Pereira-Moliner, J., Font, X, Molina-Azorín, J.; Lopez-Gamero, M.D.; Tarí, J.J. Pertusa-Ortega, E. (2015) The Holy Grail: Environmental management, competitive advantage and business performance in the Spanish hotel industry, International Journal of Contemporary Hospitality Management, 27(5) 714 – 738.

Abstract

Purpose: This paper analyses the influence of environmental proactivity on cost and differentiation competitive advantages, and explores the double relationship between environmental proactivity and business performance.

Design/methodology/approach: The population consists of all 3-to-5 star hotels in Spain. A sample of 350 hotels was classified according to environmental proactivity and performance levels employing a two-step cluster analysis. Significant differences between groups were examined.

Findings: The results show two types of environmental behaviour (reactive and proactive), with proactive hotels developing significantly better on both cost and differentiation competitive advantage and achieving significantly higher performance levels. Hotels which achieve above average business performance levels are significantly more environmentally proactive.

Practical implications: The present paper demonstrates that environmental management is related to competitive advantages and business performance. Environmental management systems are more developed in higher category, chain-affiliated, and larger hotels. This could be due to having more resources to develop their environmental capability. The environmental proactivity scale employed in this study is presented as a reference measure for hotel managers to benchmark their current practices and implement environmental improvements.

Originality/value: First, measuring environmental proactivity using four managerial systems (operative, information, strategic and technical) is innovative and provides a more detailed approach to measuring environmental proactivity. Second, demonstrating a double association between environmental proactivity and performance provides fresh insights into the relationship between these variables.

Keywords: Environmental proactivity, Cost competitive advantage, Differentiation competitive advantage, Business performance, Hotel industry, Cluster analysis, Spain

Introduction

The quest to demonstrate that environmental management improves business financial performance has been compared to the search for the Holy Grail (Kelly, 2004) on the grounds that it produces only inconclusive results (Margolis *et al.,* 2007; Orlitzky, 2011), cannot explain under which conditions these variables are related, or, indeed, establish a causality (Vogel, 2005). Most studies analysing the relationship between environmental management and competitive advantage conclude that there is a positive and significant relationship. For example, environmental management allows firms to reduce costs (increasing efficiency and productivity) (Bohdanowicz, 2006; Bohdanowicz *et al.*, 2011; Bonilla-Priego *et al.,* 2011; Chan, 2009; Chan and Ho, 2006) and increase differentiation by improving reputation and image (Chan, 2013; Chen and Peng, 2012; Lee *et al.*, 2011; Leonidou *et al.,* 2013; López-Gamero *et al.*, 2009, 2010). However, empirical studies examining the relationship between environmental management and firm performance are not conclusive (Molina-Azorín *et al.,* 2009a).

The link between environmental management, competitive advantage, and firm performance in hospitality research has attracted hardly any attention, with a few notable recent exceptions (Leonidou *et al.,* 2013; López-Gamero *et al.*, 2011). Singal (2014) recently

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analysed the double relationship between financial performance and investment in sustainable initiatives, and found that tourism firms are more environmentally committed than firms in other industries, that tourism firms with higher financial performance have higher environmental performance, and that going green enhances performance. This paper contributes to the discussion by offering more empirical evidence on this relationship, focusing on the hotel sector. Research has mainly focused on the impact of environmental variables on business performance (Aragón-Correa and Rubio-López, 2007; Galdeano-Gómez *et al.*, 2008; Nakao *et al.*, 2007; Wahba, 2008). Previous studies have generally failed to examine the opposite direction of the relationship, that successful firms may have a propensity to invest more in environmental management. The present study contributes to this theoretical development by providing greater explanatory value by looking at both directions of this relationship and providing fresh insights into the relationship between environmental management and firm performance.

This paper therefore has several aims: (a) to identify environmental proactivity in the hotel industry, (b) to assess whether more proactive hotels are better at developing cost and differentiation competitive advantages, (c) to examine whether more environmental proactive hotels achieve better performance levels, and (d) to analyse whether hotels with better performance levels are more proactive in environmental management.

Theory development

Environmental proactivity and competitive advantage

The first argument advanced here is that hotels with greater environmental proactivity are more competitive, in terms of either costs or differentiation. We first define the key concepts in this section, and then explain the arguments linking environmental proactivity with a positive impact on establishing competitive advantage.

Environmental management involves the study of all technical and organizational activities aimed at reducing the environmental impact caused by a company's business operations (Cramer, 1998: 162). Proactive environmental management can be understood as a systematic pattern of voluntary practices that go beyond regulatory requirements (Aragón-Correa and Rubio-López, 2007). Proactivity refers, therefore, to the additional voluntary effort, which results in a higher level of commitment and resources, and from which we may expect improved business performance (Galdeano-López *et al.,* 2008; Nakao *et al.,* 2007; Wahba, 2008).

Environmental proactivity is the overall set of environmental strategies and practices that a company deploys to meet their environmental aims. We suggest that this is a better measure than environmental performance in explaining the fuller environmental patterns and their influence on business performance (González-Benito and González-Benito, 2005). Curkovic *et al.* (2000) state that proactivity shares many of the characteristics of management systems frameworks and they adapted the Malcolm Baldrige National Quality Award to study environmental issues, while maintaining its structure of strategic systems, operational systems, information systems and results. Previous articles (Barla, 2007; Darnall and Sides, 2008; Russo, 2009) had not differentiated between the three systems, but rather had grouped them as "management", and focused primarily on the results (environmental performance).

Competitiveness is a key term in the business management literature. Its definition becomes complex when efforts are made to measure it (Crouch and Ritchie, 1999). To firms, competitiveness means the ability to compete in world markets with a global strategy (Porter, 1998). As a consequence, firms have to create and maintain a competitive advantage, and be able to achieve better performance levels than their competitors (Porter, 1985).

Cost reduction can be understood as an internally-driven reason for environmental engagement (Bonilla-Priego *et al.,* 2011) because the hotel is taking decisions for reasons of

efficiency, based on clear financial results. Cost reduction is considered to be the prime motivation behind environmental practices for both large and small hotels (Tzschentke *et al.,* 2004). While there is a literature about small firms preferring cost saving actions, we have little evidence of measurements (Sampaio *et al.,* 2012) and the most compelling cases come from entire hotel groups reporting substantial savings and efficiency improvements from systematic measurement and management of resources (Bohdanowicz *et al.,* 2011). Cost reduction is often the first tangible outcome of environmental management, before creating other capabilities. Additional cost savings come from regulatory incentives, through reduced environmental taxes and charges, reduced liability costs and ensured continuous compliance with regulations. Therefore, the following hypothesis is proposed:

> *Hypothesis 1: The more environmentally proactive, the better will be the hotel's cost competitive advantage.*

The literature also suggests that environmental proactivity fosters differentiation on the part of customers and stakeholders more broadly. If cost reduction is seen as an internally driven reason, differentiation is legitimation-seeking and therefore an externally driven reason (Bonilla-Priego *et al.,* 2011). Legitimation responds to a company's need for social approval and focuses on the visibility of environmental friendliness. Legitimation is directed towards any stakeholder who shows an interest in the company's environmental behaviour as a strategy to build reputation (Russo and Fouts, 1997; Sharma and Vredenburg, 1998). Legitimation is important to a firm because it is a higher level, more complex capability that is very difficult to copy and offers a longer term source of competitive advantage (Oliver, 1997).

Miles and Covin (2000) indicate that a firm's advantage in reputation is bound to offer marketing opportunities and increase market value. Differentiation advantage typically arises from the customers' perception that the product is more valuable (Lankoski, 2008). If we accept that ecological characteristics of products are a new competitive argument (Elkington, 1994), firms with a better ecological reputation can increase the demand from environmentally-sensitive consumers (Miles and Covin, 2000; Chan, 2013). Thus, brand managers in the hotel industry can deliver emotional benefits through the brand, at the same time as making sure that the target groups perceive real environmental benefits (Hu, 2012).

The key stakeholders here would be the tourists, who are expected to show increasing concern for the environment (Chan and Wong, 2006). Healthy guestrooms, eco-friendly practices, reduced expenses and organic food are positively associated with visit intention (Lee *et al.*, 2011). For tourists who see themselves as knowledgeable about green products, it is important that green hotels demonstrate a sense of belonging by showing concern about the seriousness of ecological degradation, which provides a source of intangible differentiation (Han *et al.,* 2010; Kim and Han, 2010). For the less knowledgeable customers, hotels can utilize recommendations from environmental activists and celebrities (Chen and Peng, 2012). In both cases, hotels must underline the benefits to the consumer from a green purchase, the additional experience gained in addition to the core purchasing attributes of quality, convenience and price.

Hotels with longer experience in environmental management see environmental management protection as a source of differentiation, and not just as an eco-efficiency tool (Carmona-Moreno *et al.*, 2004). This can be explained by the greater need of larger firms for stakeholder visibility, or it can be seen in their greater ability to understand the environment as a source of differentiation (El Dief and Font, 2010). Therefore, we suggest the following hypothesis:

Hypothesis 2: The more environmentally proactive, the better a hotel's differentiation competitive advantage.

Environmental proactivity and business performance

The theoretical and empirical literature on the influence of environmental management on firm performance produces inconclusive and even contradictory evidence. On the one hand, there is a negative approach according to which environmental proactivity may reduce a firm's performance. From this point of view, complying with environmental laws entails high costs, which harm a firm's ability to compete (Jaffe *et al.*, 1995). In addition, although cost savings may be easily obtained by adopting a few preventive measures, more ambitious prevention practices may imply costs which exceed any savings derived (Walley and Whitehead, 1994). Thus, these works suggest firms that try to improve their environmental performance beyond an introductory level need to withdraw resources and managerial effort from other key areas, which results in lower profits.

According to this analysis, and from the agency theory point of view, managers cannot invest in the environment and be more competitive at the same time (Hull and Rothenberg, 2008). Agency theory, as applied to the environmental sphere, emphasizes that without strict control by shareholders, managers may inappropriately allocate corporate resources in order to advance goals that increase their own utility function in areas where the firm is not likely to obtain important profits. Therefore, good environmental performance is obtained at the cost of good corporate results, because the firm's resources are devoted to reducing environmental impacts, thus preventing the firm from allocating them to alternative investment projects or simply returning them to shareholders. Very few empirical studies have tested this negative relationship (Cordeiro and Sarkis, 1997; Gilley *et al.*, 2000; Link and Naveh, 2006).

On the other hand, most manufacturing studies suggest a positive relationship between environmental management and business performance (Al-Tuwaijri *et al.*, 2004; Judge and Douglas, 1998; Heras-Saizarbitoria *et al.,* 2011; King and Lenox, 2002; Klassen and McLaughlin, 1996; Melnyk *et al.,* 2003; Molina-Azorín *et al.,* 2009a; Wahba, 2008). Most hospitality publications have also found a positive linkage (Álvarez Gil *et al.*, 2001; Carmona-Moreno *et al.*, 2004; Kassinis and Soteriou, 2003; Leonidou *et al.,* 2013; López-Gamero *et al.*, 2009; Molina-Azorín *et al.,* 2009b; Pereira-Moliner *et al.,* 2012).

As most works suggest a positive relationship between environmental management and business performance, we would expect improved performance outcomes from competitive advantage deriving by proactive environmental management (Lindell and Karagozoglu, 2001; López-Gamero *et al.*, 2010). The fact that environmental management can help firms reach a win-win situation, from which both the firm and the environment benefit, reflects an approach known as the "Porter Hypothesis" (Porter and van der Linde, 1995). This suggests that strict environmental regulation triggers the introduction of environmental improvements making production processes and products more efficient (Wagner, 2003). The cost savings are sufficient to compensate for both the compliance costs directly attributed to the new regulations and the innovation costs. Moreover, as noted above, firms with a better ecological reputation can increase the demand from environmentally-sensitive consumers, creating differentiation advantage. Environmental management is therefore a vehicle to improve business performance.

Jabbour and Santos (2006) indicate that environmental activities must be integrated into the company's overall business strategy, exploring strategic opportunities. Companies must adopt an ethical attitude to environmental issues, as opposed to a reactive view to the pressures of environmental regulation. All these aspects characterize proactive environmental management and, therefore, companies may improve their performance.

For example, Judge and Douglas (1998) found that there is a positive and significant impact of integrating environmental issues on financial performance. Sharma and Vredenburg (1998) indicated that there is a positive and significant influence of proactive environmental practices on the development of organizational capabilities, and these capabilities also impact on firm performance. King and Lenox (2002) showed that lower emissions are significantly associated with higher financial performance. Wahba (2008) compared ISO 14001 certified and non-certified companies, finding that ISO 14001 had a positive and significant impact on firm performance. Following these arguments, we propose this hypothesis:

Hypothesis 3a: The more environmentally proactive, the better the hotel's business performance.

As noted above, previous studies have mainly focused on the impact of environmental variables on business performance (Aragón-Correa and Rubio-López, 2007; Galdeano-Gómez *et al.*, 2008; Nakao *et al.*, 2007; Wahba, 2008). What tends to be forgotten in the hospitality literature (Álvarez Gil *et al.*, 2001; Carmona-Moreno *et al.*, 2004; Claver-Cortés *et al.*, 2007; Kassinis and Soteriou, 2003; Leonidou *et al.*, 2013; López-Gamero *et al.*, 2011; Molina-Azorín *et al.*, 2009b) is that the opposite direction of relationship could also occur (López-Gamero *et al.*, 2010), i.e. successful firms may well have a propensity to invest more in environmental management (Singal, 2014).

The slack resources approach could be used to put forward the argument that more profitable businesses are more likely to be environmentally proactive. This approach suggests that environmental performance and/or its accreditation could be a kind of 'luxury good' for a company when it has reached a certain level of economic performance (Schaltegger and Synnestvedt, 2002). In other words, financial performance may influence environmental

management (Wagner, 2005) because a firm with a good financial performance can allocate more resources to environmental initiatives.

However, this approach provides inconclusive results. Wagner *et al.* (2002) did not find and evidence of a significant impact of any economic performance variable on environmental performance, while Nakao *et al.* (2007) did. López-Gamero *et al.* (2010) concluded that proactive environmental management influences financial performance, and to a lesser extent financial performance also influences proactive environmental management. Heras-Saizarbitoria *et al.* (2011) found that more profitable firms have a greater propensity to adopt international standards for environmental management. This may be explained by a selection effect. That is, it may be an ex-ante selection mechanism where better performing firms have a greater propensity to carry out environmental initiatives (Toffel, 2005). This double relationship between environmental proactivity and business performance has never been tested in the hospitality industry, and based on the previous reasoning, we propose the following hypothesis:

Hypothesis 3b: The better the business performance, the more environmentally proactive a hotel will be.

Method

Population and sample

The target population for this study was 3-to-5-star hotels, including independent and chain affiliated hotels, located in Spain. Spain is the world's second destination in terms of international tourism revenues and fourth in international tourist arrivals (UNWTO, 2013). Consequently, Spain attracts international hotel companies to compete. The census was

achieved from the Hostelmarket (2011) Database, September 2011 version. The population size is 4,770 hotels (see Table I).

'Insert Table I here'

A structured questionnaire with closed questions was sent to the whole population by post in two waves from October 2011 to February 2012. A pre-test was carried out with seven hotel managers, four representatives of hoteliers' associations, one representative of an institute linked to quality issues in tourism, and one manager of a hotel management and environmental quality consultancy firm. The pre-test was very useful and enabled the researchers to simplify and improve the questionnaire design. In the introduction letter accompanying the questionnaire, we suggested that environmental management questions should be answered by the person responsible for environmental management in the hotel, while competitive advantage and business performance questions should be answered by the hotel manager, and in this way we hoped to avoid common method variance caused by having only one respondent for all questions.

350 hotel managers answered, a 7.34% response rate. The sampling error is 5.0% for a confidence level of 95%, and the least favourable situation of p=q=0.5. Table I shows a description of the sample. Although the response rate may seem low, it is close to the mean obtained by mail surveys in Spain (del Brío *et al.,* 2002). When it comes to studying variables related to competitive advantage and performance, companies are usually reluctant to answer because they are afraid of publishing their strengths and weaknesses. Stamped addressed envelopes for the answers were enclosed for the purpose of improving the response rate, together with the promise of sending a management report benchmarking results to the

participants. Furthermore, any deficiencies detected in the answers were rectified through follow-up telephone calls, fax and e-mail.

Non-response bias was assessed by comparing early respondents with late respondents (Armstrong and Overton, 1977). The rationale is that late respondents are more similar to non-respondents than to early respondents. The dataset was divided into thirds according to the number of days from initial mailing to receipt of the returned questionnaire. Pearson's Chi Square tests and Student's t between the first and last thirds indicate no statistically significant differences in the mean responses for all the variables measured. Therefore, non-response bias is presumed not to be a problem in this dataset. It was also found that the number of stars of hotels in the sample and the population were associated (Chi-Square test, p=0.000) and that there are no significant differences between the number of rooms (Student's t, p=0.141) and beds (Student's t, p=0.111) between the sample and the population.

We decided to check for common method variance in spite of having invited multiple respondents within the same organisation. Following Podsakoff and Organ (1986), we applied Harman's single factor test, which led to the extraction of seven factors, with the first factor accounting for 25% of the total variance. Therefore, the observed relationships among constructs were not mainly accounted for by the systematic variance associated with the measurement technique.

In addition, we controlled for social desirability bias by assuring respondents of their anonymity. The most frequently utilized method for minimizing social desirability pressures involves having participants complete written questionnaires while not identifying themselves (Meier *et al.* 1998; Turnley and Feldman, 2000). This approach presumes that answering anonymously reduces the incentive to misrepresent oneself in socially desirable ways, so more honest and accurate self-reports can be expected.

Measures

Environmental proactivity: This construct was measured employing a 7-point Likert scale ranging from 1 (the environmental practice has never been adopted) to 7 (the environmental practice is always implemented). We employ the four dimensions suggested by Curcovic *et al.,* (2000) and also used by López-Gamero *et al.* (2008) to measure environmental proactivity: operative systems (related to operational categories of human resource development and process management), information systems, strategic systems, and technical systems (see Appendix).

Competitive advantage: This dimension was measured with 7 items taken from the literature (Beal, 2000; Govindarajan, 1988; Miller, 1988; Lee and Miller, 1996) (see Appendix). The items were scored on a 7-point Likert scale ranging from 1 (not using the strategy at all) to 7 (the strategy is very important for the establishment). The Appendix shows how the items are divided into cost competitive advantage and differentiation competitive advantage.

Business performance: We focus on performance in terms of operational and financial results (Venkatraman and Ramanujam, 1986) measured from hotel-specific, primary data. Four performance variables were measured: occupancy rate per room, average daily rate (ADR), revenues per available room (RevPAR), and gross operative profit per available room (GOPPAR). These variables are suitable for measuring the operational and financial results of individual hotel establishments, and they are very commonly used in the literature and well-understood by hotel managers (Sainaghi *et al.,* 2013).

These four variables were measured combining perceptual and objective variables because performance is one of the central concepts of this paper and it can be measured in both. The four variables of perceived performance (based on the opinion of hotel managers in comparison with known competitors) were obtained using a Likert scale ranging from 1 to 7

(1 meaning "much worse than competitors" and 7 meaning "much better than competitors") (see Appendix). ADR, RevPAR and GOPPAR were also measured as objective performance by using 10 intervals against which hotel managers rated their establishments (see Table II). These intervals were identified by calculating the minimum, maximum and median of the three variables from the following publications: (a) Economic Indicators of the Spanish Hotel Industry (Ernst & Young, 2011), which includes 600 hotels from 3 to 5 stars; (b) CEHAT (Spanish Confederation of Hotels and Tourist Apartments) HotStats (Magma-TRI Hospitality Consulting, 2011), which includes 4-to-5-star hotels located in Barcelona, Madrid, Palma de Mallorca, Seville and Valencia; and (c) CEHAT (2011) *Hotel Monitor*. Thus, the median value was taken as the central value, and five intervals were selected below the median, including the lowest calculated minimum value, and five intervals were selected above the median, including the calculated maximum value. We measured these variables in this way because these were the only objective data we had access to, and also because it is not advisable to ask directly for commercially sensitive information, as practitioners and researchers commented during the pre-test.

'Insert Table II here'

In addition, three *descriptive variables* are introduced in the analysis: category (number of stars), size (number of rooms and beds) and affiliation (independent or chain-affiliated). The literature suggests that environmental proactivity will be higher in larger hotels, with more stars and if they are chain-affiliated, as each of these variables is linked to having more resources to invest into environmental management (Bohdanowicz, 2005; Carmona-Moreno *et al.*, 2004; Pereira-Moliner *et al.,* 2012; Rahman *et al.,* 2012).

The *validity and reliability of the perceptual measures* were estimated as follows. Content validity is assured by an extensive literature review and the expert judgement of academics and hotel professionals. Construct validity was assessed through a factor analysis for each measure (see Appendix). All items which relate to environmental systems and perceptual performance converge to one factor. Items which relate to competitive advantage converge to two factors (cost competitive advantage and differentiation competitive advantage). Criterion-related validity was checked by the correlation between environmental performance and each environmental system (see Table III). Environmental performance was measured through 10 items taken from Wagner (2009). The managers had to indicate the extent to which their efforts to improve environmental management contributed to reducing the environmental impacts indicated. Each item was measured on a Likert scale, from 1 (no impact) to 7 (very high impact). The correlation matrix shows that all the environmental systems are significantly related ($p=0.000$) to environmental performance, providing evidence of criterion-related validity. Finally, reliability is examined using Cronbach's alpha (see Appendix). The minimum advisable value of 0.7 (Nunnally, 1978) is exceeded by every factor, except for competitive advantage on costc (0.630) which may also be acceptable (Hair *et al*, 2006).

'Insert Table III here'

Analysis

Two complementary quantitative methods were used. Firstly, a two-step cluster analysis gave us environmental groups with different levels of environmental proactivity, and we tested for differences in competitiveness and performance. Secondly, we classified hotels into two groups (low and high performance, below or above the median respectively) considering each

performance variable. These two analyses allow us to understand the double relationship between environmental proactivity and business performance.

Two-step cluster analysis with SPSS 19 solves some of the problems of the widely used clustering algorithms, k-means clustering and agglomerative hierarchical techniques (Bacher, 2000; Everitt *et al.*, 2001; Huang, 1998). The two-step process automatically determines the optimal number of clusters for the input data and can use the hierarchical clustering method in the second step to assess multiple cluster solutions. A characteristic of hierarchical clustering is that it produces a sequence of partitions in one run: 1, 2, 3, … clusters. In contrast, a k-means algorithm would need to run multiple times (one for each specified number of clusters) in order to generate the sequence. To determine the number of clusters automatically, the TwoStep procedure of SPSS 19 uses a two-stage procedure that works well with the hierarchical clustering method. In the first stage, the Bayesian Information Criterion (BIC) for each number of clusters within a specified range is calculated and used to find the initial estimate for the number of clusters.

Results

We first offer a descriptive analysis of environmental management in hotels located in Spain, contextualised by category, chain affiliation and size. Table IV shows that 5-star, chain-affiliated and large hotels are the most proactive in all environmental systems, with significant differences by number of stars, chain affiliation and size.

'Insert Table IV here'

After the descriptive analysis, the two-step cluster analysis of the four environmental systems allows us to identify environmental proactivity levels to test the hypotheses. This

shows two different environmental groups with strong evidence that there is a cluster structure (0.6 in the indicator proposed by Kaufman and Rousseeuw (2009)). The two-step cluster analysis proved to be valid; there are significant differences between the two clusters in all the environmental variables (see Table V), and a discriminant analysis revealed that 96.2% of the original grouped cases were correctly classified. Table V provides the average scores for each group for each variable and the significance test for the variables used to obtain the clusters.

Group 1, with reactive environmental behaviour, clusters hotels that perform below average on all environmental systems. 3 out the 4 of the environmental systems achieve an average score below 3. The highest score relates to technical environmental systems and the lowest to information systems. These are usually 3-star and independent hotels.

Group 2, with proactive environmental behaviour, clusters hotels with above average performance on each environmental system. The highest score is also achieved in technical systems and the lowest in operative systems. These are usually 4-star, chain-affiliated and larger than Group 1 hotels.

Regarding competitive advantage, Table V shows that hotels in Group 2, with a proactive environmental behaviour, achieve significantly better cost and differentiation competitive advantage. Therefore, Hypotheses 1 and 2 are fully supported. As for business performance, hotels which develop proactive environmental behaviour are significantly more profitable on all performance variables, except in occupancy rate per room. Consequently, Hypothesis 3a is partially supported.

'Insert Table V here'

The final test is whether more profitable hotels develop more proactive environmental behaviour. For this, hotels were classified into two business performance groups, hotels below and above the average on each performance variable. This makes it possible to examine whether more advanced environmental commitment is developed by hotels with more financial resources. As Table VI shows, there are significant differences in all environmental systems for RevPAR and perceived performance, in two systems for ADR and in none for occupancy rate per room and GOPPAR. Therefore, Hypothesis 3b is only partially supported.

'Insert Table VI here'

If we compare the results in Tables V and VI, it seems that the impact of environmental proactivity on business performance is clearer (Table V) than the impact of business performance on environmental proactivity (Table VI). In addition, Table VII shows that there is a significant relationship between the two environmental groups and the two performance groups, as Gamma values are significant and above 0 (Goodman and Kruskal, 1954). Therefore, Table VII shows that, except for occupancy rate per room, proactive hotels (Group 1) achieve better performance levels and will invest significantly more on environmental management, while the reverse is also true.

'Insert Table VII here'

Discussion and conclusions

Discussion

The quest for the Holy Grail, or the search for an unequivocal business case for sustainability that can be used to promote change behaviour, is complex and inconclusive. This study

provides fresh insights into this search by using more detailed measurement constructs in the comparison, and by testing data relationships in two directions rather than assuming that environmental proactivity is the cause and improved performance the consequence.

The results show that there are environmentally proactive and reactive hotels. Carmona-Moreno *et al.* (2004) and Claver-Cortés *et al.* (2007) found three environmental hotel groups employing the same environmental management scale (proactive, intermediate and reactive). No intermediate group was identified in the present study, possibly because the gap between proactive and reactive hotels has been increasing, or possibly because the way of measuring environmental proactivity is more comprehensive in the present paper. This improved measurement was produced by introducing four subsystems to measure this construct. Another possible reason is that these previous research works did not use the BIC to specify the number of clusters.

The results also show that the relationships between environmental proactivity and both cost competitive advantage and differentiation competitive advantage are significant. Environmentally proactive hotels achieve significantly better competitive advantage than reactive hotels**.** This result is in accordance to studies from other industries (Galdeano-Gómez *et al.*, 2008; López-Gamero *et al.*, 2009; Sharma and Vredenburg, 1998) and the hotel industry (Leonidou *et al.,* 2013; López-Gamero *et al.*, 2011). The finding also confirms previous evidence that environmentally proactive hotels are able to save costs from environmental practices, and also increase their differentiation, gaining a stronger reputation among customers.

This study also shows that a double relationship exists between environmental proactivity and business performance. This linkage is significant for most performance variables analysed, as previously described in the literature (Heras-Saizarbitoria *et al.*, 2011; López-Gamero *et al.,* 2010; Nakao *et al.,* 2007; Singal, 2014). The direction of influence

between environmental and financial performance is difficult to determine with certainty, without evidence to show whether firms are first being environmentally proactive to improve business performance, or whether it is the business performance that improves their ability to be environmentally proactive. In this sense, hotels which achieve better performance levels will invest significantly more in environmental management and vice versa.

Academic and managerial implications

Our paper contributes to the literature by applying measures not previously used in the field of hospitality. First, we have measured environmental proactivity employing four managerial systems (operative, information, strategic and technical), which enhances our knowledge of how hotels implement environmental practices beyond more traditional measures that focus only on organizational and technical aspects. Second, we have measured business performance both from a perceived and an objective point of view, reaching similar results in the two cases, which previous papers had not done. Finally, we found a double relationship between environmental proactivity and business performance, which opens up new avenues of research.

This paper also has several implications for hotel managers. First, our paper presents results which are highly relevant to the activities of hotel managers, because Spain is one of the most important tourism destinations, and the main international hotel companies all operate there. Our sample includes environmental management and performance measures in this important market. Therefore, the environmental proactivity scale employed in this study could be a reference for hotel managers to benchmark their current performance and to implement new environmental practices.

Another practical contribution and implication of this paper is that it highlights the fact that environmental management systems are more developed in hotels of a higher category,

chain-affiliated, and larger (more rooms). This finding could be due to the fact that this kind of hotel has more resources to develop in a better way their environmental capability. In relation to chain affiliation, we have found the same result as Rahman *et al.* (2012) and, for hotel size, we have found the same results as Mensah (2006). We do not know of any previous research work which analyses the relationship between environmental proactivity and hotel category.

Third, the present paper demonstrates that environmental management is related to competitive advantage and business performance. By describing the environmental behaviour followed in the hotel industry, environmentally reactive hotels are able to learn which environmental systems they should first develop to be more environmentally proactive. Adopting voluntary norms and proactive environmental management has a positive impact on competitive advantage and business performance, so, in circumstances of reduced income, firms should not reduce environmental investment (Schaefer, 2009). Hotel managers have excellent opportunities to establish close links with customers, suppliers, employees and other stakeholders so as to develop loyalties and legitimacy based on environmental conservation, which leads to cost competitive advantage and differentiation competitive advantage (Sharma *et al.*, 2007). This is very relevant because hotels with more proactive environmental behaviour will have a better relationship with stakeholders, who in turn will make it easier to achieve the mission and vision of the firm.

This paper has implications for policy makers as well, in the sense that they need evidence of sustainability improving business performance in order to support their policies, a cornerstone of much European tourism policy making at present (Commission of the European Communities, 2007). In addition, it provides evidence that policies should differentiate between segments or the business sector and take their developmental needs into account.

Limitations and future research

This search for the Holy Grail is understandable, but the contradictory results do not help to advance knowledge. It is worth reflecting on our study's limitations, so that future researchers can see why our results may differ from those of others. First, the definition of technical systems (Curkovic et al., 2000) applied in this study is limited mainly to items that can achieve eco-savings, such as water, energy and waste, while a study with a broader understanding of what is meant by environmental management may achieve different results. One possible explanation for the varying results across studies could be that they use different interpretations of environmental management and performance (Aragón-Correa and Rubio-López, 2007). The present study assumes that there are four types of environmental management systems and the analysis is based on each system independently. There are probably various combinations of these systems in operations in the sector.

Second, there are also disagreements about the most suitable measurement methods for performance. The choices include operational, finance or a balanced scorecard, objective or perceived measures (Sainaghi *et al.,* 2013). Our study aimed to overcome this challenge by using both perceived and objective measurements, and shows that similar results are obtained in both cases. Third, all similar studies, including the present one, have taken a snapshot across a number of companies, while a longitudinal study could help test whether or not hotels with a higher degree of environmental commitment eventually achieve significantly better performance levels. Finally, it would be interesting to replicate this study in other countries and sectors that are different from tourism, in order to provide comparable samples, and to test the external validity, and the causality between environmental management and business performance.

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Table I

Category and size in population and sample

		Category		Average Size	
		N_i	%	By rooms	By beds
Population	3-star	2,417	50.67%	126	248
	4-star	2,063	43.24%		
	5-star	290	6.07%		
Sample	3-star	158	45.14%	128	260
	4-star	167	47.71%		
	5-star	25	7.14%		

Table II

ADR, RevPAR, and GOPPAR intervals

Intervals	ADR	RevPAR	GOPPAR
1	Less than 30€/room	Less than 10 €/room	Less than 0€/room
2	From 30to 40€/room	From 10 to 20€/room	From 0 to 10€/room
3	From 41 to 50€/room	From 21 to 30 €/room	From 11 to 20€/room
4	From 51 to 70€/room	From 31 to 40€/room	From 21 to 30€/room
5	From 71to 100€/room	From 41 to 50€/room	From 31 to 40€/room
6	From 101to 120€/room	From 51 to 70€/room	From 41 to 50€/room
7	From 121 to 150€/room	From 71 to 100€/room	From 51 to 60€/room
8	From 151 to 180€/room	From 101 to 150€/room	From 61 to 70€/room
9	From 181 to 200€/room	From 151 to 200€/room	From 71 to 100€/room
10	More than 200€/room	More than 200€/room	More than 100€/room

Table III

Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	Mean	S.D.
1. Operative systems	1	-	-	-	-	-	-	-	-	-	-	3.75	1.76
2. Information systems	0.883***	1	-	-	-	-	-	-	-	-	-	3.61	1.94
3. Strategic systems	0.833***	0.887***	1	-	-	-	-	-	-	-	-	4.02	1.85
4. Technical systems	0.609***	0.561***	0.618***	1	-	-	-	-	-	-	-	5.56	1.17
5. Environmental performance	0.568***	0.568***	0.625***	0.709***	1	-	-	-	-	-	-	4.70	1.49
6. Differentiation	0.423***	0.392***	0.428***	0.533***	0.472***	1	-	-	-	-	-	5.66	1.04
7. Costs	0.196***	0.155**	0.165**	0.179**	0.295***	0.255***	1	-	-	-	-	4.51	1.29
8. Perceived business performance	0.266***	0.310***	0.265***	0.253***	0.197***	0.339***	0.064	1	-	-	-	4.67	1.07
9. Occupancy rate per room	0.040	0.082	0.003	0.049	-0.056	-0.034	0.111	0.319***	1	-	-	61.36%	17.78
10. ADR	0.124*	0.133*	0.101	0.149**	0.129*	0.224***	-0.198***	0.302***	0.040	1	-	4.68	1.72
11. RevPAR	0.143*	0.163**	0.124*	0.220***	0.157**	0.244***	-0.10*	0.423***	0.395***	0.812***	1	4.71	1.90
12. GOPPAR	0.126*	0.135*	0.081	0.102	0.040	0.141**	-0.061	0.310***	0.206**	0.585***	0.623***	3.88	2.16

*** p<0.001; ** p<0.01; * p<0.05

Table IV

Profiles of environmental proactivity systems by category, chain affiliation and size

	Operative systems	Information systems	Strategic systems	Technical systems
Sample average	3.75	3.61	4.02	5.56
Category				
3 stars	3.53	3.34	3.78	5.43
4 stars	3.85	3.73	4.14	5.62
5 stars	4.45	4.50	4.65	5.97
F ANOVA	*3.425**	*4.396**	*3.042**	*2.693†*
Chain affiliation				
Independent	3.31	3.07	3.63	5.39
Chain-affiliated	4.27	4.27	4.52	5.78
Student's t	*-4.941****	*-5.469****	*-4.247****	*-2.976***
Size				
Familiar (≤100 pax)	3.35	3.21	3.75	5.33
Small (101-150 pax)	3.21	2.90	3.61	5.56
Medium-sized (151-300 pax)	4.09	4.00	4.21	5.63
Large (> 300 pax)	4.19	4.07	4.34	5.78
F ANOVA	*6.349****	*6.508****	*2.656**	*2.330†*

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.10$

Table V

Environmental hotel behaviours in Spain

	Average			
	Group 1	Group 2		
	Reactive	Proactive	Total Average	Statistics
Environmental systems	n=171	n=144		
Operative systems	2.48	5.36	3.75	**-24.998(1)***
Information systems	2.13	5.41	3.61	**-27.054(1)***
Strategic systems	2.66	5.67	4.02	**-24.782(1)***
Technical systems	4.97	6.27	5.56	**-12.520(1)***
Descriptive variables				
Category (a)	3	4	4	**7.145(2)***
Size (No. of rooms)	103.82	166.78	130.53	**-3.903(1)***
Chain affiliation (a)	Independent	Chain-affiliated	Independent	**21.502(2)***
Competitive advantage				
Cost	4.34	4.73	4.56	**-2.670(1)**
Differentiation	5.32	6.07	5.66	**-6.967(1)***
Business performance variables				
Occupancy rate per room	60.14%	63.04%	60.68%	-1.295(1)
ADR	4.52	4.96	4.59	**-2.242(1)***
RevPAR	4.41	5.19	4.54	**-3.572(1)***
GOPPAR	3.53	4.22	3.76	**-2.524(1)**
Perceptual business performance	4.42	4.97	4.67	**-4.318(1)***

(a) Median
(1) Student's t; (2) Pearson's chi square
*** $p<0.001$; ** $p<0.01$; * $p<0.05$

Table VI

Environmental proactivity according to business performance level

	Operative systems	Information systems	Strategic systems	Technical systems
Occupancy rate per room				
Below the average	3.63	3.39	3.87	5.53
Above the average	3.89	3.83	4.01	5.68
Student's t	*-1.229*	*-1.847*	*-0.977*	*-1.109*
ADR				
Below the average	3.62	3.46	3.91	5.48
Above the average	4.08	4.00	4.28	5.77
Student's t	*-2.123**	*-2.289**	*-1.637*	*-2.331**
RevPAR				
Below the average	3.56	3.37	3.81	5.35
Above the average	4.07	4.02	4.35	5.93
Student's t	*-2.494**	*-2.854***	*-2.429**	*-4.770****
GOPPAR				
Below the average	3.62	3.45	3.95	5.50
Above the average	3.98	3.79	4.17	5.69
Student's t	*-1.664*	*-1.419*	*-0.955*	*-1.380*
Perceived performance				
Below the average	3.56	3.29	3.76	5.39
Above the average	4.11	4.06	4.36	5.78
Student's t	*-2.727***	*-3.397****	*-2.739***	*-2.845***

*** $p<0.001$; ** $p<0.01$; * $p<0.05$

Table VII

Relationship between environmental groups and business performance groups

Cross-Tab GAMMA(a) values	Occupancy rate per room	ADR	RevPAR	GOPPAR	Perceptual performance
Environmental proactivity	0.229	0.241*	0.400***	0.289*	0.296**

(a) Gamma (Goodman and Kruskal, 1954). A symmetric measure of association between two ordinal variables that ranges between -1 and 1. Values close to an absolute value of 1 indicate a strong relationship between the two variables. Values close to 0 indicate little or no relationship.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Appendix

Environmental proactivity, competitive advantage and perceived performance variables

Operational systems	Factor – 1
1. Environmental training courses are offered to all management and supervisory staff	0.917
2. Environmental training is offered to all employees	0.925
3. Environmental issues are taken into account when offering services	0.839
4. The environmental record of suppliers is assessed	0.850
Cronbach's alpha	*0.906*
Eigenvalue per factor	*3.123*
% of variance explained	*78.069%*
Correlation matrix determinant	*0.057*
Kaiser-Meyer-Olkin index	*0.814*
Barlett's significance test of sphericity	*0.000*

Information systems	
5. Environmental information/data are periodically reviewed and updated	0.920
6. Environmental communication is promoted between staff and managers	0.908
7. An environmental report is prepared in order to disseminate the environmental activities	0.926
8. Financial and operational indicators are used to measure and inform on the environmental impacts and costs	0.906
Cronbach's alpha	
Eigenvalue per factor	*0.935*
% of variance explained	*3.349*
Correlation matrix determinant	*83.725%*
Kaiser-Meyer-Olkin index	*0,031*
Barlett's significance test of sphericity	*0.834*
	0.000

Strategic systems	
9. The establishment's environmental policy and strategy are formally communicated to all its employees	0.871
10. Procedures are defined and documented for all activities, products and processes which have, or may have if not controlled, a direct or indirect significant impact on the environment	0.919
11. Results of the environmental impact reduction obtained by employees are evaluated	0.894
12. The necessary resources are provided in order to carry out environmental improvements in the establishment	0.873
13. Customers' complaints and suggestions are assessed in order to improve environmental practices	0.816
14. Indicators are developed in order to gauge the customers' degree of satisfaction with environmental practices	0.876
Cronbach's alpha	*0.939*
Eigenvalue per factor	*4.597*
% of variance explained	*76.609%*
Correlation matrix determinant	*0.005*
Kaiser-Meyer-Olkin index	*0.884*
Barlett's significance test of sphericity	*0.000*

Technical systems	
15. Low environmental impact products are chosen	0.724
16. Waste is suitably disposed/treated/stored	0.763
17. Practices to reduce water consumption are implemented	0.791
18. Practices to reduce energy consumption are implemented	0.790
19. Practices to reduce the consumption of resources are implemented	0.808
20. Product re-use/recycling is encouraged	0.725
Cronbach's alpha	*0.841*
Eigenvalue per factor	*3.738*
% of variance explained	*62.307%*
Correlation matrix determinant	*0.049*
Kaiser-Meyer-Olkin index	*0.861*
Barlett's significance test of sphericity	*0.000*

Competitive advantage	Factor – 1	Factor - 2
Differentiation		
21. Creation of a brand image identifying the firm	0.773	
22. The quality of the service offered is better than that offered by competitors	0.838	
23. A greater number of supplementary services is offered, adding value for customers	0.820	
24. Important innovations are made in the service	0.816	
Costs		
25. Efforts are made to reach economies of scale, i.e. high occupancy rates in order to obtain the maximum performance from the hotel size		0.524
26. An attempt is made to improve productivity		0.819
27. Our costs are lower than those of our competitors	`	0.853
Cronbach's alpha	*0.850*	*0.630*
Eigenvalue per factor	*3.485*	*1.679*
% of variance explained	*43.567%*	*20.982%*
Correlation matrix determinant	*0.045*	
Kaiser-Meyer-Olkin index	*0.780*	
Barlett's significance test of sphericity	*0.000*	

Perceived business performance	
28. Occupancy rate per room	0.730
29. RevPAR	0.843
30. GOP	0.931
31. GOPPAR	0.936
Cronbach's alpha	*0.887*
Eigenvalue per factor	*2.987*
% of variance explained	*74.663%*
Correlation matrix determinant	*0.042*
Kaiser-Meyer-Olkin index	*0.748*
Barlett's significance test of sphericity	*0.000*