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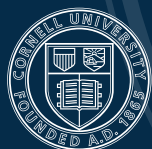
Cornell Hospitality Report Environmental Management Certification (ISO 14001): Effects on Hotel Guest Reviews

by María-del-Val Segarra-Oña, Ph.D., Angel Peiró-Signes, Ph.D., Rohit Verma, Ph.D., José Mondéjar-Jiménez, Ph.D., and Manuel Vargas-Vargas, Ph.D.

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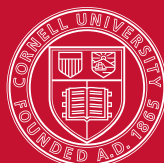
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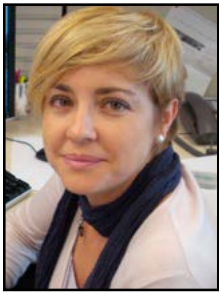
Environmental Management Certification (ISO 14001): Effects on Hotel Guest Reviews

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EXECUTIVE SUMMARY

A survey of guests at 6,850 hotels in Spain found that the guests gave higher satisfaction ratings to hotels that held the ISO 14001 certification than to hotels without the certification. As an international standard aiming at development of effective environmental management systems, the ISO 14001 standard specifies a path for the continuous improvement and the control of a firm's environmental performance. The study explored the differences in the overall customer ratings for the certified hotels overall and for several individual services and attributes, including housekeeping and overall comfort. Interestingly, the most significant differences were found between upscale 4-star hotels with and those without certification, while differences relating to certification in 5- and 3-star hotels were muted. While the study does not reveal causes for these findings, the implication is that the highest-end luxury hotels do not gain distinctive differentiation by having the ISO 14001 certification, while for 3-star hotels, guests' price sensitivity apparently overrides environmental concerns. That said, the results imply that acquiring ISO 14001 certification may give upscale hotels a distinctive asset that leads them to a competitive advantage over similar non-certified properties. Moreover, ISO 14001 seems to contribute to the value creation by the hotels, based on their higher guest ratings.

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Environmental Management Certification (ISO 14001): Effects on Hotel Guest Reviews

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The hotel industry's practices regarding environmental sustainability have been widely studied and a series of published studies show that commitment to environmental practices influences hotels' economic performance.¹ Furthermore, research shows that there is a growing consensus on the practices that allow hotels to become more environmentally sustainable.² Despite the industry's progress in becoming sustainable,³ hotels still have yet to determine the most effective way to promote their green status.⁴ Formal certification is gradually becoming a common approach for hotels to demonstrate their commitment and focus to sustainability.⁵ Among the third parties offering certification are online travel agencies such as Travelocity.com, which has started "green-flagging" hotels based on their environmental certifications,⁶ and the U.S. Green Building Council, which offers LEED certification. In Europe and especially in Spain, ISO 14001 is the leading environmental certification.⁷

¹ Segarra-Oña, M., A. Peiró-Signes, R. Verma and L. Miret-Pastor. 2012. Does Environmental Certification Help the Economic Performance of Hotels? Evidence from the Spanish Hotel Industry. *Cornell Hospitality Quarterly* 53(3): 242-256 and Molina-Azorín, J.F., E. Claver-Cortés, M.D. López-Gamero and J.J. Tari. 2009a. Green management and financial performance: a literature review. *Management Decision* 47(7):1080-1100.

² Zhang, J.J., N. Joglekar and R. Verma, R. 2010. Developing Measures for Environmental Sustainability in Hotels: An Exploratory Study. *Cornell Hospitality Report*. The Center for Hospitality Research. Cornell University; Goodman, A. 2000. Implementing sustainability in service operations at Scandic hotels. *Interfaces* 30(3): 202-214; Bonilla, M.J. 2008. Analysis of environmental statements issued by EMAS-Certified Spanish Hotels. *Cornell Hospitality Quarterly* 49 (4): 381-394.

³ Sloan, P., W. Legrand and J.S. Chen. 2012. Sustainability in the hospitality industry. *Principles of Sustainable Operations*. 2nd Ed. Routledge. Oxford, UK and Kasim, A. 2009. Managerial attitudes towards environmental management among small and medium hotels in Kuala Lumpur. *Journal of Sustainable Tourism* 17 (6): 709-725.

⁴ Lee, J., L. Hsu, H. Han and Y. Kim. 2010. Understanding how consumers view green hotels: how a hotel's green image can influence behavioural intentions. *Journal of Sustainable Tourism* 18 (7): 901-914.

⁵ Hsieh, Y. 2012. Hotel companies' environmental policies and practices: a content analysis of their web pages. *International Journal of Contemporary Hospitality Management* 24 (1):97-121; Mensah, I. 2006. Environmental management practices among hotels in the greater Accra region. *International Journal of Hospitality Management* 25 (3): 414-431; and Rodríguez-Antón, J.M., M. Alonso-Almeida, M. Celemin and L. Rubio. 2012. Use of different sustainability management systems in the hospitality industry. The case of Spanish hotels, *Journal of Cleaner Production* 22 (1): 76-84; Melnyk, S.A., R.P. Sroufe, and R.J. Calantone. 2002. Assessing the impact of environmental management systems on corporate and environmental performance. *Journal of Operations Management* 21(3):329-351.

⁶ See: www.travelocity.com.

⁷ Raines, S.S. 2002. Implementing ISO14001—An international survey assessing the benefits of certification, *Corporate Environmental Strategy* 9 (4): 418-426.

ISO 14001 is an international standard for sustainable operation. The ISO 14001 Environmental Management System was developed in 1996 by the International Standards Organization.⁸ The aim of ISO 14001 is the development of effective environmental management systems that can be applied to any type of company. According to ISO, the 14001 standard specifies a path for continuous improvement and control of a firm's environmental performance. It enables a company to identify and control the environmental impact of its products, processes, and services and also to improve its environmental performance.⁹

The ISO 14001 standards are consistent with the definition of a "green" hotel put forth by the American "Green" Hotel Association, as follows: "Green hotels are environmentally friendly properties whose managers are eager to institute programs that save water, save energy, and reduce solid waste—while saving money."¹⁰ Because ISO 14001 provides assurance to company management and employees, as well as external stakeholders, that environmental impact is being measured and improved,¹¹ the standard has been used as a proxy for environmental orientation in other studies.¹²

ISO 14001 certification has two potential benefits. One is the improvement in operations due to following the certification's methodical standards. These benefits extend to

internal or operational improvements;¹³ marketing-related improvement,¹⁴ and financial performance improvement.¹⁵

Previous Studies

Many authors have studied consumer perceptions towards green practices in the hospitality industry.¹⁶ These studies generally show that environmental practices are positively related to performance through the mediating effect of higher customer satisfaction and loyalty.¹⁷ They also show that eco-labels and environmental certifications lead to enhanced customer awareness of restaurants and hotels' environmental efforts and act as differentiating assets.¹⁸

⁸ www.standardsinfo.net.

⁹ Segarra-Oña, M., Peiró-Signes, A. and Verma, R. (2011) Environmental Management Certification and Performance in the Hospitality Industry: A Comparative Analysis of ISO 14001 Hotels in Spain, *Cornell Hospitality Report*, Vol. 11 No. 22. The Center for Hospitality Research. Cornell University

¹⁰ <http://greenhotels.com>.

¹¹ ISO Central Secretariat, 2009

¹² Lockyer, T. 2003. Hotel cleanliness—how do guests view it? Let us get specific. A New Zealand study, *International Journal of Hospitality Management* 22 (3): 297-305; Zhang, J.J., N. Joglekar, and R. Verma, 2012. Pushing the frontier of sustainable service operations management: Evidence from U.S. hospitality industry. *Journal of Service Management* 23 (3): 377-399; and Zhang, J.J., N. Joglekar and R. Verma, R. 2012. Exploring Resource Efficiency Benchmarks for Environmental Sustainability in Hotels. *Cornell Hospitality Quarterly* 53(3): 229-241.

¹³ Chan, W.W. and K. Ho. 2006. Hotels' environmental management systems (ISO 14001): creative financing strategy. *International Journal of Contemporary Hospitality Management* 18 (4): 302-316; Chan, E.S. W. and S.C.K. Wong. 2006. Motivations for ISO 14001 in the hotel industry. *Tourism Management* 27: 481-492; and Chan, W.W. 2009. Environmental measures for hotels' environmental management systems: ISO 14001. *International Journal of Contemporary Hospitality Management* 21 (5):542-560.

¹⁴ Matuszak-Flejszman, A. 2009. Benefits of Environmental Management System in Polish Companies Compliant with ISO 14001. *Polish Journal of Environmental Studies* 18 (3): 411-419; Zeng, S.X., X.M. Xie, C.M. Tam and L.Y. Shen. 2011. An empirical examination of benefits from implementing integrated management systems (IMS). *Total Quality Management & Business Excellence*, 22 (2): 173-186.

¹⁵ Klassen, R. and C. McLaughlin. 1996. The impact of environmental management on firm performance. *Management Science* 42 (8): 1199-1214.

¹⁶ Han, H. and K. Yunhi. 2010. An investigation of green hotel customers' decision formation: Developing an extended model of the theory of planned behavior *International Journal of Hospitality Management*, 29 (4): 659-668 and Kassinis, G.I. and A.C. Soteriou. 2003. Greening the service profit chain: The impact of environmental management practices. *Production and Operations Management*. 12(3): 386-403.

¹⁷ Zeng, S.X., X.M. Xie, C.M. Tam and L.Y. Shen. 2011. An empirical examination of benefits from implementing integrated management systems (IMS). *Total Quality Management & Business Excellence*, 22 (2): 173-186.

¹⁸ Sebhathu, S. P., Enquist, B. 2007. "ISO 14001 as a driving force for sustainable development and value creation," *TQM Magazine* 19 (5): 468-482; and Zhang, J.J., N. Joglekar and R. Verma, R. 2012. Green Moments of Truth: Environmental Signaling Using Eco-Labels In High Contact Service Systems, Proceedings of the 12th International Research Conference in Service Management, La Londe, France. (www.cerog.org/lalondeCB/SM/2012_lalonde_seminar/papers/28-P161-2012-ZHANG-JOGLEKAR-VERMA-REV-26-03-2012.pdf)

D'Souza *et al.*, for instance, examined visitors' preferences and concluded that visitors preferred "eco-efficient" planning options to business-as-usual scenarios, although that support varied by market segment.¹⁹ According to Millar, green certification has become the most influential attribute when measuring preferences for green hotel attributes from the clients' point of view.²⁰

Environmental certifications inform clients about a hotel's status and, at the same time, can provide guests with an idea of what an environmentally conscious hotel does. In the past, consumers tended to be skeptical of eco-labels, but there is now more acceptance that a green certification label can have positive influence on a hotel's financial performance,²¹ although some studies found that the effect was neutral.²²

However, we have seen little research in the hotel industry that evaluates whether the implementation of ISO 14001 (which certifies the hotel with a green or eco-label) specifically has any influence on clients' services ratings. In that regard, post-stay guest ratings are generally considered to be a good proxy for customer satisfaction and loyalty.²³ For example, a recent report from the Cornell Center for Hospitality Research has demonstrated that higher online guest ratings lead to higher occupancy, room rates, and market share.²⁴ To fill this conceptual gap, in this study we test whether environmental certifications such as ISO 14001 are related to guest ratings, as a proxy for satisfaction.

We believe that this study has important implications for hotel managers, in part because it provides insights about consumers' preferences for environment commitment (demonstrated in this case by certification) that leads to higher guest ratings, and by implication higher rates and occupancy. In this study we measure consumer preferences, including the

hotel's housekeeping accuracy, comfort, services, staff, and total value of the guests' stay.

Objectives

As we said, we have seen little hotel research that specifically evaluates the effects of ISO 14001 on guests' hotel ratings. Given that research generally is supportive of positive impact of environmental management systems, we want to check whether hotels with an environmental commitment (certified with ISO14001) get higher client ratings than those which do not have this ISO certification.

To explore the linkages between the implementation of ISO 14001 and the various determinants of customer satisfaction and service quality,²⁵ we tested guests' satisfaction with specific hotel features. In addition to location, numerous features and amenities have been found to affect guest satisfaction, including employee attitude, price, brand name and reputation, physical property, value for money, guest-room design, services, housekeeping, hotel comfort, and hotel services.²⁶

The ISO 14001 standard places the responsibility for the environmental management system on the organization's top management, and makes it easy to incorporate the required environmental standards into an existing quality management system. In that regard, ISO 14001 is mainly a measure of service quality which can be used to promote comprehensive organizational changes that lead to sustainable development and value creation.²⁷

So, considering, on one hand, that international standards (such as ISO 14000) are intended to help improve quality, enhance customer satisfaction, and increase sales,²⁸ and, on the other hand, that service experience is directly related to hotel customer satisfaction,²⁹ we analyzed ratings of housekeeping accuracy, hotel comfort, hotel services, hotel staff, and the hotel's location and total value. All of those attributes may be considered as "service experience" from the consumer's perspective. Thus, we expect that hotels with the ISO14001 environmental certification would receive higher customer ratings regarding the different attributes that measure customer satisfaction.

¹⁹ D'Souza, C., M. Taghian, P. Lamb. 2006. An empirical study on the influence of environmental labels on consumers. *Corporate Communications: An International Journal* 11 (2):162–173.

²⁰ Millar, M. and S. Baloglu. 2011. Hotel Guests' Preferences for Green Guest Room Attributes. *Cornell Hospitality Quarterly* 52(3): 302-311.

²¹ Nicholls, S. and S. Kang. 2012. Going green: the adoption of environmental initiatives in Michigan's lodging sector. *Journal of Sustainable Tourism* 20 (7): 953-974 and see also footnotes 7 and 9

²² For example, see: Howard G. Chong, Rohit Verma, (2013). Hotel Sustainability: Financial Analysis Shines a Cautious Green Light, *Cornell Hospitality Report*. The Center for Hospitality Research. Cornell University Vol. 13, No. 10.

²³ Gustin, M and P. Weaver. 1996. Are hotels prepared for the environmental consumer? *Cornell Hotel and Restaurant Administration Quarterly* 20(2), 1-14; Ramanathan, R. 2012. An exploratory study of marketing, physical and people related performance criteria in hotels. *International Journal of Contemporary Hospitality Management* 24 (1): 44–61.

²⁴ Anderson, C. K. 2012, The Impact of Social Media on Lodging Performance, *Cornell Hospitality Report*, Vol. 12 No. 15. The Center for Hospitality Research. Cornell University.

²⁵ Su, C.S. and L.H. Sun. (2007). Taiwan's hotel rating system: a service quality perspective. *Cornell Hotel and Restaurant Administration Quarterly* 48(4): 392-401.

²⁶ Verma, R. 2007. Unlocking the Secrets of Customers. *Cornell Center for Hospitality Research* 7 (2), www.hotelschool.cornell.edu/research/chr/pubs/reports/abstract-14342.html

²⁷ Sebhatu, S. P., Enquist, B. 2007. "ISO 14001 as a driving force for sustainable development and value creation", *TQM Magazine* 19 (5): 468-482.

²⁸ www.standardsinfo.net/info/benefits/benefits.html

²⁹ Wilkins, H., B. Merrilees and C. Herington. 2007. Towards an understanding of total service quality in hotels. *International Journal of Hospitality Management* 26(4): 840-53.

Example of guest ratings from booking.com



To capture preference differences among various customer segments, we analyze the sample according to consumer characteristics (as did Bowie and Buttle, for instance³⁰), with clients classified into the following six groups: families with older children, families with young children, elderly couples, groups of friends, persons traveling by themselves, and young couples. We used this classification also following booking.com's rating system,³¹ and we want to check whether customer ratings of the hotels with the ISO14001 environmental certification vary according to type of customer.

The Sample

According to the *World's Top Tourism Destinations*,³² Spain is the second largest tourism earner worldwide and the first in Europe (US\$56 billion), while ranking fourth in the world by arrivals (58 million). Spain is, therefore, an interesting country to explore our research questions. We analyzed guests' ratings of 6,854 Spanish hotels with 5, 4, or 3 stars (corresponding to luxury, upscale, and midscale), 350 of which had ISO14001 certification. Guests' evaluation data were retrieved from the hotels' websites and from Booking.com during December 2011. Booking.com provides at-

³⁰ Bowie, D. and F. Buttle. 2004. *Hospitality Marketing: An Introduction*. Elsevier Butterworth-Heinemann Linacre House, Jordan Hill, Oxford Wheeler.

³¹ Booking.com is the world leader in booking accommodations online.

³² UNWTO *Tourism Highlights*, 2013, <http://mkt.unwto.org/en/publication/unwto-tourism-highlights-2013-edition>.

tribute evaluations for all the hotels, although the number of customers that rate each hotel is different (see Exhibit 1).

To double check whether the hotel held ISO certification, we sent e-mails to all fourteen certification companies in Spain requesting confirmation of certification. (We contacted all of them although just a handful of companies certify the majority of the hotels.) All but three of the certification companies sent us their list of certified hotels. We also made several web searches to check for possible missing certified hotels. We recorded guests' general evaluation of each hotel and also ratings for housekeeping accuracy, and hotel comfort, location, services, staff, and value. For the booking.com ratings, location refers to convenience, service refers to facilities, staff refers to the quality of the hotel staff, and company size is measured by number of rooms. The database is segmented according to the six different customer segments that we studied, and we also classified hotels by star rating, with the results shown in Exhibit 2.

Data Analysis

We applied ANOVA to detect mean differences across business functions comparing ISO 14001-certified hotels with non-certified properties, using the specific client satisfaction indicators that we mentioned above: housekeeping accuracy, hotel comfort, and hotel services and location.

The ANOVA analysis seeks to break down the variability in a set of data into independent components that can be assigned to different causes. It is a statistical technique designed to analyze the significance of the mean differences of the different populations. As such, it is considered as an

Certification status of hotels by star rating

	5-Star Hotels	4-Star Hotels	3-Star Hotels
Without ISO 14001	231	1895	2371
With ISO 14001	29	215	70
Total	260	2110	2441

Source: Self-compilation with information retrieved from the internet. Data were not available for the entire sample.

extension of the means difference test and is used to study the relationship between nominal, ordinal, and interval variables.³³ The ANOVA technique indicates whether we reject the null hypothesis that reflects the equal means value for each α level of significance. In this way we confirm whether the mean of the variable performance is significantly different for the firms according to their ISO 14001 environmental certification. Additionally, the ANOVA analysis can be more useful than a two-sample *t*-test as it has a lesser chance of committing a type-I error.

For these analyses, we compared hotel ratings between the properties with ISO 14001 and those without. Then, we split the sample according to the number of stars, and we distinguished between the various client segments. Summarized ANOVA results with sample sizes, means, and F values are reported in Exhibit 3.

Results

The ANOVA analysis on hotel characteristics considering ADR and number of rooms showed that hotels with ISO 14001 are significantly ($p < 0.001$) more expensive and bigger than hotels without ISO. Segmented results by scale (measured by the number of stars) are consistent with overall results, although 3-star and 5-star ADR differences were not significant. Results of the whole sample comparison are represented in Exhibit 4.

Generally speaking, hotels with ISO 14001 show significantly greater overall customer ratings than those without ISO 14001 ($p < 0.001$). Over this period, the mean general rating for these properties was .16 higher than those properties without ISO, supporting the primary hypothesis of this paper.

After comparing the hotel ratings for properties with ISO 14001 and those without, we split the hotel sample

according to the number of stars, as shown in Exhibits 5, 6, and 7 (on following pages). The segmented results by scale show significant differences in 4-star hotels in all the studied attributes ($p < 0.001$). While general ratings for 3- and 5-star hotels with ISO were higher than those without ISO, these differences weren't statistically significant.

Splitting the ratings into the component attributes of housekeeping, comfort, location, services, staff, and value, we found significant differences between ISO hotels and non-certified hotels ($p < 0.001$) for housekeeping, comfort, location, and services. In particular, 4-star hotels with ISO 14001 had significantly higher ratings for these attributes, except for value, which didn't show significant differences for this category.

Then, a series of one-way analyses of variances were conducted on each of the different client segments. ANOVA results for these segments are shown in Exhibits 8 through 13. The overall rating results for the various customer segments were similar to that of the total sample. That is, we found significant differences between certified and not certified 4-star hotels among the various respondent groups, but no significant differences in certified and uncertified 5-star hotels. For the 3-star hotels, we found a few significant differences in the ratings by the various segments. Looking at specific features, the segmented results based on the type of client show generally significant differences ($p < 0.001$) for housekeeping and hotel comfort.

Even though it can be seen from the means comparison analysis that hotels that have implemented ISO 14001 have, in general terms, better guest ratings, our data do not offer any indication of causality. We cannot say whether the better ratings result from having implemented the environmental certification system or some other cause. Overall, these results support the first hypothesis, which stated the contribution of ISO 14001 to value creation in the hotel business by enhancing clients' ratings.

Conclusions

We found differences in ratings of Spanish hotels with the ISO 14001 label and those that are not so certified. Most interesting, we found significant differences between certified and non-certified hotels in the 4-star category, a finding that leads to an intriguing managerial implication. It appears that luxury hotels do not gain distinctive competency in their guests' estimation when they hold the ISO 14001 certification, nor do the middle scale hotels (3 stars) receive a benefit from certification. However, our findings imply that 4-star hotels do get important benefits from the client point of view when the hotel is environmentally certified. This clearly indicates that 4-star hotels achieve a competitive advantage

³³ Hair, J.F., R.E. Anderson, R.L. Tatham and W.C. Black. 1998. *Multivariate Date Analysis*, 5th ed., Prentice-Hall, Englewood Cliffs, NJ.

Certification status of hotels by star rating

All		All			5*			4*			3*		
		N	Mean	F (sig)	N	M	F (sig)	N	M	F (sig)	N	M	F (sig)
ADR	W/O ISO	4929	63.57	68.78 ***	173	150.62	0.06	1466	78.47	7.89 ***	1720	57.12	2.07
	W ISO	237	85.01		22	146.73		147	87.52		38	64.46	
	Total	5166	64.56		195	150.18		1613	79.30		1758	57.28	
Rooms	W/O ISO	6011	75.85	162.49 ***	178	144.46	5.55 **	1688	122.25	8.63 ***	2227	75.49	45.11 ***
	W ISO	322	144.16		24	208.13		191	147.30		68	148.43	
	Total	6333	79.32		202	152.02		1879	124.80		2295	77.65	
General Rating	W/O ISO	6503	7.99	24.11 ***	231	8.51	0.15	1895	8.09	21.84 ***	2371	7.88	0.08
	W ISO	351	8.16		29	8.55		215	8.26		70	7.91	
	Total	6854	8.00		260	8.51		2110	8.11		2441	7.88	
Housekeeping	W/O ISO	6500	8.26	10.63 ***	231	8.83	0.09	1895	8.35	11.04 ***	2369	8.13	0.54
	W ISO	350	8.39		29	8.80		214	8.49		70	8.06	
	Total	6850	8.26		260	8.83		2109	8.36		2439	8.13	
Comfort	W/O ISO	6500	7.74	27.72 ***	231	8.75	0.07	1895	8.06	4.5 **	2369	7.56	0.13
	W ISO	350	8.01		29	8.72		214	8.17		70	7.52	
	Total	6850	7.75		260	8.75		2109	8.07		2439	7.56	
Location	W/O ISO	6500	8.20	22.46 ***	231	8.48	0.18	1895	8.21	30.57 ***	2369	8.15	4.81 **
	W ISO	350	8.44		29	8.55		214	8.57		70	8.40	
	Total	6850	8.21		260	8.49		2109	8.24		2439	8.16	
Services	W/O ISO	6500	7.66	49.35 ***	231	8.48	0.58	1895	7.89	21.5 ***	2369	7.52	0.89
	W ISO	350	7.99		29	8.58		214	8.12		70	7.61	
	Total	6850	7.67		260	8.49		2109	7.92		2439	7.52	
Staff	W/O ISO	6500	8.28	1.37	231	8.67	0.21	1895	8.23	7.63 ***	2369	8.20	0.03
	W ISO	350	8.32		29	8.72		214	8.35		70	8.18	
	Total	6850	8.28		260	8.68		2109	8.25		2439	8.20	
Value (Q/P)	W/O ISO	6500	7.80	0.04	231	7.84	0.39	1895	7.80	1.46	2369	7.74	1.44
	W ISO	350	7.80		29	7.91		214	7.85		70	7.64	
	Total	6850	7.80		260	7.84		2109	7.81		2439	7.74	

***Significance at the 0.001 level is shown in **boldface**; ** Significance at the 0.01 level is shown in **boldface**; * Significance at the 0.05 level is shown in **boldface**.

EXHIBIT 4

Guest ratings comparison for the entire sample and all variables

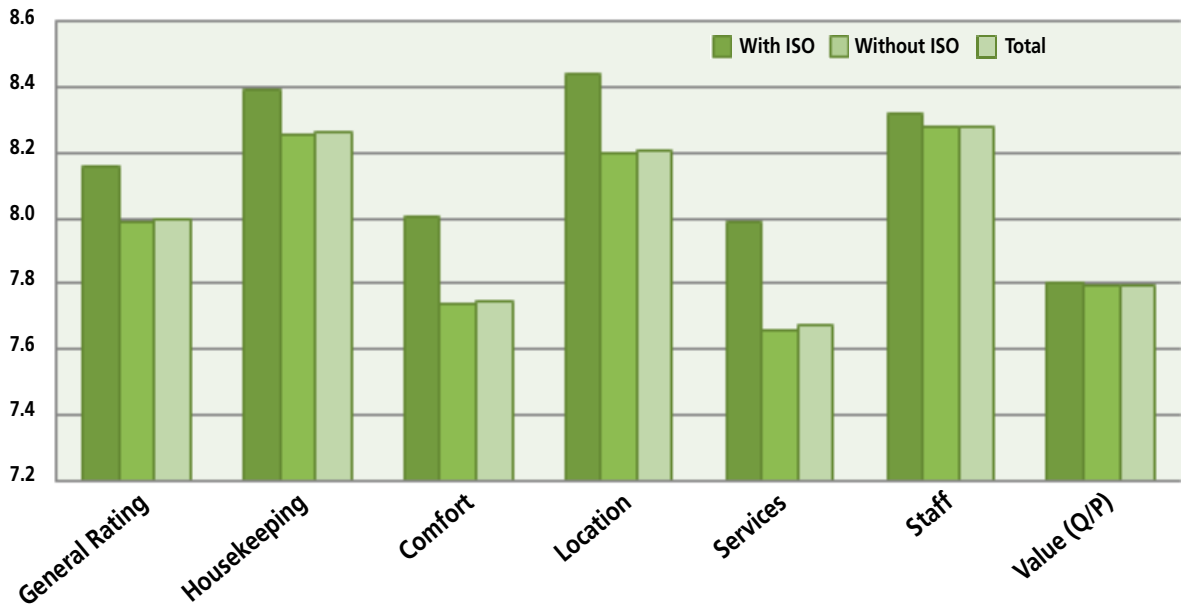


EXHIBIT 5

Guest ratings comparison for five-star hotels and all variables

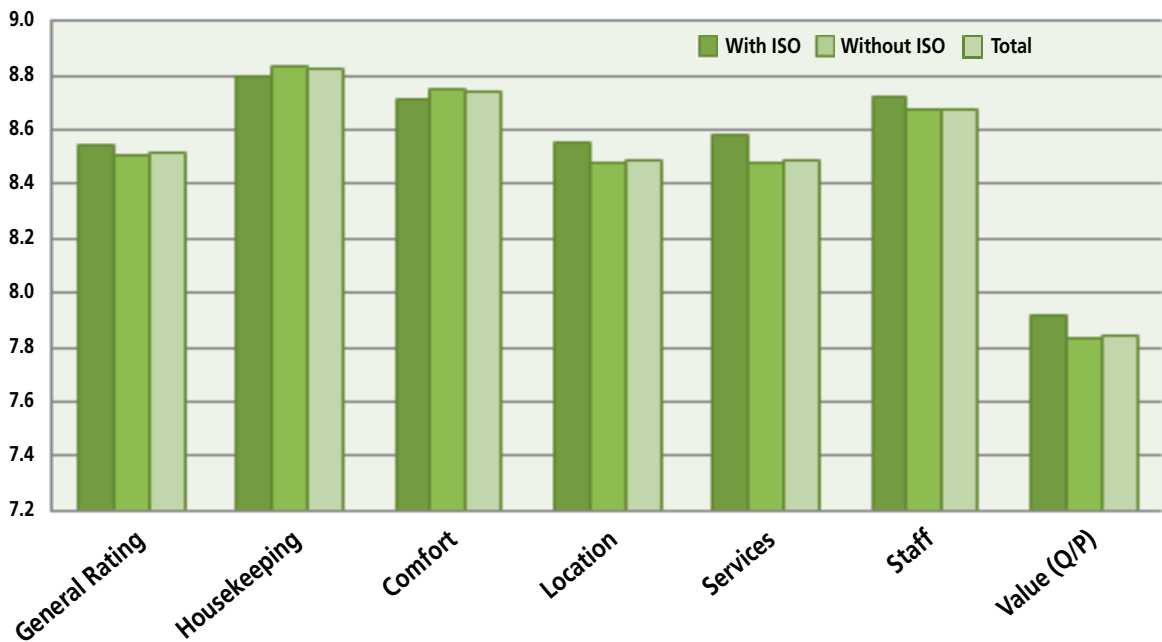


EXHIBIT 6

Guest ratings comparison for four-star hotels and all variables

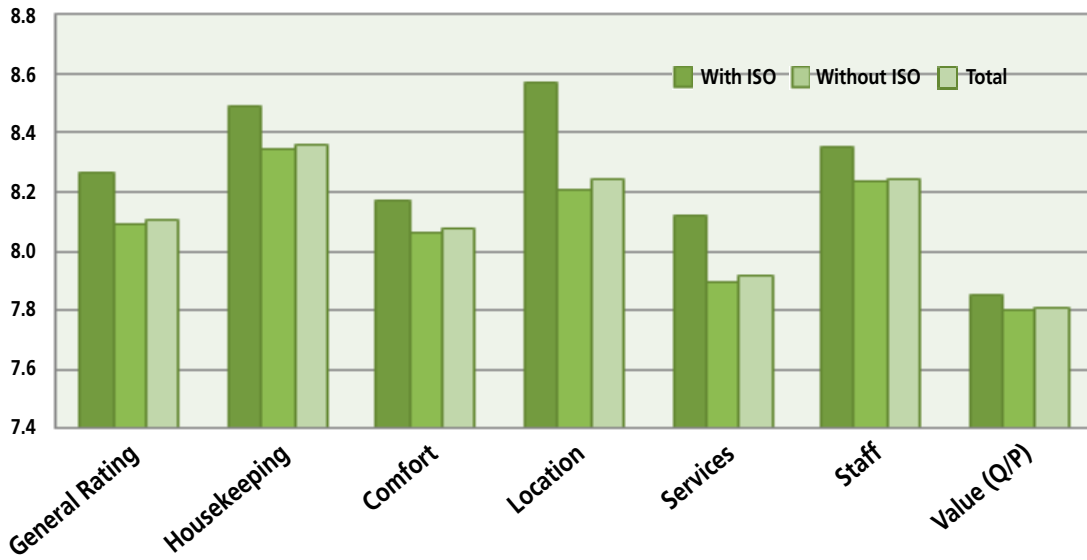


EXHIBIT 7

Guest ratings comparison for three-star hotels and all variables

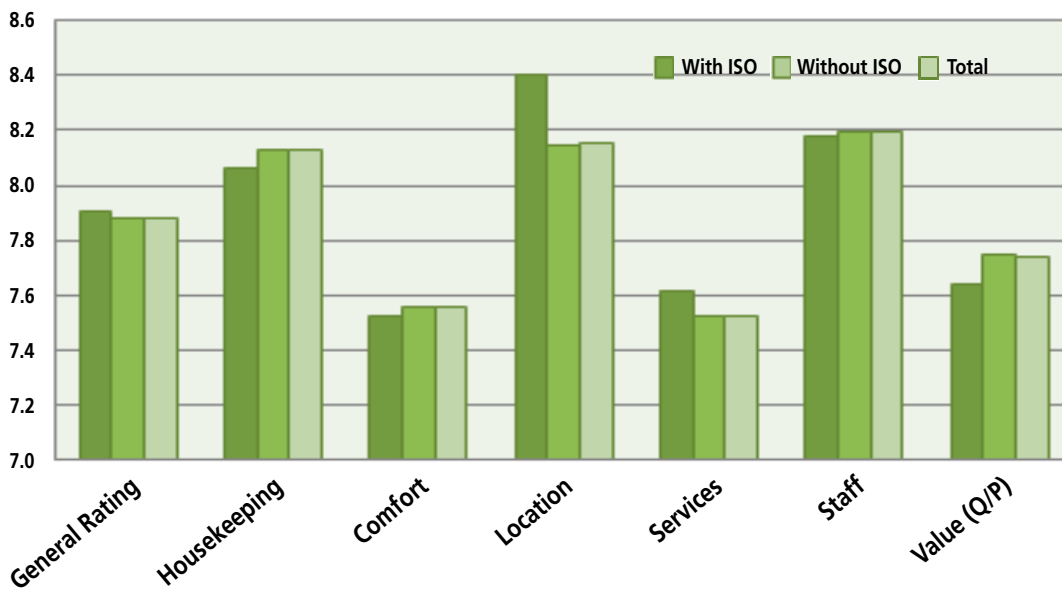


EXHIBIT 8

Ratings comparison for families with older children

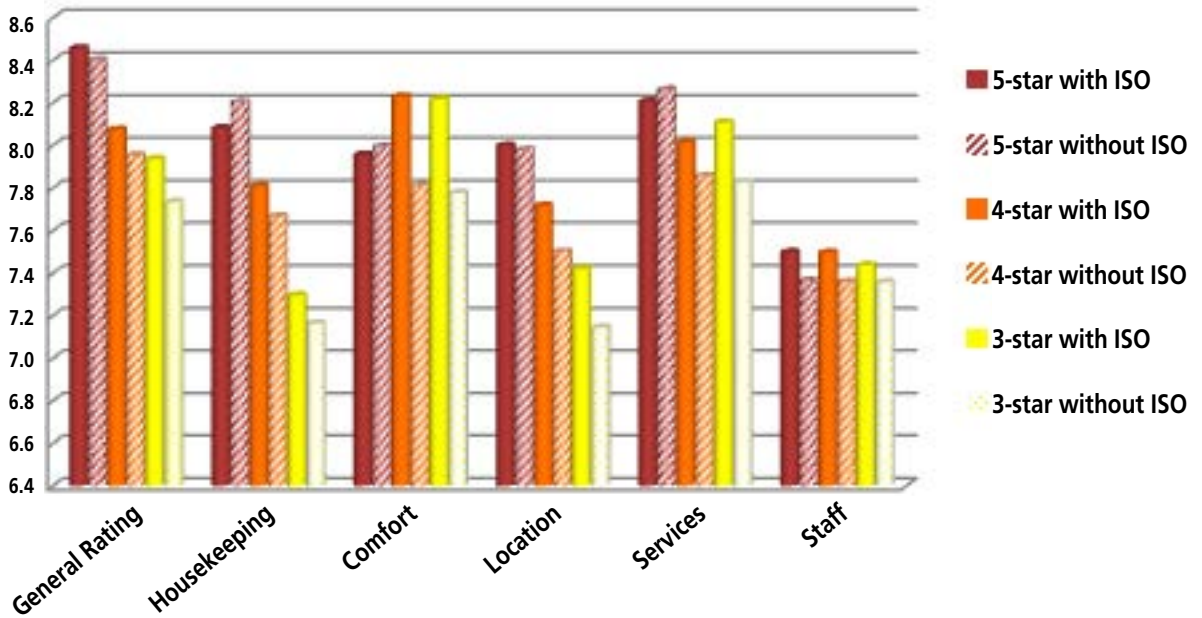


EXHIBIT 9

Ratings comparison for families with younger children

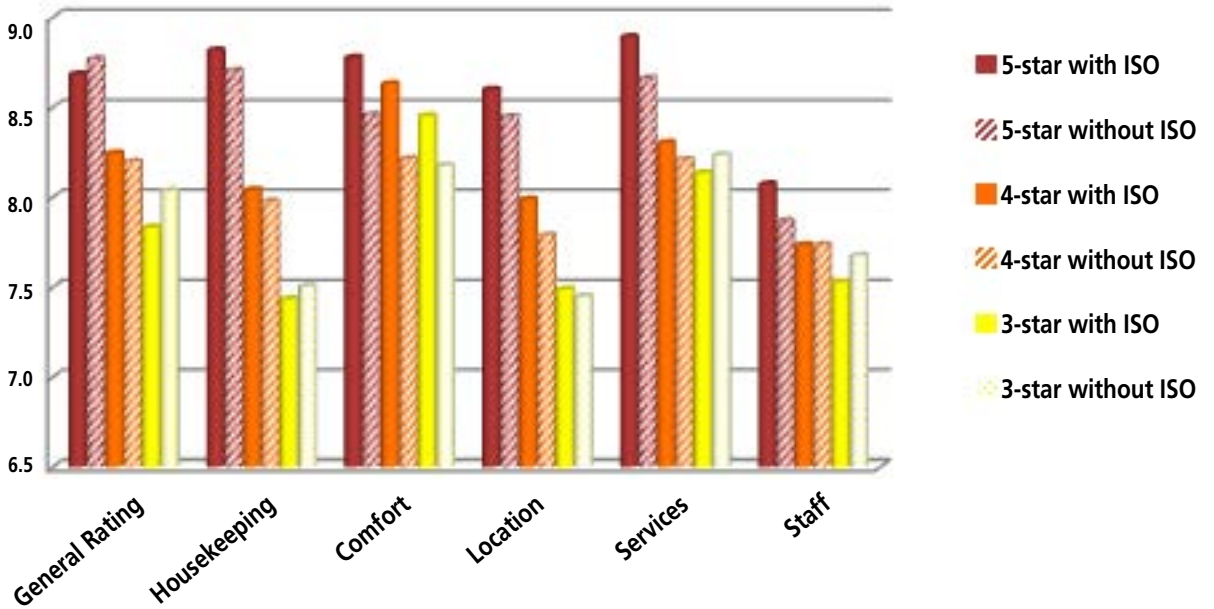


EXHIBIT 10

Ratings comparison for older couples

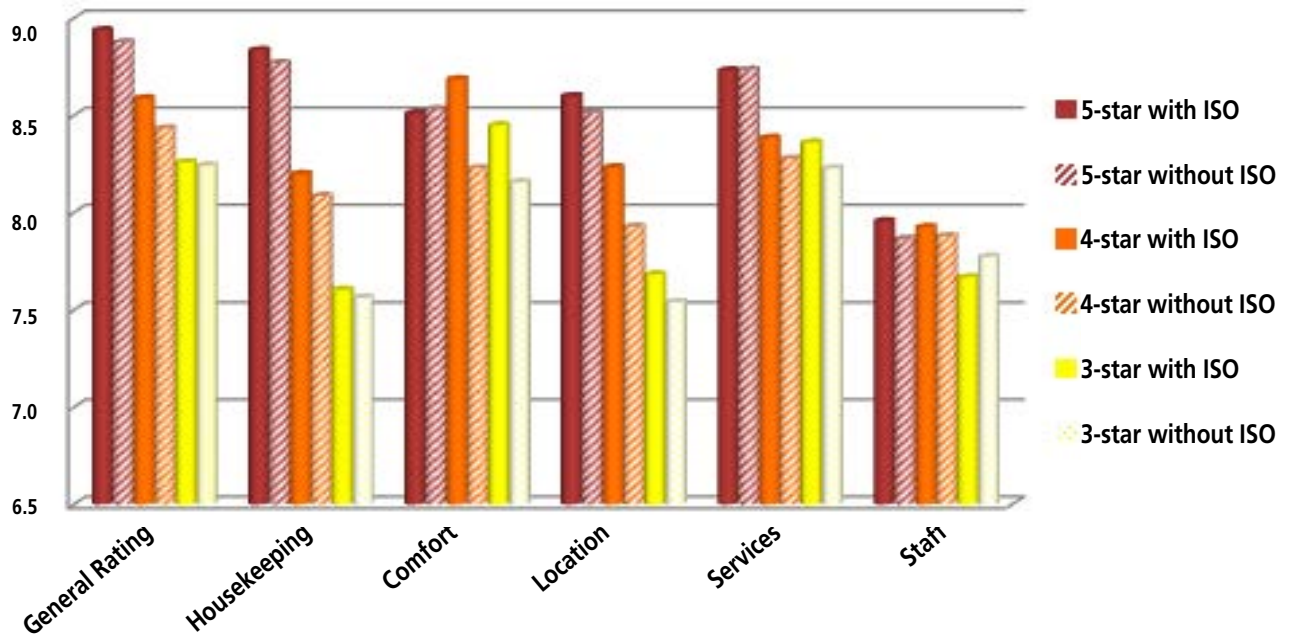
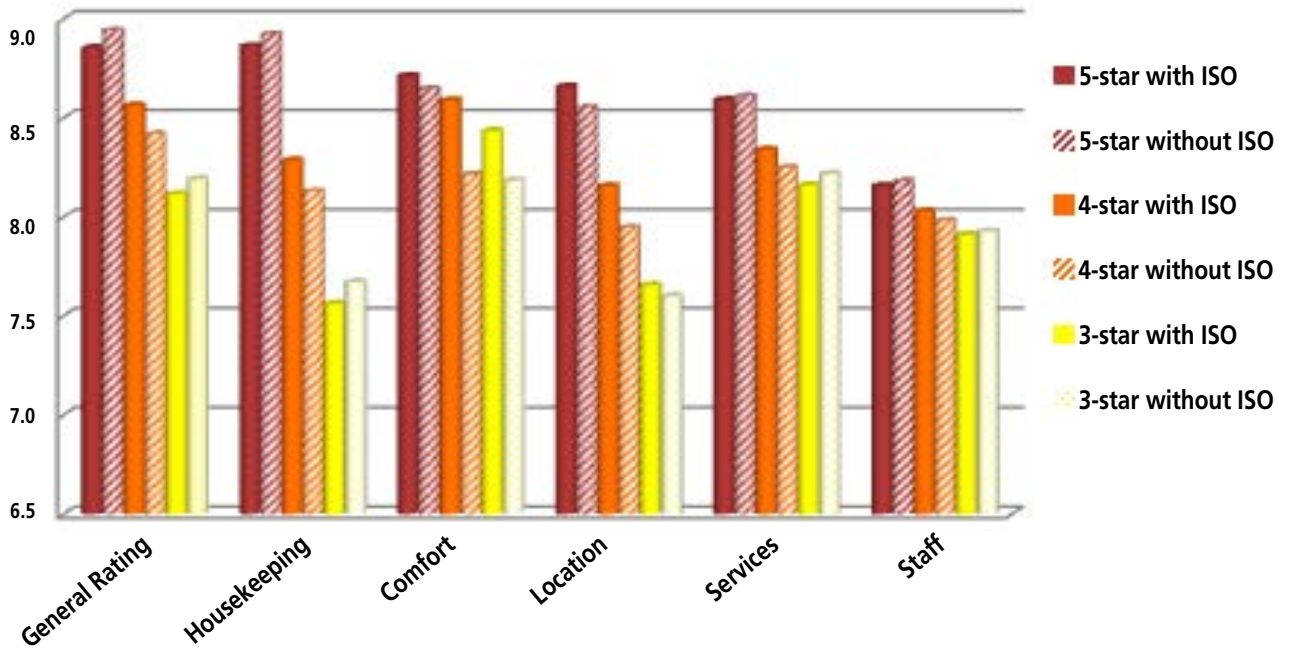
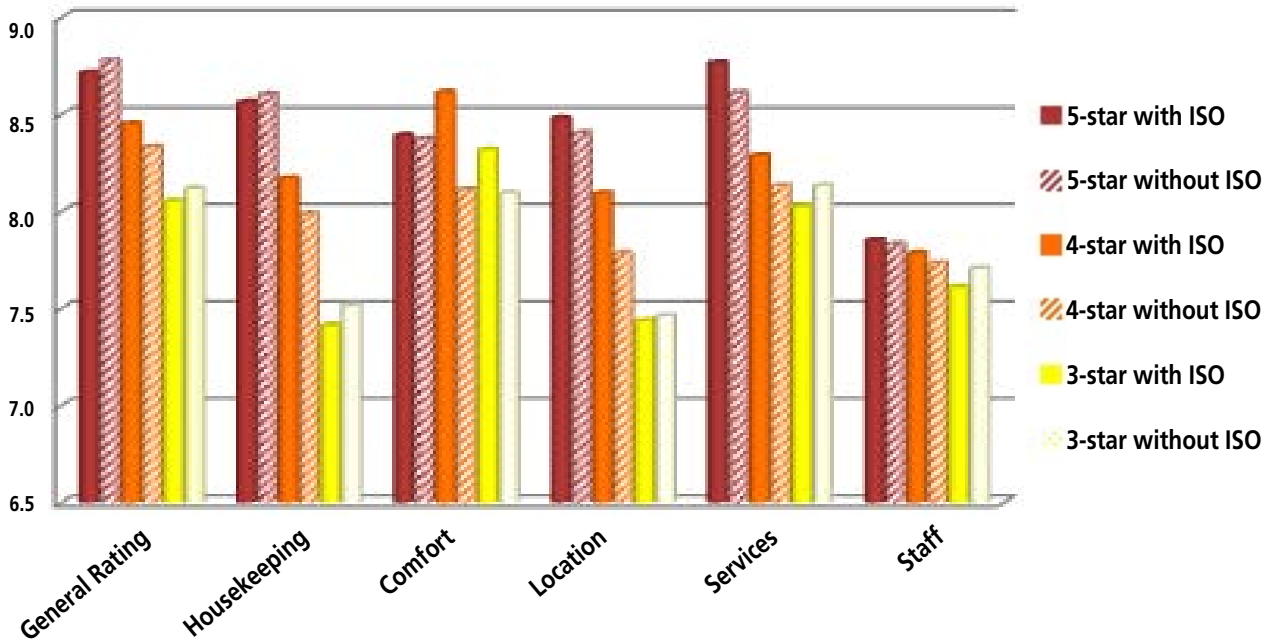


EXHIBIT 11

Ratings comparison by groups of friends



Ratings comparison for persons traveling alone



in adopting ISO 14001. We can only speculate regarding the reason for this, but our earlier study of Spanish hotels has established the value of ISO 14001 as an aid to effective management.³⁴ Most likely ISO 14001 gives these 4-star properties an opportunity to compete with the 5-star hotels, through an extra point of differentiation. At the same time, a 3-star property may not gain any competitive advantage by adopting ISO 14001 because customers that stay at 3-star hotels tend to be more value conscious and may not be willing to pay any extra for ISO 14001 certifications. For the 5-star hotels, ISO 14001 certification may be lost in a sea of luxurious amenities, and in any event the properties may have maxed out in guest satisfaction (and ADR), meaning that ISO 14001 would not grant further increases in either measure. That said, given the industry’s push toward sustainability, the ISO 14001 certification may give luxury hotels some competitive advantage and allow market share gains against their competitive set.

Regarding the general sample, our results indicate significant differences between the two sets of hotels in guest satisfaction for housekeeping accuracy, hotel comfort, and hotel services. Looking at the results for the guest segments, the satisfaction effect is stronger in hotel comfort and hotel services in all the studied subgroups. In short, guests reward

hotels that have the ISO14001 certification with higher ratings than those that don’t have it. We encourage hotel marketing decision-makers to advertise their active eco-friendly practices to allow environmentally conscious customers make better informed purchasing decisions.³⁵

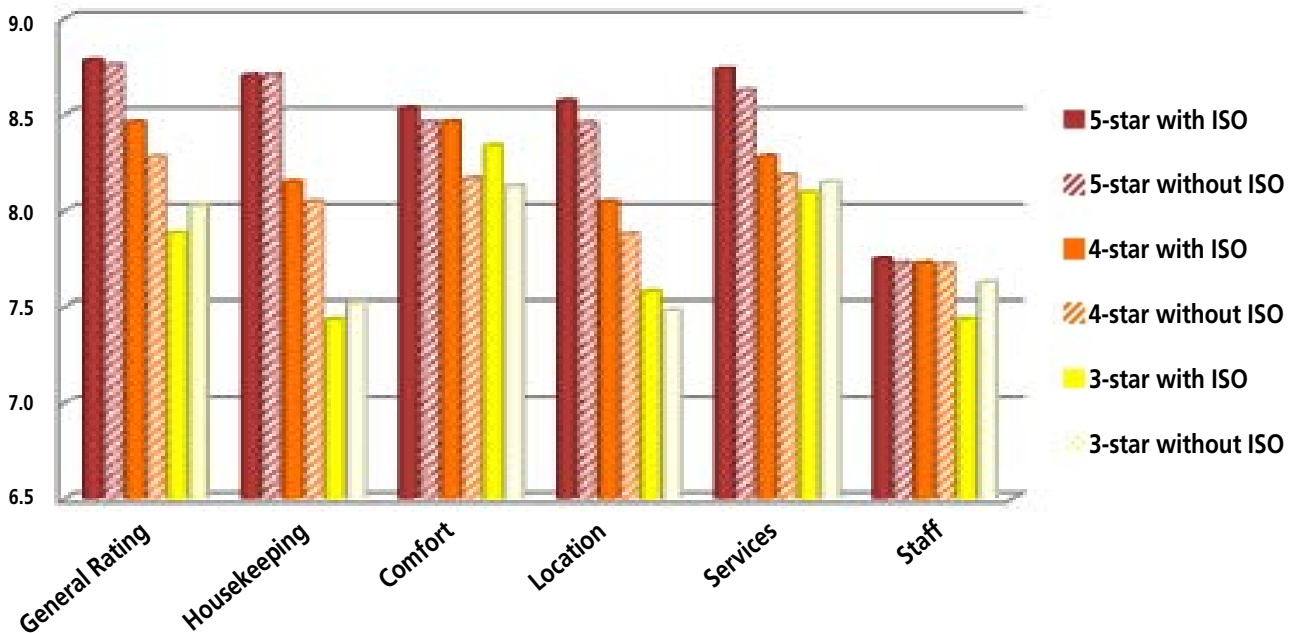
As we mentioned above, hotels that have implemented ISO 14001 in Spain are generally larger than those that have not done so. The mean of the entire sample is 79 employees, while hotels with ISO 14001 averaged 144. Another characteristic of hotels with ISO 14001 is that they have higher room rates. The ADR mean of the entire sample is €64.56, while hotels with ISO 14001 averaged €85.

At the same time, the certified hotels scored higher on certain features. In the analysis of the sample segmented by type of visitor, after comparing clients’ rating of hotels with ISO 14001 and those without, we found significant differences in ratings of comfort, location, and services in all guest segments. Additionally, it can be seen that hotels with ISO 14001 show significantly higher rates in cleanliness compared with the whole sample and as judged by families with grown children and by older couples. Therefore, we found that hotels with ISO14001 certification receive higher customer ratings regarding the various attributes that mea-

³⁴ See: Segarra-Oña, Peiró-Signes, and Verma (2011), *op.cit.*

³⁵ Schubert, F., J. Kandampully, D. Solnet and A. Kralj. 2010. Exploring Consumer Perceptions of Green Restaurants in the US., *Tourism and Hospitality Research* 10 (4): 286-300.

Ratings comparison for young couples



sure customer satisfaction compared to the hotels without environmental certification and that an unequal influence on the customers' rating of service quality aspects can be observed in hotels environmentally certified through the ISO14001 standard, depending on the type of customer. Our findings showed that ISO 14001 certification contributes to value creation because clients' ratings are significantly higher in certified hotels. Thus, we consider that ISO 14001 should be a measure of management performance.

These results imply that hotels may be able to acquire a distinctive asset that leads them to a competitive advantage over similar non-environmentally oriented properties if they are ISO 14001 certified, particularly those in upscale market segments. The results show that hotels with proactive practices exhibited a positive effect on the customers' decision formation.³⁶

The most interesting finding is that 5-star and 3-star hotels don't seem to gain added value from this certification, while guests at 4-star hotels in this study regarded ISO 14001 as a distinctive hotel asset.

³⁶ Han H., L. Hsu and C. Sheu. 2010. Application of the Theory of Planned Behavior to green hotel choice: Testing the effect of environmental friendly activities. *Tourism Management* 31 (3):325-334. Customers' decision processes are extremely complex, as discussed in: K.M. Williams, "Consumer Thinking in Decision-Making: Applying a Cognitive Framework to Trip Planning," *Cornell Hospitality Report*, 14, No. 7 (2014), Cornell Center for Hospitality Research.

These results have important managerial implications, considering that sustainability represents a great opportunity for the hospitality industry.³⁷ The results suggest that hotel managers should consider implementing the ISO 14001 environmental management system, particularly if they are competing in a market segment where such a certification would provide a point of differentiation, notably the upscale 4-star segment. Studies have demonstrated that it helps to improve productivity and hotel performance, especially in those aspects related to housekeeping accuracy and hotel comfort.

To sum up, our analysis shows that there are significant differences between hotels that have adopted the ISO 14001 proactive environmental management tool from the clients' point of view. However, there is still a research gap in the understanding of what part (or how much) of the higher rankings is due to the implementation of the ISO 14001 and to what extent other attributes are acting as moderating factors. ■

³⁷ Tzschenke, N. A., D. Kirk and P. A. Lynch. 2008. Going Green: Decisional Factors in small hospitality operations. *International Journal of Hospitality Management* 27 (1):126-133; Vastag, G., S. Kerekes and D. A. Rondinelli. 1996. Evaluation of corporate environmental management approaches: a framework and application. *International Journal of Production Economics* 43 (2-3):193-211.

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