	-0.31	-0.16	1						
13	Environmental Jurisdiction 4	*0.01*	*0.09*	-0.03	-0.02	-0.08	1					
14	Environmental Jurisdiction 5	*0.06*	*0.23*	-0.09*	-0.04	-0.22	-0.02	1				
15	Environmental Jurisdiction 6	*0.01*	*0.07*	-0.17	-0.09*	-0.44	-0.04	-0.12**	1			
16	Environmental Jurisdiction 7	*0.03*	*0.17*	-0.13	-0.07	-0.33	-0.03	-0.09*	-0.18***	1		
17	Environmental Jurisdiction 8	*0.20*	*0.40*	-0.06	-0.03	-0.15	-0.02	-0.04	-0.08*	-0.06	1	
18	Environmental Jurisdiction 9	*0.12*	*0.33*	-0.03	-0.01	-0.06	-0.01	-0.02	-0.03	-0.03	-0.01	1

Table 2. Descriptive Statistics and Correlation Matrix

***P < 0.01;

**P < 0.05;

*P < 0.10

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Variables	Estimated Coefficients	Marginal Effects				
		Level 1	Level 2	Level 3	Level 4	Level 5
Independent Variables						
Number of VEP Certified Competitors	0.206*** (0.063)	-0.009***	-0.007**	0.009***	0.006**	0.001**
Proximity to a Sacrosanct Environment	-0.482** (0.232)	0.224***	0.171***	-0.215***	-0.145***	-0.035**
Proximity to a Sacrosanct Environment^2	0.151*** (0.052)	-0.034***	-0.026**	0.033***	0.022**	0.005**
Moderation Variable						
Number of VEP Certified Competitors × Proximity to a Sacrosanct Environment	-0.058*** (0.019)	0.015***	0.008***	-0.014***	-0.007***	-0.002**
Control Variables						
Fim Size	-0.002** (0.001)	0.000**	0.000**	-0.000**	-0.000**	-0.000**
Firm Quality: 2 Star Rating	-0.902*** (0.202)	0.281***		-0.216***	-0.083***	-0.015**
Firm Quality: 3 Star Rating	-0.506*** (0.173)	0.137***	0.056*	-0.121***	-0.060**	-0.012*
Firm Quality: 4 Star Rating	0.420** (0.192)	-0.069*	-0.095**	0.060*	0.077**	0.027**
Firm Quality: 5 Star Rating	0.968*** (0.222)	-0.111***	-0.225***		0.190***	0.105***
Environmental Jurisdiction 1	-1.150*** (0.255)	0.259***	0.198***	-0.249***	-0.168***	-0.041***
Environmental Jurisdiction 2	-2.882*** (0.515)	0.650***	0.496***	-0.623***	-0.421***	-0.102***
Environmental Jurisdiction 3	-1.607*** (0.285)	0.362***	0.277***	-0.347***	-0.235***	-0.057***
Environmental Jurisdiction 4	-1.091** (0.454)	0.246**	0.188**	-0.236**	-0.159**	-0.039*
Environmental Jurisdiction 5	-0.299 (0.238)					
Environmental Jurisdiction 6	-1.664*** (0.245)	0.375***	0.287***	-0.360***	-0.243***	-0.059***
Environmental Jurisdiction 7	-1.737*** (0.258)	0.392***	0.299***	-0.376***	-0.254***	-0.062***
Environmental Jurisdiction 8	0.715** (0.361)	-0.161**	-0.123*	0.154*	0.104*	0.025*
Parameter Estimates						
Cutpoint 1 (κ_1)	-3.09 (0.477)					
Cutpoint 2 (κ_2)	-1.943 (0.474)					
Cutpoint 3 (κ_3)	-0.767 (0.480)					
Cutpoint 4 (κ_4)	0.177 (0.493)					
Year Fixed Effects	Included					
Log pseudolikelihood	-467.462					
Wald chi^2	277.77					
Prob > chi^2	0.0000					
McFadden Psuedo R^2	14.59%					
Number of Observations	387					

Table 3. Estimated Ordered Probit Regression Model and Marginal Effects
Dependent variable is Level of VEP Engagement (Level 1 = low engagement; Level 5 = high engagement)
Year dummies are included in the model. Robust standard errors are in parentheses.
Significance Levels:
***$P < 0.01$;
**$P < 0.05$;
*$P < 0.10$
Marginal effects are calculated at the mean of all variables.

competitors × proximity to a sacrosanct environment) is negative and statistically significant.[1] Thus, we conclude that the greater the geographic proximity to a sacrosanct environment, the greater the effect the number of competing VEP participants has on firms' level of VEP engagement. This result provides *support for* H3. Firm size, measured by the number of rooms in each hotel, is negatively related to a firm's level of VEP engagement. In terms of firm quality, two and three star ratings (lower quality hotels) are negatively related to the level of VEP engagement, while four and five star ratings (higher quality hotels) are positively related.

[1]Because the interpretation of interaction terms is more complicated in nonlinear regression models than in linear models, we compared our results with a linear model and found them to be consistent in sign, magnitude and statistical significance (Ai and Norton, 2003). Results for the linear regression model can be found in the appendix.

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We also test the robustness of our results using an ordinal least squares (OLS) model as some previous studies (e.g. Angrist and Pischke, 2008) have suggested. As shown in the appendix, the OLS model performs well and yields highly consistent results.

Because the interpretation of coefficients in ordered probit regression models is not straightforward (Greene, 2007), we also include marginal effects calculated at the mean of each explanatory variable in order to verify our results. Ceteris paribus, marginal effects indicate the effect of a one unit change in an explanatory variable on each level of the dependent variable. Beginning with the number of VEP certified competitors, the negative marginal effects on Levels 1 and 2 indicate that an increase in the number of proximate VEP participants surrounding a firm reduces the probability that a firm will attain either of the two lowest levels of VEP engagement. The positive marginal effects on Levels 3, 4 and 5 indicate that an increase in the number of proximate VEP participants surrounding a firm will increase the probability that a firm will attain each of the three highest levels of VEP engagement. The positive marginal effects on Levels 1 and 2 of the proximity to a sacrosanct environment variable indicate that an increase in the distance between a firm and a sacrosanct environment increases the probability that a firm will attain one of the two lowest levels of VEP engagement. The negative marginal effects on Levels 3, 4, and 5 indicate that an increase in the distance between a firm and a sacrosanct environment reduces the probability that a firm will attain each of the three highest levels of VEP engagement. These results provide further evidence in support of Hypotheses 1 and 2. In order to find further evidence of support for the interaction effect (Hypothesis 3), we graphically plot the interaction effect (Figure 2), as marginal effects of interactions are often a complex, nonlinear function of all coefficients included in the model (Greene, 2007). Figure 2 illustrates the positive moderation of proximity to a sacrosanct environment on the relationship between the number of VEP certified competitors and firms' level of VEP engagement, thus offering further evidence in support of Hypothesis 3.

Discussion

Most previous studies related to VEPs have attempted to discern between participants and nonparticipants in a VEP (Delmas and Montes-Sancho, 2010; Rivera and De Leon, 2004). However, with growing popularity of VEPs

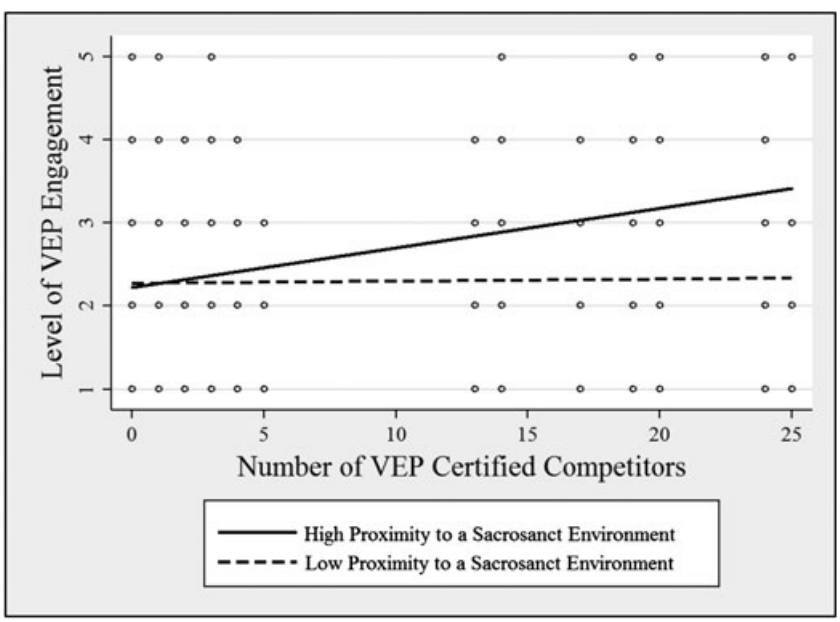

Figure 2. Moderation effect of *proximity to a sacrosanct environment* on the relationship between *number of VEP certified competitors* and firms' *level of VEP engagement*. Level of VEP engagement represents the predicted value of firms' engagement in the VEP program, thus illustrating a positive moderation effect, which suggests that the effect of the number of VEP certified competitors on firms' level of VEP engagement is stronger for firms proximate to a sacrosanct environment

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(Montiel and Husted, 2009) and a resultant general decline in the proportion of nonparticipants in many sectors, it is timely to shift the focus of academic research to understanding drivers of higher versus lower levels of engagement in a VEP. This paper is a step in that direction. The evidence of support for Hypothesis 1 has important implications. From a conceptual perspective, at least two notable points emerge. First, the number of green competitors creates an upward spiraling effect on firms' environmental engagement. We speculate that once participation in a VEP becomes a norm, mere participation no longer helps firms stand apart. They, therefore, seek differentiation through higher levels of VEP participation and, in so doing, ratchet up acceptable standards of environmental performance for the industry as a whole. Thus, a greater number of green competitors overcomes the decoupling concern that Darnall and Sides (2008) raise for firms that implement the bare minimum, superficial requirements in order to gain a VEP certification without making any considerable changes to their operations. Second, by considering the effect of the total number of VEP certified competitors on firms' level of VEP engagement, we complement findings of Husted *et al.* (2015), who consider the density of green competitors as a driver of superior environmental performance. The total number of VEP participants is a suitable alternative to participant density, especially when density may significantly vary across different units of analysis due to spatial differences and levels of environmental engagement. For example, in our study, the distance between hotels significantly varies across different sacrosanct areas. In such cases, the total number of participants provides a better measure of competition than density.

The support for H2 and H3 is important to advance conceptual knowledge about the role of 'place' in firms' environmental engagement. Previous literature calls for spatial analysis (Bansal and Knox-Hayes, 2013; Husted *et al.*, 2015) to examine firm behavior. As a step toward this end, we find that proximity to sacrosanct areas foster proactive environmental behavior. Such sacrosanct areas are able to attract a vast and varied number of entities (e.g. NGOs, experts etc.) knowledgeable about complex environmental issues, which on the one hand puts enhanced pressure on surrounding firms to be environmentally responsible, and on the other hand could be a source of valuable environmental knowledge. Thus, firms' environmental performance in this sense becomes a product of an environmental ecosystem with which firms strive to be in a state of equilibria. We therefore propose that the role of place in firms' environmental engagement is essentially about creating an enabling ecosystem that not only pushes firms to change their environmental practices but also provides them with necessary input and knowledge to enact such change. As more and more firms begin to seek equilibria with surrounding ecosystems, a virtuous path seems to shape up such that green locales lead to more green firms, which in turn ratchets up environmental standards for all firms. From a policy perspective too, our results have far-reaching implications. The support of our green competitor hypothesis suggests that firms' environmental engagement can be enhanced by developing green clusters to facilitate inter-firm learning and induce green mimicry. This finding complements that of Husted *et al.* (2015), who found that CSR clusters stimulate CSR engagement. Firms interested in environmental engagement may benefit from knowledge spillovers and the legitimacy of shared environmental practices associated with green clusters. Thus, VEPs and other incentive-based policies might focus on developing and promoting green clusters, which will then lead to higher levels of engagement in such programs. The support of our green locale hypothesis suggests that these green clusters may be even more effective by developing green corridors around them. Green corridors are likely to attract environmentally engaged firms, high quality employees and loyal customers (Rottle, 2006). Novel policies and/or knowledge sources might be developed to encourage higher levels of environmental engagement among firms operating distant from green corridors. Overall, we contend that corporate sustainability is a collective goal that firms can achieve together within an enabling environment that fosters both inter-firm learning and learning from other knowledgeable sources.

Surprisingly, our results indicate that firm size, measured as the total number of rooms in each hotel, is negatively related to the level of VEP engagement. Previous studies have indicated that larger firms tend to have more resources and consequently invest further in their environmental performance (Mensah, 2014; Panwar *et al.*, 2016). It is possible that the firm size only drives whether firms participate in a VEP or not; but once they choose to participate then perhaps the effect of firm size disappears.

Results related to firm quality are in line with previous research examining VEP participation and reinforce that higher quality firms (in our case, hotels with higher star ratings) exhibit higher levels of VEP engagement (Rivera, 2002, 2004). One potential implication of these findings is to emphasize higher levels of VEP engagement among firms in lower quality segments. For instance, costs savings may be an apt selling point.

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Conclusions

In this paper, we address three place-based research questions: whether firms' voluntary environmental engagement is affected by (i) a progressive social environment, (ii) a physically sacrosanct environment and (iii) both. Results relating to the first question suggest that the greater the number of VEP competitors (green competitors), the greater the firms' level of VEP engagement. Second, firm proximity to a sacrosanct environment has a positive effect on firms' level of VEP engagement. Further, we find evidence of a nonlinear effect, where this relationship appears to weaken as the distance between a firm and a sacrosanct environment increases. Third, our results demonstrate that firm proximity to a sacrosanct environment positively moderates the effect of the number of VEP certified competitors on firms' level of VEP engagement.

The reach of our results is, however, restricted by a number of limitations. The first set of limitations arises from our sample. Most importantly, results obtained from a tourism sector study must be extrapolated to other sectors with caution. Also, our sample consists only of CST certified firms in Costa Rica. The CST program is somewhat unique and our findings may not fit other VEPs. Further, Costa Rica is particularly unique, as it is an ecotourism hotspot, and hotels are very likely to behave differently in other contexts. Also, our sample frame precluded us from including financial performance as a predictor of firms' level of VEP engagement. Financial data is not available for most hotels and practically none were willing to share this data with us. The second set of limitations pertains to operationalization of our main construct. We included here only two dimensions of place. However, place is a complex construct and future research may explore additional dimensions to gain a broader understanding.

With these limitations, this paper takes an important step in operationalizing and empirically testing the role place can play in determining firms' environmental behavior. The results of our green competitors and green locale hypotheses suggests that firms can achieve higher levels of environmental engagement by leveraging inter-firm learning and also learning from other knowledgeable entities in the surrounding environment.

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Appendix. Comparison of Ordinal Probit and Ordinary Least Squares (OLS) Models

Variables	Model 1: Ordinal Probit	Model 2: OLS
Independent Variables		
Number of VEP Certified Competitors	0.206 (0.063)	0.182 (0.051)
Proximity to a Sacrosanct Environment	-0.482 (0.232)	-0.404 (0.192)
Proximity to a Sacrosanct Environment^2	0.151 (0.052)	0.129 (0.044)
Moderation Variable		
Number of VEP Certified Competitors × Proximity to a Sacrosanct Environment	-0.058 (0.019)	-0.051 (0.016)
Control Variables		
Fim Size	-0.002 (0.001)	-0.002 (0.001)
Firm Quality: 2 Stars	-0.902 (0.202)	-0.708 (0.159)
Firm Quality: 3 Stars	-0.506 (0.173)	-0.386 (0.145)
Firm Quality: 4 Stars	0.420 (0.192)	0.362 (0.164)
Firm Quality: 5 Stars	0.968 (0.222)	0.811 (0.187)
Environmental Jurisdiction 1	-1.150 (0.255)	-0.922 (0.202)
Environmental Jurisdiction 2	-2.882 (0.515)	-2.263 (0.343)
Environmental Jurisdiction 3	-1.607 (0.285)	-1.349 (0.233)
Environmental Jurisdiction 4	-1.091 (0.454)	-0.801 (0.337)
Environmental Jurisdiction 5	-0.299 (0.238)	-0.254 (0.204)
Environmental Jurisdiction 6	-1.664 (0.245)	-1.391 (0.203)
Environmental Jurisdiction 7	-1.737 (0.258)	-1.365 (0.195)
Environmental Jurisdiction 8	0.715 (0.361)	0.567 (0.251)
Year Fixed Effects	Included	Included
Prob > chi^2	0.0000	0.0000
McFadden Psuedo R^2	14.59%	
R^2		35.16%
Number of Observations	387	387

Model 1 represents the ordinal probit regression used in the analysis where the DV measures five ordinal levels of VEP engagement. Model 2 represents an OLS regression where the DV is treated as a continuous variable to measure VEP engagement. The models are highly consistent.
Year dummies are included in each model. Robust standard errors are in parentheses.
Significance Levels:
$^{***}P < 0.01$;
$^{**}P < 0.05$;
$^{*}P < 0.10$

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