The influence of environmental dynamic capabilities on organizational and environmental performance of hotels: Evidence from Mexico

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ABSTRACT

This article proposes a proactive environmental strategy (PES) and eco-innovation as environmental dynamic capabilities and analyzes the relationship between these capabilities as well as their influence on performance in 126 hotels in Oaxaca, Mexico. Based on survey data, path analysis was used for hypothesis testing. The results show a positive and significant link between a PES and both eco-innovation and performance (organizational and environmental); eco-innovation shows a positive and significant link to environmental performance as well as a negative and significant link to organizational performance. Our research provides a better understanding of the use of environmental dynamic capabilities in value creation but also notes limitations and challenges in their implementation in the hotel industry.

Keywords: environmental dynamic capabilities, proactive environmental strategy, firm performance, eco-innovation, hotel industry.

1. INTRODUCTION

The literature on environmental management identifies a proactive environmental strategy (PES) and eco-innovation as dynamic capabilities that stimulate competitive advantage by themselves but also through other valuable organizational capabilities. (Aragón-Correa and Sharma, 2003; Delmas *et al*., 2011). Many authors have studied a PES and eco-innovation as sources of competitive advantage (Papadas *et al*., 2018; Singjai *et al*., 2018) but few have studied how a PES encourages other dynamic capabilities such as eco-innovation (Ryszko, 2016). This study addresses this gap by analyzing the relationship between a PES and eco-innovation. It also aims to improve our understanding of the way in which dynamic capabilities work together and contribute to an organization's outcomes. Among these outcomes, environmental impacts can be particularly important in the hotel industry, where awareness and social pressure can lead hotels to manage their environmental impacts and become accountable for this management (Henri and Journeault, 2010; Sánchez-Medina *et al.*, 2016).

Regarding the relationship between a PES and performance, Álvarez-Gil *et al*. (2001) have shown that hotels implement environmentally proactive actions to improve financial performance; however, hotels can obtain additional benefits, for example, the improvement of human relations and reputation (Ottenbacher, 2007).

Tourism is one of the most important economic activities for the Mexican State of Oaxaca but it has a significant impact on the natural environment. According to AgroDer (2012), tourists in Oaxaca consume the same amount of water as the entire local population. Although there are no specific energy use data for hotels in Oaxaca, the Ministry of Energy [Secretaría de Energía] (2013) reports that electricity consumption in Oaxaca is dominated

by the service sector. In terms of solid waste generation, tourism represents a significant contribution in both city and beach destinations (Sánchez-Medina *et al*., 2016); in particular, temporary accommodation and food and beverage services generate 218.5 tons of solid waste per day (SEMARNAT, 2013). Thus, hotels should be interested in becoming greener so they can reduce costs, obtain environmental accreditations, improve their image and reputation, and attract and retain green consumers. Environmental awareness in the Oaxacan hotel sector also occurs in response to the government, which provides training for hotels that voluntarily make pro-environmental changes. The scarcity of resources such as water, as well as the personal attachment of owners to their localities have also encouraged participation in pro-environmental actions.

This study extends dynamic capabilities to the environmental field, with the goal of characterizing a PES and eco-innovation as environmental dynamic capabilities and analyzing the relationship between these capabilities and their impacts on both organizational and environmental performance in hotels.

We selected a PES and eco-innovation as relevant environmental dynamic capabilities for this study since environmental regulation in Oaxaca, Mexico is lax or non-existent and consequently, environmental actions of hotels are voluntary (Sanchez-Medina *et al*., 2016). A PES provides meaning and understanding to members of the organization about the effects of their activities in the natural environment so they take environmental actions and obtain benefits in consequence (Aragón-Correa and Sharma, 2003). Our research is of interest to the general public as it demonstrates how hotels are developing environmental dynamic capabilities in response to environmental concerns. For hotel managers, it offers guidance in developing these capabilities, recognizing their advantages and challenges.

The article is structured as follows: we describe the theoretical framework and hypotheses, we present the method, results and discussion and, finally, we provide concluding remarks, limitations, and recommendations for further research.

2. LITERATURE REVIEW AND HYPOTHESES

2.1 Dynamic capabilities

Dynamic capabilities are an organization's capacities to undertake constructive change in response to changing environments (Hayter and Cahoy, 2016); they allow adaptation, integration, and configuration of internal and external resources (Teece *et al*., 1997). Dynamic capabilities are characterized as tacit, causally ambiguous, specific to the organization, socially complex, and dependent on trajectory. Dynamic capabilities are difficult to distinguish and imitate, they work as a protective barrier and contribute to the competitive advantage of the organization (Eisenhardt and Martin, 2000). Examples of dynamic capabilities are: sensing, seizing, and transforming capabilities (Feiler and Teece, 2014), product development, strategic decision making, and alliancing (Eisenhardt and Martin, 2000). Recently, the role of dynamic capacities in environmental issues has attracted the attention of researchers (Chen *et al*., 2015; Dangelico *et al*., 2015).

2.2 PES and eco-innovation as dynamic capabilities

A PES is defined as the capability of an organization's management to generate a favorable interpretation of environmental concerns as value-generating opportunities (Aragón-Correa and Sharma, 2003; Sharma, 2000); thus, it does not refer to a particular strategy but makes reference to the integration of the environment as a strategic element for

the organization so managers can perceive environmental challenges as opportunities rather than threats so the environmental aspect gains significance among all members of the organization (Majumdar and Marcus, 2001; Sharma, 2000).

A PES uses and reconfigures capabilities such as involvement of interested parties, innovation, continuous improvement, shared learning (Aragón-Correa and Sharma, 2003), integration and communication with people outside the hotel, leadership, and openness towards the natural environment (Claver-Cortés *et al*., 2007; Fraj *et al.*, 2015). This reconfiguration of resources related to needs, traits, and historical elements of both the hotel and the tourism destination gives it a tacit and trajectory-dependent character. It becomes specific to the firm and competitors cannot completely understand nor imitate the strategy (Aragón-Correa and Sharma, 2003; Claver-Cortés *et al*., 2007).

Eco-innovation is the organization's capability to develop or modify services, processes, and organizational or marketing methods that might favorably contribute to the environment, regardless of whether the contribution is intentional (Cheng *et al*., 2014; Rennings, 2000). Eco-innovations can be observed in hotels reducing their use of energy (Chan and Lam, 2003), implementing solar power technologies (Chan *et al*., 2013), implementing more efficient heating systems (Mak *et al*., 2013), making water use more efficient (Styles *et al*., 2015), and minimizing solid waste generation (Cummings, 1997).

Eco-innovation involves changes to an organization's methods related to employee participation in developing sustainable ideas and actions (Smerecnik and Andersen, 2010) as well as the ability to share environmental knowledge among members of the organization (Wong, 2013). Eco-innovation in marketing in hotels includes developing strategies to project a green image and attract green customers (Martínez, 2015).

Eco-innovation is socially complex because its implementation requires firms to develop communication and cooperation relations with several actors in their value network (De Marchi and Grandinetti, 2013). Eco-innovations generally depend on the historical trajectory of knowledge that is produced, disseminated and used. And in the case of technological eco-innovation, its implementation depends on the technological trajectory of the organization and its availability, thus eco-innovation implementation is particular to each hotel (Cecere *et al*., 2014).

2.3 Relation between PES and eco-innovation

Outside hospitality, Haverkamp *et al*. (2010) argued that firms that attempt to move dynamically towards new strategic positions are more committed to the environment, and are more interested in ecological product-redesign. Ryszko (2016) found a positive and significant relationship between a PES and eco-innovation technology.

In services and hospitality, research suggests that different aspects that form environmental strategy can be related to eco-innovation. On the one hand, a PES is translated into operational and managerial structures in the firm, including planning and control elements, such as environmental goals, policies, budgets, and reports; all of which are elements that encourage eco-innovation in tourism firms (Claver-Cortés *et al*., 2007; Fraj *et al*., 2015; Molina-Azorín *et al*. 2009).

On the other hand, a proactive environmental strategy brings educational elements, including values, knowledge, training, and far-reaching skills for employees, that can foster new behaviors and result in environmental innovations (Büschgens *et al*., 2013; Smerecnik and Andersen, 2010).

In general, a PES promotes a dynamic, creative, and entrepreneurial environment in the workplace, where people are encouraged to take risks and can develop eco-innovations. Thus, we propose the following research hypothesis:

H1: There is a positive and significant relationship between a proactive environmental strategy and eco-innovation.

2.4 Relation between PES and organizational performance

At the heart of the performance concept is the notion of value. In this regard, performance refers to the value that the company captures from the sale of its products and services (Newbert, 2008). However, as systems, organizations develop different criteria for determining value. Quinn and Rohrbaugh (1983) developed a framework that shows four types of organizational systems according to the value criteria around two axes: control-flexibility and internal-external orientation. These four types are: the internal process model, the rational goal model, the human relations model, and the open system model.

The internal process model favors control and internal orientation, the most appreciated values are stability and predictability in activities and people (Cameron and Quinn, 2006; Quinn and Rohrbaugh, 1983). Firms adopting this model concentrate their efforts on growth and profitability (Linnenluecke and Griffiths, 2010). Sharma (2011) noted that a PES encourages financial outcomes by improving the efficiency of processes. Álvarez-Gil *et al*. (2001) found that in the hotel industry there is a positive and significant relationship between environmental management practices and financial performance, with this relationship being stronger in proactive hotels. And Molina-Azorín *et al*. (2009) showed that the most proactive

hotels in terms of environmental practices tend to have better levels of financial and operational performance.

The rational goal model favors control and external orientation; the most appreciated values are planning and goal setting, and success is defined in terms of market share and penetration (Cameron and Quinn, 2006; Quinn and Rohrbaugh, 1983). Buysse and Verbeke (2003) noted that more proactive environmental strategies are associated with a more thorough coverage of the expectations of a wide variety of stakeholders, such as nongovernmental organizations and employees. Hotels of this type have developed green marketing strategies in order to improve market share (El Dief and Font, 2010), customer loyalty, and the public image of the business (Lee *et al*., 2010).

The human relations model favors flexibility and internal focus, the main goal is the development of human resources (Cameron and Quinn, 2006; Quinn and Rohrbaugh, 1983). Chan and Hawkins (2010) showed that hotels adopt improvements in environmental strategies in order to reinforce employees' health and safety standards, and Iraldo *et al*. (2017) confirmed the relevance of green strategies on competitiveness in terms of employee motivation.

Finally, the open system model favors flexibility and external focus, the main goal is successful adaptation to the general environment (Cameron and Quinn, 2006; Quinn and Rohrbaugh, 1983). Hotels adopt a PES voluntarily because it is strategic for the business (Lee *et al*., 2010). In this sense, Fraj *et al*. (2015) found a positive link between a PES and competitiveness of hotels. Thus, we propose the following research hypothesis:

H2: There is a positive and significant relationship between proactive environmental strategy and organizational performance.

2.5 Relation between PES and environmental performance

Barba-Sánchez and Atienza-Sahuquillo (2016) pointed out that an environmental corporate strategy could also represent a source of competitive advantage not only in organizational terms but also as a result of improved environmental performance.

A PES in the hotel industry has been found to contribute to improved environmental performance through savings in water and energy and the reduction in waste and discharge (Bagur-Femenias *et al*., 2016). A PES promotes pollution reduction by improving efficiency in use of both the firm's assets and natural resources (Hart and Dowell, 2011).

Cheremisinoff and Bendavid-Val (2001) pointed out that firms examine their operations, establish environmental objectives and targets that represent improved environmental performance, and carry out environmental management programs, or projects, to reach those targets. In this sense, environmental performance is used to measure or represent environmental management success (De Burgos-Jiménez *et al.*, 2002). In hotels, a PES involves policies, objectives, and targets developed to improve environmental performance (Zientara *et al.*, 2015).

Barba-Sánchez and Atienza-Sahuquillo (2016) showed a link between a PES, in terms of communication of environmental values to organizational members, and environmental performance. In this sense, Alt *et al.* (2014) showed the link between a PES and environmental performance, and argued that a firm’s PES translates employee stakeholder integration into environmental performance. Thus, we propose the following research hypothesis:

H3: There is a positive and significant relationship between proactive environmental strategy and environmental performance.

2.6 Eco-innovation and organizational performance

Shrivastava (1995) considered environmental technologies as a potential source of competitive advantages and improved performance. Carrión-Flores and Innes (2010) found environmental innovation to be a strong driver behind emissions reduction and environmental benefits. Ar (2012) found a positive and significant relationship between green product innovation and organizational performance. Lin *et al*. (2013) showed green products to be positively related to a firm's performance in financial and market terms.

In the hotel industry, eco-innovations include alternatives for a more efficient use of resources, reducing both environmental impacts and costs (Razumova *et al*., 2016); examples include improving heating systems (Mak *et al*., 2013) and acquiring new solar energy technology (Chan *et al*., 2013). Hotels' marketing eco-innovations include green marketing strategies such as online social network advertising with the goal of achieving an increase in sales and greater market penetration (Chan, 2013).

In tourism, organizational eco-innovation has been developed in terms of environmental education for employees, which contributes to a better working environment and greater satisfaction among employees (Kasim, 2009). Ecotourism often involves working innovatively with local communities and governments to increase the welfare of local people as a main intended outcome (Erdem and Tetik, 2013). Thus, we propose the following research hypothesis:

H4: There is a positive and significant relationship between eco-innovation and organizational performance.

2.7 Eco-innovation and environmental performance

Martin *et al*. (2013) observed that ecological innovation could generate both organizational and environmental benefits. Eco-innovation in hospitality includes technological alternatives and better practices for a variety of issues, such as reduction in water and electricity consumption as well as in waste generation (Chan and Lam, 2003; Chan *et al*., 2013; Cummings, 1997; Mak *et al*., 2013; Styles *et al*., 2015).

Jabbar and Abid (2014) proposed that training motivates employees to develop environmental practices and increase performance. In this sense, Berezan *et al*. (2013) showed that sustainable hotel practices have a positive impact on guest satisfaction and intention to return, and contribute to preserving the natural environment.

Marketing eco-innovations aim to make the organization more visible in the market by providing evidence that the firm is acting in favor of the natural environment. Barba-Sánchez and Atienza-Sahuquillo (2016) pointed out that an environmental corporate strategy could be a source of competitive advantage by differentiating a company from its competitors. Hotels develop marketing and sponsoring strategies to show their commitment to preserving natural resources and protecting natural and cultural heritage (Amoako *et al*., 2012).

Finally, organizational eco-innovations in hospitality also include environmental certification programs such as ECOTEL and Green Globe. These types of certifications affect the entire organization by creating and disseminating a philosophy and objectives in favor of the natural environment; continued assessment by external auditors reinforces the right

behavior and motivates enhanced environmental practices (Geerts, 2014). Thus, we propose the following research hypothesis:

H5: There is a positive and significant relationship between eco-innovation and environmental performance.

As shown in Figure 1, our research model proposes PES as an exogenous variable that explains the rest of the variables in the research model, while eco-innovation explains organizational and environmental performance.

Insert Figure 1 about here

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3. METHOD

3.1 Research design, sampling, and data collection

This research, a cross-sectional study, was conducted in the hotel industry in Oaxaca, Mexico. In Oaxaca's main tourism centers, Oaxaca City, Huatulco, and Puerto Escondido, 220 facilities with three stars or more (161 three-star, 54 four-star and 5 five-star) offered lodging in 2015 (Instituto Nacional de Estadística y Geografía [National Institute of Statistics and Geography], 2015). Hotels in the sample were randomly selected from the hotel directory created by the Ministry of Tourism and Economic Development [Secretaría de Turismo y Desarrollo Económico] available at the time of the study at http://www.hotelesdeoaxaca.com/. Our sample is composed of 126 hotels (96 three-star and 30 four-star): 76 hotels in Oaxaca (a city destination), 30 in Huatulco (a beach destination), and 20 in Puerto Escondido (a beach destination). We selected three-and-four-star hotels

because research has shown that higher rated hotels are environmentally more proactive than lower rated ones (Molina-Azorín *et al*., 2009; Sánchez-Medina *et al*., 2016). The sample size allows for a 95% confidence level and a 5.6% sample error, which are acceptable levels. The response rate was 75%.

A structured survey instrument in Spanish was developed in order to measure the constructs in the research model. The survey instrument was administered via face-to-face interviews with hotel managers and owners, who were between 25 and 64 years old, 58% male and 42% female. Hotels had been in operation for 16.5 years on average with a standard deviation of 10.2 years. The average number of rooms was 29 with a standard deviation of 25, the organizations can all be considered small to medium-sized businesses.

3.2 Survey instrument

Likert and Likert-type five-point scales were developed based on previous research to measure each construct in the research model. The items were adapted to fit the hotel industry in Oaxaca. During the survey, respondents were asked to compare the current state of things with that of the year before. A pilot questionnaire was developed and administered to 30 hotel managers or owners in Oaxaca City in face-to-face interviews. Following this, several items were discarded or modified (e.g., items that were not easily understood or that included elements that were not common to all hotels). The final questionnaire included four sections with 57 items plus demographic information.

3.3 Measures

In order to validate our measures, we used two sources of validity evidence: evidence based on test content and evidence based on internal structure. Content validity evidence is

related to the use of previous research in which specific dimensions of the constructs were identified. When available, previous scales were used as a basis to develop specific items adapted to the Oaxacan hotel industry. Internal structure analysis offers evidence of how individual items relate to each other and therefore how they conform to the intended constructs. For this purpose, an exploratory factor analysis with Varimax rotation and Kaiser normalization was conducted in SPPS for each second order factor in the research model, those factors with eigenvalues greater than 1.0 were extracted. No convergence problems emerged. Items with factor loadings greater than .6 were retained for further analysis and items with low factor loadings or loading in two or more factors were discarded. Reliability was assessed by means of Cronbach's alpha. All constructs showed good reliability coefficients, with Cronbach's alpha between .715 and .979.

3.3.1 Proactive environmental strategy

A proactive environmental strategy legitimizes environmental goals, policies, budgets, reports, etc.—that allow favorable actions and behaviors towards the environment. Items were developed from previous studies to measure proactive environmental strategies (Claver-Cortés *et al*., 2007; Fraj *et al*., 2015; Molina-Azorín *et al*. 2009). Exploratory factor analysis results are shown in Table 1.

Insert Table 1 about here

3.3.2 Eco-innovation

To measure eco-innovation, we asked interviewees about the frequency of adoption of eco-innovations. Items were developed from previous studies to measure eco-innovation (Charara *et al*., 2011; Chan, 2013). Exploratory factor analysis results are shown in Table 2.

Insert Table 2 about here

3.3.3 Organizational performance

We asked our interviewees about changes in different aspects of the organization in comparison to the previous year. Items were developed from previous studies to measure organizational performance (Gálvez-Albarracín and De Lema, 2012; Jiménez-Jiménez and Sanz-Valle, 2011; Ottenbacher, 2007) Exploratory factor analysis results are shown in Table 3.

Insert Table 3 about here

3.3.4 Environmental performance

We asked the interviewees about environmental changes in the organization in comparison to the previous year. Based on previous studies (Erdogan and Tosun, 2009; Mensah, 2014; Styles *et al*., 2015), our questionnaire incorporated items concerning electricity, water, and solid waste. Exploratory factor analysis results are shown in Table 4.

Insert Table 4 about here

Convergent and discriminant validity evidence is shown in Table 5, the square root of the average variance extracted (AVE) of each of the 14 first order factors is greater than the bivariate Pearson correlations of the same factor with any of the other factors (Fornell and Larcker, 1981).

Insert Table 5 about here

3.4 Statistical analysis

Factor scores were computed as the average of the values in the composing items derived from the factor analysis conducted previously. Due to the relatively small sample, no full measurement or structural models were estimated. Hypothesis testing was performed using path analysis with the factor scores of the second order factors to simultaneously estimate the effects of the variables in the model. An instrumental variable (sex of the respondent) was introduced to purge the model from potential problems of endogeneity of PES, reverse causality, omitted variables, and common method bias in order to obtain consistent estimates (Antonakis *et al.*, 2010). In this case, sex of the respondent was included as an instrumental variable because it is truly exogenous to the model and explains significantly the independent variable PES ($\beta = .186$, $p < 0.04$). The path model was run in EQS software, with the following acceptable fit indices (Kline, 2016): Chi-square = 4.24 with 3 degrees of freedom; $p > .24$; CFI = .987; and RMSEA = .058.

4. RESULTS AND DISCUSSION

Table 6 shows non-standardized coefficients (B) for all paths in the model while Figure 2 shows standardized coefficients (β).

Insert Table 6 about here

Insert Figure 2 about here

H1 is accepted, there is a positive and significant relationship between a PES and eco-innovation ($\beta = .452$, p .001). Our results coincide with those of Ryszko (2016), who found a positive and significant relationship between a PES and eco-technology. A PES facilitates the implementation of eco-innovations because it provides an organizational framework that legitimizes implementation and supports changes in processes, services, and organizational and marketing methods that reduce the environmental impact of hotels.

H2 is accepted, a PES is positively and significantly related to organizational performance in hotels ($\beta = .548$, p .001). Our results show more broadly the organizational benefits of a PES: human relations model benefits, such as a greater commitment, motivation, and retention of employees; internal process model benefits, such as goal attainment, quality of service, process coordination, and better use of time and resources; rational goals model benefits, such as increases in occupancy rate and length, sales, and firm profitability; and open system model benefits, such as satisfaction, preference, communication with customers, and corporate image and its services.

H3 is accepted, we found a positive and significant relationship between a PES and environmental performance (β = .211, p .01). Our results in the hotel industry expand the work of authors such as Zailani *et al*. (2012) and Alt *et al*. (2014), who found a positive and significant relationship between proactive environmental strategies and environmental performance in several industries.

H4 is rejected, the observed relationship between eco-innovation and organizational performance is negative and significant (β = - .193, p < .015). Our results differ from those of Ar (2012), Martin *et al*. (2013), Cheng *et al*. (2014), and Ryszko (2016), who found positive and significant relations between eco-innovation and organizational performance. Hotel managers might consider that investing in the acquisition of devices or modification of areas generates a greater cost and a greater staff effort. Besides, eco-innovations are not sufficiently widespread in the hotels of Oaxaca and do not impact customer preferences yet (Sánchez-Medina *et al*., 2016). Abdel-Maksoud *et al*. (2016) found no significant relationship between eco-innovation capabilities and hotel performance, and Han *et al*., (2010) pointed out that, for eco-innovation to impact performance, it is necessary to develop pro-environmental attitudes among employees and guests.

Finally, H5 is accepted, a positive and significant relation between eco-innovation and environmental performance is observed (β = .279, p < .002). Our results coincide with previous research (Carrión-Flores and Innes, 2010; Martin *et al*., 2013) that showed that hotel eco-innovations improve water and electricity use as well as solid waste management.

5. CONCLUSIONS

5.1 Theoretical contributions and practical implications

This research allows us to understand how dynamic environmental capabilities work together, as well as their effects on an organization's outcomes. In this study, we use a dynamic capabilities framework to show that both a PES and eco-innovation are dynamic capabilities that help hotels face new environmental challenges.

A PES in hotels works as an organizational framework that legitimizes initiatives that favor the environment in the organization. Environmental goals, policies, and budgets make investment in eco-innovations easier. Environmental information, formation, and values sensitize employees to new eco-innovation opportunities. Establishing mechanisms of control such as environmental reports helps to question obtained results and support the search for better alternatives.

Eco-innovations in hotels improve water and electricity use, waste management, use of organic and local products, and marketing and organizational practices. Even if eco-innovation has a positive influence on environmental performance, it does not increase organizational performance, at least in the short term. On the contrary, given that Oaxacan hotels are still at an early stage of eco-innovation implementation, they need greater organizational efforts in terms of both investment and staff. Furthermore, eco-innovations are not well known by consumers and do not significantly impact their preferences.

However, hotels can identify and seize environmental opportunities from outside the organization and create flexible structures that allow them to adapt to the changing environment. Adopting a PES can be favorable not only for large organizations but also for small organizations. Small hotels, abundant in the Mexican hospitality sector, lack financial

resources (Sánchez-Medina *et al*., 2016) and, as a result, certain forms of eco-innovation (e.g., new technologies and supplies) can be too costly. In these cases, an open culture would enable them to develop better practices in services and processes as well as changes in marketing and organizational methods, which would mean less spending and access to several benefits in the long term.

5.2 Limitations and future research directions

Research limitations in this work are related to three aspects: first, a relatively small sample size, which made it impossible to test full structural models; second, the use of a single instrument to measure all the variables in the model, which can lead to common method bias issues, and; third, we did not apply an exhaustive list of procedures to deal with potential response and nonresponse biases. However, potential response bias and common method concerns are mitigated by the complexity of the relationships in the model and the introduction of an instrumental variable in the analysis.

In the future, research on the effects of a PES on firm outcomes could include moderating variables to assess how different factors modify this relationship; for instance, being part of an international hotel chain, community perceptions (especially important for hotels established within indigenous territories), or the environmental orientation and preferences of customers.

Finally, it could be important to develop a framework that allows a better analysis and understanding at a broader level of the factors that encourage the development of environmental dynamic capabilities in order to help organizations improve both organizational and environmental performance. The role of governmental and nongovernmental organizations might be of importance in this regard.

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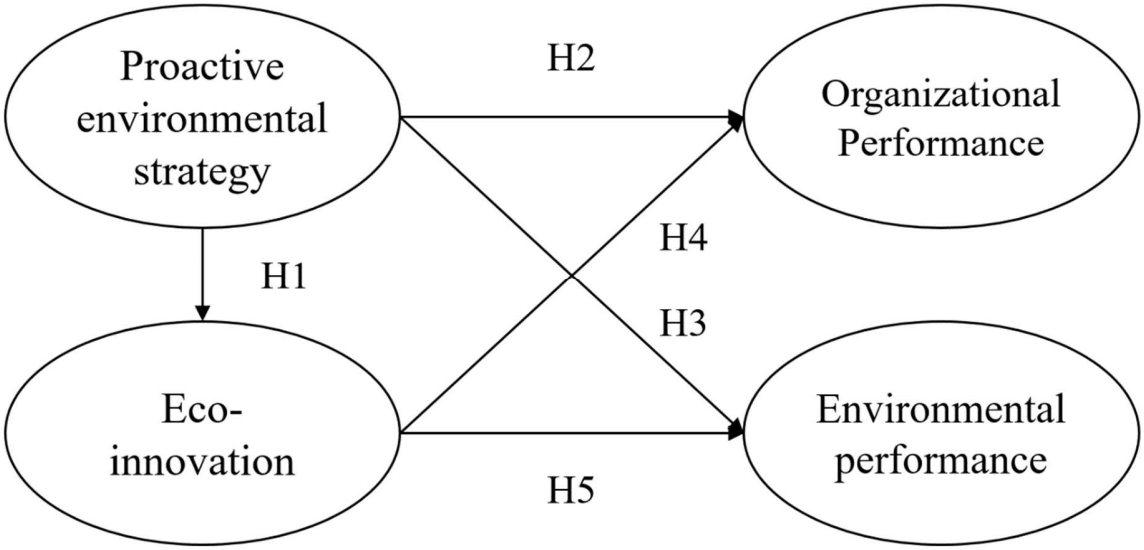

Figure 1. Research Model. Source: elaborated by the authors

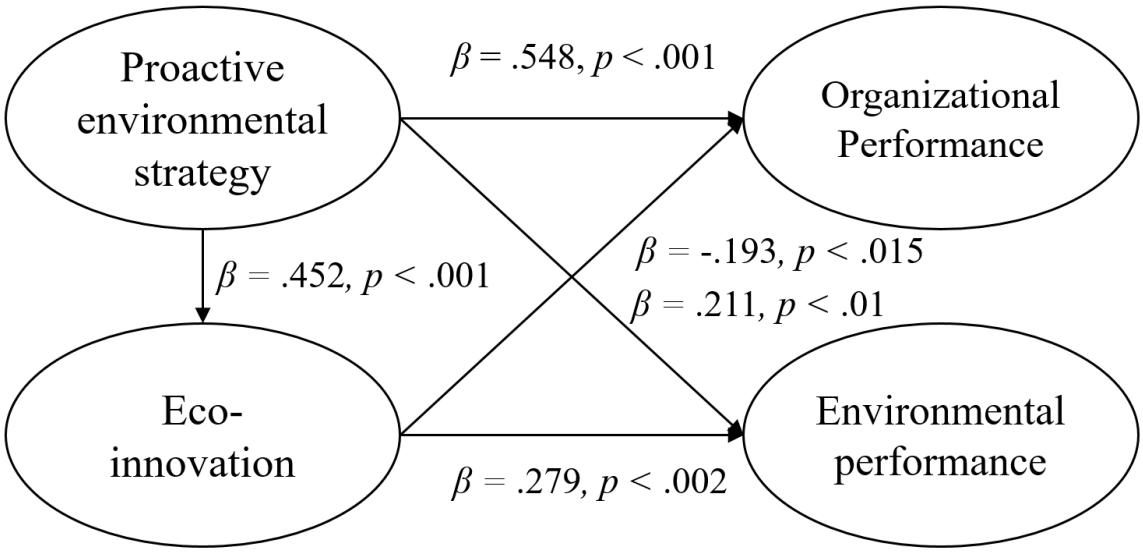

Figure 2. Research Model with Standardized Coefficients ( ). Source: elaborated by the authors

Table 1. Factor loadings for proactive environmental strategy (PES)

How much do you agree or disagree with the following statements about the organization?

1 = Strongly agree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Completely agree

Items	Factors			Communalities
	1	2	3	
1. Planning				
It establishes environmental goals and plans.	**.889**	.124	.191	.842
It develops environmental policies (in the selection of suppliers, equipment, decision-making, practices, etc.).	**.751**	.190	.288	.683
It wants to achieve environmental goals (for example: a percentage of decrease in consumption of electricity, water, etc.).	**.914**	.076	.139	.861
It has a budget for environmental issues.	**.649**	-.092	.131	.447
2. Human Development				
It promotes environmental values among its workers.	-.095	**.912**	.010	.841
The staff receives environmental information.	.018	**.890**	-.025	.792
The staff receives training on environmental aspects.	.339	**.764**	.009	.698
3. Control				
In the organization, environmental reports are made.	.255	-.005	**.956**	.980
The hotel provides regular information on its environmental practices and results (inside and / or outside the organization).	.254	-.018	**.954**	.975
Total Variance Explained	**31.83**	**25.25**	**22.02**	**79.11**
Cronbach's alpha	**.842**	**.827**	**.979**	

KMO = 0.682; Bartlett's Test of Sphericity: approx. chi-square 877.8; 36 degrees of freedom; p .001.
Extraction method: Principal component analysis.
Rotation Method: Varimax with Kaiser normalization.

Table 2. Factor loadings for eco-innovation

In the last year, how often did the organization take the following actions?

1 = Never 2 = Sporadically 3 = Frequently 4 = Several times 5 = Continuously

Items	Factors				Communalities
	1	2	3	4	
1. Services					
Modifications in the areas of the hotel used by guests in order to:					
Improve efficiency in the use of water (for example, showerheads, toilets, faucets, etc.).	**.855**	.151	.229	.133	.824
Improve efficiency in the use of electricity (for example, sensors for light, sources of lower electrical consumption, thermostats, etc.).	**.802**	.183	.242	.244	.795
Increase the use of natural light and heat (for example, glass, paints, solar heating devices, etc.).	**.775**	.390	.131	-.044	.772
Achieve proper separation, classification, and storage of solid waste.	**.817**	.032	.090	.232	.730
Adopt organic products in swimming pools, courts, halls, etc.	**.892**	.064	.166	.012	.828
Use local ingredients in food and beverages offered to the guests.	**.848**	.242	.073	.012	.783
Create or modify common spaces trying to preserve the natural environment.	**.750**	.304	.116	.156	.692
2. Processes					
Introduction or improvement of forms and devices for the reuse of water (for example, irrigation with pool water).	.252	**.843**	.163	-.010	.800
Facilities and furniture of areas not directly related to the guests have been created or adapted with natural and / or local materials (for example, wood, adobe, palm, etc.).	.166	**.874**	.225	.210	.886
Organic or biodegradable supplies have been adopted in activities and areas not directly related to the guests.	.311	**.788**	.212	.213	.808
3. Marketing					
Development or improvement of strategies and activities to improve its image in environmental issues.	.280	.315	**.784**	.127	.808
Venturing into new markets interested in the conservation of the environment.	.211	.165	**.876**	.139	.858

Motivate the general public to the protection or restoration of the natural environment (for example, sponsorships, donations, social events, etc.).	.142	.062	**.846**	.148	.762
Collaboration or commercial linkage with other organizations in environmental matters.	.060	.157	**.797**	.148	.685
4. Organizational Methods					
Creation or improvement of information, awareness and training activities focused on guests, employees and volunteers on:					
The rational use of electricity.	.346	-.026	.261	**.745**	.743
The appropriate separation, classification, and storage of solid waste.	.372	.334	.294	**.714**	.845
The preservation of the natural areas, flora and fauna of the place.	-.077	.154	.097	**.850**	.763
Total Variance Explained	**31.28**	**16.17**	**18.83**	**12.43**	**78.72**
Cronbach's alpha	**.942**	**.894**	**.820**	**.806**	

KMO = 0.837; Bartlett's Test of Sphericity: approx. chi-square 1876.9; 136 degrees of freedom; p .001.
Extraction method: Principal component analysis.
Rotation Method: Varimax with Kaiser normalization.

Table 3. Factor loadings for organizational performance

What is the status of the organization in the following aspects compared to last year?

1 = Equal 2 = Slightly better 3 = Better 4 = Significantly better 5 = Much better

Items	Factors				Communalities
	1	2	3	4	
1. Internal Process Model					
Achievement of the objectives.	**.881**	.277	.148	.158	.900
Quality of service.	**.890**	.297	.159	.142	.926
Process coordination.	**.696**	.049	.177	.366	.652
Efficiency (use of time and resources) of the processes.	**.921**	.212	.028	.156	.918
2. Open System Model					
Customer satisfaction.	.062	**.871**	.126	.101	.789
Adaptation to the needs and preferences of markets.	.209	**.776**	.068	.264	.720
Image of company and its products.	.322	**.765**	.211	.300	.823
Communication with customers.	.422	**.682**	.209	.149	.709
3. Rational Goals Model					
Occupancy time.	.309	.259	**.814**	.226	.876
Market share.	.281	.188	**.796**	.185	.782
Sales growth.	.256	.327	**.806**	.227	.873
Profitability.	-.195	-.075	**.679**	.222	.555
4. Human Relations Model					
Workers' motivation.	.188	.295	.291	**.848**	.927
Retention of essential employees.	.185	.226	.200	**.910**	.953
Personal and work relationships among employees.	.115	.215	.212	**.913**	.939
Commitment of the employees to the organization.	.339	.105	.236	**.835**	.879
Total Variance Explained	**23.17**	**18.96**	**17.63**	**22.87**	**82.62**
Cronbach's Alpha	**.969**	**.933**	**.853**	**.880**	

KMO = 0.865; Bartlett's Test of Sphericity: approx. chi-square 2283.2; 120 degrees of freedom; p .001.
Extraction method: Principal component analysis.
Rotation Method: Varimax with Kaiser normalization.

Table 4. Factor loadings for environmental performance

What is the status of the organization in the following aspects compared to last year?

1 = Much worse 2 = Slightly worse 3 = Equal 4 = Slightly better 5 = Much better

Items	Factors			Communalities
	1	2	3	
1. Electricity				
Lighting electricity in guest areas.	**.853**	.033	.142	.749
Lighting electricity in process areas.	**.859**	-.166	.335	.877
Appliances' electricity consumption in guest areas.	**.751**	-.016	.393	.719
Appliances' electricity consumption in process areas.	**.821**	.179	.028	.707
Natural lighting.	**.659**	-.177	.422	.643
Solar heat.	**.764**	-.295	.276	.746
2. Water				
Water used in guest areas.	.029	**.919**	.112	.857
Water used in the rest of the hotel.	-.083	**.873**	-.010	.769
Water contaminated with chemical elements (for example, detergents, chlorine, ammonia, etc.).	.018	**.856**	.017	.733
Reused water.	-.147	**.851**	-.010	.746
3. Solid Waste				
Generated in the areas used by guests.	.173	-.039	**.870**	.788
Generated in the process areas.	.307	-.182	**.864**	.874
Solid waste reused.	.335	.322	**.767**	.805
Solid waste from guest rooms properly separated, classified, and stored.	.182	.019	**.777**	.637
Solid waste from the rest of the hotel properly separated, classified, and stored.	.188	.135	**.868**	.806
Total variance explained	**27.03**	**22.66**	**26.69**	**76.37**
Cronbach's alpha	**.893**	**.862**	**.715**	

KMO = 0.822; Bartlett's Test of Sphericity: approx. chi-square 1623.2; 105 degrees of freedom; p .001.
Extraction method: Principal component analysis.
Rotation Method: Varimax with Kaiser normalization.

Table 5. Square root of the Average Extracted Variance (AVE) and bivariate Pearson correlations

Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.PES-Planning	**.808**													
2. PES-HD	.167	**.858**												
3. PES-Control	.456	.010	**.955**											
4. EI-Services	.588	.126	.236	**.821**										
5. EI-Processes	.331	.136	.139	.516	**.836**									
6. EI-Marketing	.301	.150	.137	.423	.469	**.827**								
7. EI-Org. Methods	.402	-.037	.348	.433	.430	.477	**.772**							
8. OP-Internal Processes	.031	.650	-.016	.079	.143	.130	-.056	**.852**						
9. OP-Open System	.038	.670	.048	-.086	-.001	.090	-.086	.566	**.776**					
10. OP-Rational Goals	.007	.624	.104	.069	.009	.082	-.059	.409	.466	**.776**				
11. OP-Human Relations	.117	.848	-.046	.107	.063	.084	-.061	.479	.515	.544	**.877**			
12. EP-Electricity	.430	.003	.242	.325	.109	.061	.184	-.121	-.132	.018	.026	**.788**		
13. EP-Water	.034	-.009	.005	-.042	.198	.303	.443	-.048	.007	-.176	-.011	-.120	**.875**	
14. EP-Solid Waste	.550	.027	.101	.405	.080	.031	.251	-.021	-.177	-.009	.130	.557	.062	**.831**

Note: Square root of AVE in bold face.

Table 6. Path Analysis Non Standardized Coefficients

Independent Variable(s)	Dependent Variable	Non-standardized Coefficient (B)	*t*	Two-tailed significance ($p<$)	R^2
Proactive Environmental Strategy	Eco-innovation	.489	5.669	.001	.205
Proactive Environmental Strategy	Organizational Performance	.646	6.275	.001	.242
Eco-innovation		-.210	-2.205	.015	
Proactive Environmental Strategy	Environmental Performance	.180	2.315	.010	.175
Eco-innovation		.220	3.060	.002	

Fit indices of the path model: Chi square = 4.24 with 3 degrees of freedom; $p > .24$; CFI = .987; RMSEA = .058.