

Eco-innovation and Tourism Towards and Integrative Framework

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Eco-innovation and Tourism

Towards and Integrative Framework

Abstract

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Keywords: Eco-innovation; Capabilities; Dynamic Capabilities; Hotel Management

JEL: O31; Z31; Z32

Introduction

Climate change has been strongly highlighted in the international press and triggered a wave of concerns in many areas of society, including academics. About 1996 the concept of eco-innovation appeared in the literature (Fussler, 1996; Fussler & James, 1996). Initial definition considered the development of new products, processes or services with significant decrease on environmental impact (Fussler & James, 1996).

Other definitions followed. Some are simple and straightforward like Carrillo-Hermosilla et al. (2010): “innovation that improves environmental performance” (p, 1075) or “innovations which are able to attract green rents on the market” (Andersen, 2008). Other are more complex, for example European Union defined eco-innovation as “any form of innovation aiming at significant and demonstrable progress towards the goal of sustainable development, through reducing impacts on the environment or achieving a more efficient and responsible use of natural resources” (European Commission (2007). Despite more than two decades of discussion, eco-innovation concept is still object of discussion (Díaz-García et al., 2015), but in general definitions

“emphasize that eco-innovation is innovation that results in a reduction of the environmental impact of consumption and production activities, no matter whether or not that effect is intended” (Del Río, et al. 2016: 2159).

Nevertheless the variety of studies, research on eco-innovation is centered on industrial sectors (eg. Cuerva et al., 2014, Ghisetti et al., 2015, Cainelli et al., 2015) and a reduced number of studies is dedicated to service sectors. For example, Cainelli and Mazzanti (2013) explored eco-innovation in services in Italian firms, and found that eco-innovation drivers differ across sectors.

In the tourism sector, although there is a growing concern around eco-innovation, as a result of a higher attention paid by customers to firms’ environmental concerns (Aguiló, et al., 2005), few studies have focused on the thematic of green businesses in tourism from a integrative model perspective. Hjalager (1997) discussed the slow pace in adopting innovation by the tourism industry, which is predominantly launched as part of defensive strategies. Tzschentke, et al. (2008), in a small sample of thirty lodging operations, studied the role played by owners personal values in decision-making. In the same vein, Ferrari and Vargas-Vargas (2010) analyzed entrepreneurs’ environmental perceptions influence on business management of rural tourism firms. An organizational capability construct was proposed by Leonidou et al. (2015) to explain eco-based competitive advantage. They used a sample of global hotel chains. Martínez-Pérez et al. (2015) analyzed social capital, knowledge-based approach and territorial perspective as antecedents of eco-innovation in small- and medium-sized firms in the cultural tourism sector. On the demand side, Han and Yoon (2015) analyzed hotel guests’ decision formation. However, there is no integrating framework that incorporates external and internal dimensions, as well as its link to performance.

Based on this framework, this research aims to develop a model that integrates the organizational and environmental (or context) dimensions as predictors of eco-innovation. In order to clarify the underlying theoretical framework, usually neglected (Del Río, et al., 2016), our research is based on the resource based view (RBV) for the internal dimension (Wernerfelt, 1984; Barney, 1991). In the same vein, Cheng et al. (2014) employed RBV theory as a framework for their conceptual model linking organizational resources and business performance. Their objective was to provide a holistic view in explaining the inter-relationship among eco-innovation implementation and performance. The link between institutional pressures, environmental innovation practices and performance was established by Li (2014) using RBV.

Our research also pretends to go further and include, in our conceptual model, an external dimension, considering firms environment. As such, our theoretical framework also includes corporate environmental strategy literature (Sharma, 2000; Aragón-Correa & Sharma, 2003). Finally, this research also intends to contribute by analyzing the impact on eco-innovation of internal factors such as resources and capabilities (Díaz-García, et al., 2015).

Theoretical Framework

Eco-innovation is conditioned by a set of factors. In the literature they are called drivers (Hojnik & Ruzzier, 2015; Bossle et al., 2015). These factors are usually divided into two main groups: external and internal. (Agan et al., 2013; Bossle et al., 2015; Del Río, 2009; Gadenne et al., 2009; Horbach et al., 2012).

The first group includes, among others, factors like regulatory pressures (Cainelli et al., 2012; Carrillo-Hermosilla et al., 2010; Demirel & Kesidou, 2011; Paraschiv et al., 2012), normative pressures (Berrone et al., 2013; Chen et al., 2012; Demirel & Kesidou, 2011; Paraschiv et al., 2012), cooperation (Buttol et al., 2012; Cainelli et al., 2012; Carrillo-Hermosilla et al., 2010), market pressure (Doran & Ryan, 2012; Horbach et al., 2012; Li, 2014) and technology (Díaz-García et al., 2015; Hojnik & Ruzzier, 2015; Oltra & Jean, 2009).

Internal group includes factors within the organization, such as human resources (Cainelli et al., 2012; Hojnik & Ruzzier, 2015; Paraschiv et al., 2012), management systems (Agan et al., 2013; Qi et al., 2010; Wagner, 2007), cost saving (Berrone et al., 2013; Demirel & Kesidou, 2011; Horbach et al., 2012; Triguero et al., 2013), leadership (Arnold & Hockerts, 2011; Chen et al., 2012; Paraschiv et al., 2012), and other organizational capabilities (Berrone et al., 2013; Chen et al., 2012; Hojnik & Ruzzier, 2015).

External dimension

For the construction of an integrative model (Fig. 1), the external dimension is certainly an aspect to consider. We considered this dimension composed by the context (affecting indirectly) and by the eco-innovation drivers (affecting directly). Hojnik & Ruzzier (2016) underlined the importance to capture the relevance of the local institutional and socioeconomic context. The way it is structured is still on discussion in the literature. For example, Díaz-García, et al. (2015) considers two external levels: macro and meso. Macro level includes items related to policy instruments and governance in economic development and innovation. Meso level includes market dynamics, pressure groups and networks that foster innovations that reduce negative impact of the economic activity on the environment. Bossle et al. (2016) considered that there are external factors over which companies have little control (they specify factors like regulatory pressures, normative pressures, market demands and changes in technology). Independently of having control or not, regulations often induced process innovations and recycling but other eco-innovations were introduced to obtain cost savings or to improve the corporate environmental image (Arundel & Kemp, 2009).

Recent literature has also emphasized the role of customer demand (Horbach, et al., 2012). Customer demand includes customers' environmental friendly attitudes and behaviors, green public procurement, and technology transfer and know-how support (Hojnik & Ruzzier, 2016). On the supply side, there are also several items considered, such as equity support, environmental research and development, pre-commercialization, education and training (Hojnik & Ruzzier, 2016).

However, the external dimension cannot be summarized on external drivers. The context is also a constraint of for eco-innovation strategies. Uncertainty in the company's environment creates economic risk that conditions investment decisions (Norberg-Bohm, 1999). Considering that the tourist market is made up of a considerable proportion of international clients, it is important to understand the degree of influence they have on decisions of eco-innovation. However, the influence of the international market in eco-innovation is not consensual. Some studies point to a positive influence on the strategies of eco-innovation (e.g. Horbach, 2008, Ghisetti et al., 2015, Cainelli et al., 2015), others evidence the opposite (e.g. De Marchi, 2012, Del Rio et al. 2015). The level of industry competitiveness is also another topic to consider on eco-innovation adoption. Nevertheless, this influence depends on the type of product (Ziegler, 2015), especially those linked to cost reduction. The technological intensity of the sector also appears as another factor due to the context. Some studies have shown that the relationship between the degree of technological intensity and the adoption of eco-innovation is significant (Del Rio et al., 2013, 2016).

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Insert here Figure 1. An Integrative Model for Eco-innovation in Tourism

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Internal dimension

The regulatory drivers (Horbach, 2008; Ghisetti, et al., 2015), cost savings (Horbach et al., 2012) and demand pressure (De Marchi, 2012) are referred to in the literature as the major external drivers on the adoption of eco-innovation strategies. As observed by Horbach et al. (2012) there is a strong influence of regulation on eco-innovations. As such, companies' motivation towards eco-innovations is much related with standards compliance, much more than by truly sustainable goals (Bossle et al. 2016). In other words, the response given by companies corresponds to compliance with a set of

standards (Cainelli et al., 2015). Hjalager (1997) found that "innovations are predominantly launched as part of defensive strategies by the tourism industry" (p.35). In the end, the differentiation that would be the basis of the competitive advantage (Porter, 1996) is difficult to achieve because, probably, other competitors will adopt the same measures, leading to a situation of competitive parity. Differentiation can be considered a motivation on the adoption of eco-innovation initiatives (Cuerva et al., 2014).

On this vein, firm resources and capabilities can justify different responses to the same environmental challenges. For this reason our model should also address the internal dimension. Del Río, et al. (2016) posits that internal dimension refers to resources, preconditions and features of the firms which facilitate an eco-innovative attitude. They also serve as a safeguard on the achievement of a sustainable competitive advantage, which is supported by the firms' resources and capabilities, which should be characterized by their uniqueness, inimitability, value creation and non-substitutability, as advocated by RBV (Barney, 1991, Li, 2014).

The discussion about internal dimension involves several perspectives. First, is the willingness to be environmentally friendly. Eco-innovation emerges not because of external context or drivers but because it is a deliberate choice by firm owner. Tzschentke, et al. (2008) points the role played by personal values in small firms' decision-making. Their findings suggested that personal ethics are a key determinant of business ethical/environmental behavior. These aptitudes should be expanded to organizational capabilities considering: environmental leadership, environmental culture and environmental capability (Chen et al. 2012; Bossle et al. 2016; Hojnik & Ruzzier, 2016). Second, besides owner (and eventually top-level manager) personal values about being environmentally friendly, his entrepreneurial behavior is another perspective to consider (Arnold & Hockerts, 2011). Ferrari et al. (2010) analyzed entrepreneurs' environmental perceptions influence on business management. They found that environmental awareness is present in all rural tourism entrepreneurs, but with different degrees of managerial integration: some acted only according to customer demands, while others were cost driven. There were also ecopreneurs that planned "the entire management to achieving the environmental sustainability of their economic activities" (p.413). Entrepreneurial behavior is considered by Andersen (2008) as a knowledge base for competitiveness through eco-innovation.

Third, furthermore managerial commitment with environmental issues and ecopreneurial behavior, other capabilities are also to be considered. One is technological competencies (Del Río, et al., 2016) another is financing (Cainelli and Mazzanti, 2013).

Fourth, human resources and the way they are managed can be understood as a platform to enhance all these capabilities (entrepreneurship, technological knowledge, culture, etc.) (Cainelli et al., 2012) and, simultaneously, be the support of competitive advantage based on eco-innovation adoption (Horbach et al., 2012; Bossle et al., 2016; Hojnik & Ruzzier, 2016). Human resources are also a reflex of visionary management and

managerial concern, considered two of the most important factors in the development of eco-innovations and green organizational identity (Díaz-García et al., 2015).

Fifth, eco-innovation implementation capabilities (Berrone et al., 2013; Cheng & Shiu, 2012) involves activities of establishing different forms of organization and management through the firms in order to change or improve operational processes, existing products and the development of new products in response to changes in external environment (Mahmood, et al., 2011). Cheng and Shiu (2012) identified three key dimensions: eco-organization implementation, eco-process implementation, and eco-product implementation.

Firm's resources and capabilities should also address competitive advantage as well facilitate an eco-innovative approach (Hojnik & Ruzzier, 2016). Leonidou, et al. (2015) defined eco-friendly competitive advantage as "the firm's superiority over competitors in implementing environmental strategies" (p. 276). One essential question is the ability to sustain that superiority through eco-innovation, considering that it may only be temporary until competitors match achieving the same results by regulatory compliance or demand pull response.

Thus, the issue is not only about being competitive, but also about maintaining competitiveness (Teece, 2012), as advocated by the dynamic capabilities approach (Eisenhardt & Martin, 2000; Leonidou, et al., 2015; Winter, 2003). Understanding attractive market opportunities implies going behind compliance and recognize both market and governmental incentives to create and develop more eco-innovative products, the green market can turn into a very interesting alternative for many companies (Bossle, et al. 2016).

On this vein, knowledge seems to be decisive in the adoption of eco-innovation strategies, and can be considered as a sixth internal capability. Knowledge seems to appear in the literature as a link between external factors and the firm, embedding internal resources and capabilities with the ability to address eco-innovation. Knowledge transfer mechanisms are a basis of dynamic capabilities (Eisenhardt & Martin, 2000; Zahra & George, 2002; Horbach, et al. 2012).

In the literature, smaller and younger companies show less capacity to invest on eco-innovation (Horbach, 2008; Cainelli et al., 2015). The company's experience and resources allow it to accumulate past experiences that foster the future development of innovation strategies or, by other words, a path dependency according to the dynamic capabilities approach (Helfat & Peteraf, 2009; Leonidou, et al. 2015).

However, it is also recognized that the limitations can be overcome if companies focus on integration into external knowledge networks and cooperation (Del Rio et al., 2017). In fact, cooperation with other companies and entities facilitates access to information and knowledge about eco-innovation (Rave et al., 2011; Cainelli et al., 2015). However, other studies didn't detect a significant influence on this relationship (Horbach, 2014). One of the possible reasons is related to the type of entities with whom the cooperation

is established. For example, Cuerva et al. (2014) found that co-operation is significantly influenced when partners were suppliers or customers. Other partners can also facilitate access to information and knowledge such as universities, agencies and research centers (Triguero et al., 2013).

As seen internal capabilities doesn't have the same strategic importance concerning eco-innovation. Some just permits to comply with the indispensable conditions to stay in business, but don't contribute to economic rents. Others are valuable in attracting customers and promoting differentiation from competitors. Still others, such as knowledge permits a continuous adaptation to market evolution. As such, the internal dimension can be understood at three levels:

- (i) The minimum to comply with the regulations standards, which, at best, allows being equal - a competitive parity situation;
- (ii) The essential to aim differentiation through unique and difficult to imitate characteristics, which can provide a competitive advantage situation;
- (iii) The fundamental ones that allow maintaining superior levels of performance through the constant reinvention of the capabilities that underlie the eco-innovation strategy, which can lead to a sustained competitive advantage situation. Barney (1991) defined sustained competitive advantage when a firm is "implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other are unable to duplicate the benefits of this strategy" (p. 102).

Theoretical model and hypothesis

Figure 1 presents two dimensions of eco-innovation antecedents. The first dimension is external, which is also divided in two:

- (i) Context. The model integrates a contextual dimension which consists of several forces that affect all the players in the industry. Martínez-Pérez et al. (2015) divided those forces in three groups: technological turbulence which contemplates the speed and predictability of technological changes (Jaworski & Kohli, 1993), competition intensity that reflects the environmental hostility (Covin et al., 2000) and market dynamism that considers the velocity of customer preferences changes (Atuahene-Gima et al., 2006).
- (ii) External Drivers. On a plane closer to the company several external drivers of eco-innovation must also be considered. Previously discussed in the literature review, encompassing elements such as regulation, demand-pull and grants (Cai & Zhou, 2014).

These factors influence not only eco-innovation, but also internal factors, the second dimension, as explained below. The external influence on firms' resources and capabilities in many occasions result from environmental pressures such as "environmental regulation, grants, information campaigns on cost savings, and facilitating the integration of small firms in external knowledge flows" (Del Río et al., 2017: 285). The development of internal capabilities, among other factors, depends of firms' ability to form links within the environment. Those ties "provide stimuli for innovation, affiliate firms in business groups with buyer-supplier ties were particularly better able to acquire R&D capabilities than those without such ties" (Mahmood et al., 2011: 837).

The following hypotheses result:

H1: The external dimension influences firms' eco-innovation.

H2: The external dimension enhances the development of firms' capabilities

H3: The external dimension contributes to the development of firms' dynamic capabilities

In the internal dimension considers firms' resources and capabilities. The existence of external drivers or triggers can create a framework for the development of eco-innovation, but without internal competencies to embrace projects of eco-innovation the results will be very limited. They can be considered just as internal drivers (Agan et al., 2013; Cainelli et al., 2012; Hojnik & Ruzzier, 2015; Wagner, 2007) or they can be considered on a deeper approach. As previously discussed, they don't have the same strategic importance, as defended by RBV. This means that some internal resources and capabilities are just enough to permit to comply with regulatory standards, but it also means that other capabilities can contribute both to eco-innovation and competitive advantage (Leonidou, et al. 2015). Considering the capabilities' role on the development of eco-innovation, we can hypothesize:

H4: Eco-innovation resources and capabilities contributes to eco-innovation

In the model, there's a distinction within capabilities. Winter (2003) distinguished ordinary capabilities from higher order capabilities. The former are "those that permit a firm to 'make a living' in the short term" and the later he define as dynamic capabilities which are "those that operate to extend, modify or create ordinary capabilities" (p. 992). As such, we have ordinary capabilities related to firms' daily life', and we have capabilities to change capabilities (Helfat & Winter, 2011), or dynamic capabilities. Dynamic capabilities permit to sustain competitive advantage in the context of environmental change (Helfat & Peteraf, 2009). On this vein, our model considers both kinds of capabilities, the influence of dynamic capabilities on the other capabilities, as well their effect on eco-innovation. As such:

H5: Dynamic capabilities contribute to development of eco-innovation resources and capabilities

H6: Dynamic capabilities contribute to development of eco-innovation

Method

To test our model we conducted a quantitative study supported on a questionnaire applied to a sample of Portuguese hotels. Operationalization of the model variables was done by using pre-existing measures in the literature, as described in the next section. A translation into Portuguese followed, and to ensure measures accuracy, a reverse translation was realized to verify consistency with original meaning. The questionnaire was then pre-tested with two hotel consultants and two hotel managers. Interpretation doubts lead to some adjustments. The use of an email-based questionnaire prevented respondents from missing any questions, since the response to each item must should be done before moving on to the next item.

Measures

Context measurement was divided in three dimensions: environmental hostility; market dynamism and technological turbulence. To measure environmental hostility we used Covin et al., (2000) proposal considering a three items scale using questions such as “In the industry, the number of competitors is high”. For market dynamism we adapted a two item measure from Atuahene-Gima et al. (2006) with items like “In the industry, consumers’ preferences change very quickly”. Technological turbulence measurement was based on a four item scale from Jaworski and Kohli (1993) work. Items included questions like “In the industry, it is difficult foresee how the technology may evolve in the next years”. In all three dimensions, Martínez-Pérez et al., (2015) adaptation to tourism industry was taken in consideration as well their seven-points likert scale (1 = strongly disagree, 7 = strongly agree).

External drivers were measured using five items collected from Cai & Zhou (2014) and Eurostat, Final harmonized CIS-2008 questionnaire. Items included sentences like “the government's forced environmental regulations on enterprises' energy saving and environmental protection” or “availability of government grants, subsidies or other financial incentives for environmental innovation”. A five-point Likert scale was used to obtain the perception of the respondents (1 = strongly disagree, 5 = strongly agree).

Internal capabilities were measured by adapting Cheng and Shiu (2012) proposal which refers to ‘organizational members’ capabilities and commitment to implement new forms of management, organization, processes and product conducive to eco-innovation. According to their construct these capabilities can be divided in: eco-organization implementation, eco-process implementation and eco-product implementation. We used a five-point Likert scale (1 = strongly disagree, 7 = strongly agree).

agree). Questionnaire items were like «our unit management often uses novel systems to manage eco-innovation» or «our unit often emphasizes developing new eco-products through new technologies to use natural materials».

Dynamic capabilities included integrating capacity of eco-innovation and knowledge exploration strategy. The former was measured using Cai and Zhou (2014) four item scale. Respondents were asked to rank their enterprise's position compared to the level of the same domestic industry, where 1 = Least; 2 = Slightly below the average; 3 = Industry average level; 4 = Slightly above the average; and 5= Most. Items included topics such as «conversion time of new products/services» or «the enterprise's ability to adjust to the rapid promotion of eco-innovation». To measure knowledge exploration strategy we used Martínez-Pérez et al. (2015) adaptation from Revilla et al. (2010). It was a four item measure with a seven point likert scale (1 = strongly disagree, 7 = strongly agree). Items were like «we find out and creatively solve problems in products or services that generate customer dissatisfaction» or «we incorporate constantly new knowledge, ideas, and methods».

To measure eco-innovation we used Martínez-Pérez et al. (2015) eco-innovations measure. Respondents were asked to evaluate the degree of eco-innovations introduced during the last five years, in a seven-point likert scale (1 = none, 7 = many). The measure included six items covering areas like products or services, production processes, delivery methods, business strategies, managerial procedures and marketing techniques.

Results and discussion

Our main survey was applied in May-June 2018. A final sample of 42 hotels permitted a response rate of 11.67% (sample error of 6.57%). The sample is representative of the population by means of firms' size and regional distribution. Table 1 summarizes the characteristics of hotels whose management agreed to participate in the survey.

According to the results, hotel managers recognized they compete on a turbulent environment biased by market dynamism (Mean = 5.397) and competitors hostility (Mean= 5.397). External drivers were considered to be of lesser importance by the respondents (even taking into account that it was a scale of 1 to 5). As such, the context was considered as a source of concern in relation to external drivers. This concern is consistent with Bossle et al. (2016) work since the context includes forces over which companies have little.

In relation to the internal dimension of the model, the capabilities of eco-innovation ranked means of 4.671, 5.083 and 4.776 in relation to eco-organization implementation, eco-process implementation and eco-product implementation, respectively. Dynamic capabilities were slightly above ordinary capabilities, meaning that the hotels are

investing in their ability to evolve and respond proactively to environmental changes. Knowledge exploration strategy had a very good result (Mean = 5.196) and integrating capabilities evidenced a lower mean value of 3.500 (scale from 1 to 5). For eco-innovation resulted a mean of 4.401 (scale from 1 to 5), which represented an average value.

Table 2 presents the inter-correlations between the variables. All hypotheses are total or partially supported by the results. As can be seen context variables have no effect on eco-innovation, with the exception of technological turbulence. Instead, external drivers have a strong influence on hotel's green practices. External factors showed a significant and positive influence on the three organizational capabilities, however the context influence is moderate, whilst drivers evidenced a strong correlation ($R=.711$; $.738$ and $.769$; $p<.01$). This finding is consistent with the literature, since "environmental strategy adoption depends largely on public pressure and managerial environmental concern" (Hojnik & Ruzzier, 2016: 38). This is interesting since the companies seem to develop their internal capacities for eco-innovation, as a result of external influences, in particular the drivers, but this doesn't necessarily have repercussions on eco-innovation. Chen et al. (2012) identified the 'internal origins' as important to environmental innovations. However, it's not enough since the literature suggests that managerial environmental concern is a strong internal driver (Qi et al., 2010), meaning that the initiatives should be aligned with sustainability goals (Arnold and Hockerts, 2011).

Two interpretations may result. Either there is an investment in capabilities which isn't translated into eco-innovation, or there may be other explanations so that the direct relationship between context factors and eco-innovation is only partially verified. For example, the stage of adoption may cause this relationship to develop only later (Kesidou & Demirel, 2012), or firms may need to achieve in the past results from eco-innovation to invest in the present (Horbach, 2008).

In relation to dynamic capabilities, knowledge exploration strategy influenced in a higher degree by external drivers than integrating capacity which is moderately affected by the context. Their role on ordinary capabilities development is clear, especially of knowledge exploration strategy effect on the three studied capabilities ($R=.773$, $.730$ and $.725$ respectively, $p<0.01$). This effect is in line with the role played by knowledge transfer mechanisms in establishing a link between external environment and firm capabilities (Eisenhardt & Martin, 2000; Zahra & George, 2002).

Finally, the correlation with eco-innovation. There's a strong value on the correlation of all three capabilities with eco-innovation ($R= .702$; $.713$ and $.762$ respectively; $p< .01$). Capabilities correlation is stronger than dynamic capabilities' influence on eco-innovation, what is predictable since their link to performance is indirect (Winter, 2003) as they are recognized as capabilities to change capabilities (Helfat & Winter, 2011). However, the influence of knowledge exploration is not negligible since it has a moderate high value. As previously mentioned knowledge plays an important role in the external link to sources of information and emerging technology.

Conclusion

Our model and research is based on RBV theory which addresses the role of firms' bundle of resources and capabilities as a basis for competitive advantage (Barney, 1991). The proposed model integrates this dimension by including firms' eco-innovation implementation capabilities, which are influenced by external factors as well by internal dynamic capabilities that influence and change them (Helfat & Winter, 2011). It also integrates corporate environmental strategy literature (Aragón-Correa & Sharma, 2003).

According to the findings our model allows an integrative perspective of how eco-innovation evolves in hotels. At the external level, the model incorporates not only the drivers to which the literature alludes, but also the broader context where the whole phenomenon unfolds. Market dynamism and technological and competitive turbulence can't be set aside in our model, since uncertainty is a determining factor for investment risk, including in innovation.

At the internal level there are also two levels within the capabilities that contribute to eco-innovation. At a first level, the eco-innovation implementation capabilities. These capabilities not only enable hotels to comply with existing standards and regulations and equate competitors (Carrillo-Hermosilla, et al., 2010), but above all are the basis for sustaining competitive advantage through market orientation and differentiation (Bossle, et al. 2016). On a second level, dynamic capabilities allow the firm to be able to reinvent itself and maintain those competitive advantages (Eisenhardt & Martin, 2000; Winter, 2003). The role of knowledge and integrative capabilities allow adequate access to external information and technology sources, integrating them into internal routines (Leonidou, et al., 2015).

Another contribution is the fact that this study is dedicated to a service sector, in a realm of research on eco-innovation centered in industrial sectors (Cuerva et al., 2014; Cainelli et al., 2015). As such this study contributes to eco-innovation discussion bringing sectorial diversity.

This research is a basis for further research contributing to consolidate the results obtained in other countries and sectors. A larger and more international sample will be important to reinforce the results obtained. The model can also be expanded with other variables. For example, in the ordinary capabilities could include dimensions such as human resources, leadership (Cainelli et al., 2012), entrepreneurship (Ferrari et al., 2010) or environmental management systems (Hojnik & Ruzzier, 2016). Similarly, other dynamic capabilities can be included, such as inter-functional integration or orchestration (Teece, 2012).

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Table 1. Characteristic of respondent firms (N = 42).

Characteristic	%	Characteristic	%
Age		Labor force	
Less than 5 years	16%	Less than 20	15%
5 – 10 years	22%	21 – 50 years	17%
11-20 years	27%	51-150 years	35%
More than 21 years	35%	More than 151	33%
Number of years of eco-innovation		Procedures to identify and regularly reduce environmental impacts	
Less than 3 years	15%	Yes	38%
3 – 5 years	25%	No	62%
6-10 years	27%		
More than 11 years	33%		

Table 2. Pearson correlations between the variables.

	Cronbach's	Mean	S. D.	2	3	4	5	6	7	8	9	10
	Alpha											
1. Eco-innovation	.936	4.401	1.672	.632**	.380*	.702**	.713**	.762**	.654**	.303	.205	.425**
2. Knowledge Strategy	.943	5.196	1.554		.567**	.773**	.730**	.725**	.655**	.416**	.351*	.470**
3. Integrating Cap.	.929	3.500	.927			.647**	.442**	.451**	.362*	.495**	.575**	.549**
4. Cap. Eco-org	.981	4.671	1.796				.903**	.815**	.711**	.548**	.430**	.368*
5. Cap. Eco-process	.944	5.083	1.511					.863**	.738**	.622**	.486**	.385*
6. Cap. Eco-prod.	.936	4.776	1.528						.769**	.584**	.389*	.466**
7. External Drivers	.841	3.467	.958							.413**	.378*	.413**
8. E. hostility	.801	5.397	1.143								.804**	.553**
9. M. dynamism	.801	5.583	1.082									.689**
10. Technol. Turb.	.875	5.226	1.042									

*p < 0.05; **p < 0.01.

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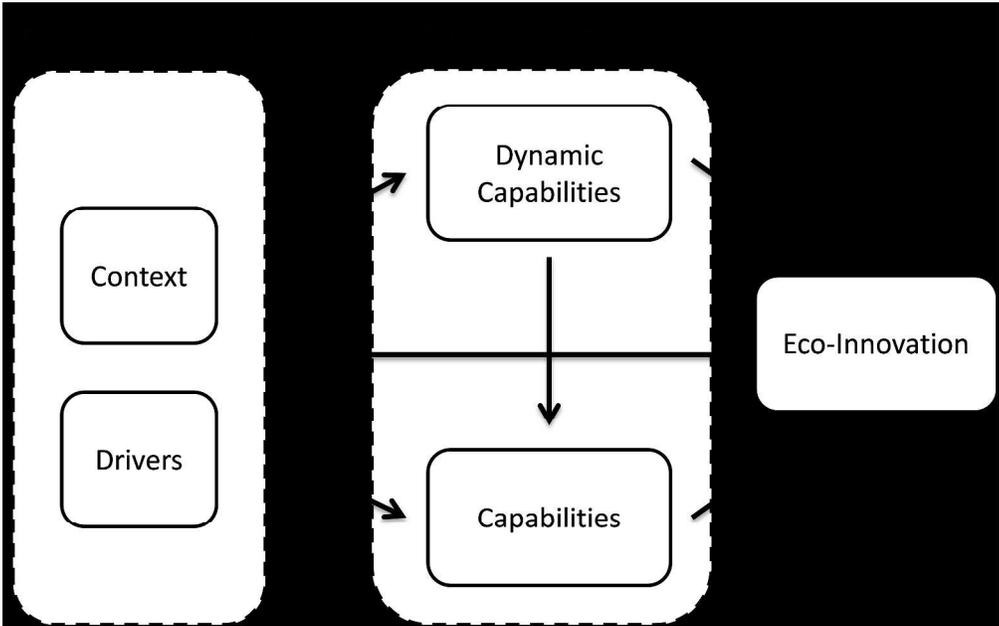


Figure 1. An Integrative Model for Eco-innovation in Tourism

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