Investment decisions on quality certifications by hotel chains: differences between ex-ante and ex-post decisions

Decisiones de inversión en certificaciones de calidad por las cadenas hoteleras: diferencias entre decisiones ex-ante y ex-post

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Abstract

Purpose – This paper aims to analyze the antecedents of two variables concerning the presence of quality certifications in hotel chains: the (ex ante) decision to become a member of the quality system and the (ex post) trend to increase or decrease the number of certified properties. Six hypotheses are posed and tested.

Design/methodology/approach – The empirical investigation is carried out on the Spanish Q for Quality in Tourism using a database including 295 hotel chains and 2,727 hotels.

Findings – The results evidence the presence of differences in the behavior of hotel chains relative to certification depending on their size, market segment, customer origin and the geographical concentration of their establishments.

Originality/value – This research deepens in how the hotel chain characteristics affect the effectiveness of a quality certification. The consideration of two stages in investment decisions allows the authors to identify

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differences in the ex ante and ex post decision processes. As a result, one factor (geographical concentration) has been detected as being underrated by managers in the first stage.

Keywords Quality certification, Quality management, Hotel chains, Certification effectiveness

Paper type Research paper

Resumen

Objetivo – Este artículo analiza los antecedentes de dos variables relacionadas con las certificaciones de calidad en cadenas hoteleras: La (ex-ante) decisión de formar parte de un sistema de calidad, y la (ex-post) tendencia a incrementar o reducir el número de establecimientos certificados. Seis hipótesis han sido propuestas y contrastadas.

Diseño/metodología/enfoque – La investigación empírica ha sido desarrollada en el marco de la marca Q de calidad para el turismo en España usando una base de datos que incluye 295 cadenas hoteleras y 2,727 hoteles.

Resultados – Los resultados ponen de manifiesto la presencia de diferencias en el comportamiento de las cadenas hoteleras en materia de certificación dependiendo de su tamaño, segmento de mercado atendido, origen de la clientela y del grado de concentración geográfica de sus establecimientos.

Aportaciones/valor – El artículo profundiza en cómo las carfacterísticas de la cadena hotelera afectan a la eficacia de la certificación de calidad. Tener en consideración la existencia de dos etapas en las decisones de inversión nos permite identificar diferencias entre los procesos de decisión ex-ante y ex-post. Como resultado, hemos observado que un factor (la concentración geográfica) está siendo infravalorado por parte de os directivos en sus decisiones en la primera etapa.

Palabras clave – Certificaciones de calidad, Eficacia de certificaciones, Dirección de calidad, Cadenas hoteleras

Tipo de artículo – Trabajo de investigación

1. Introduction

Quality certificates work as signals or cues that provide consumers with information about a firm's commitment to quality (Terlaak and King, 2006). Literature suggests that the benefits and costs of certification in the hotel accommodation sector are related with some firm characteristics, such as size, hotel rating system or tourist market segment. However, little is known about the investment behavior of hotel chains in quality certifications.

We propose two research questions:

RQ1. Why do some hotel chains have a great interest in certification, whereas others (with a similar level of quality and price) decide not to certify any of them?

RQ2. Why do some hotel chains tend to increase the percentage of certified hotels, whereas others tend to decrease it?

This paper aims to answer these research questions analyzing the link between hotel chain features and the adoption level of certification and its change over the time.

The type of firm or situation influences the effectiveness of quality certification. The signaling theory (see Connelly *et al.*'s study [2011] for a review) postulates that the use of signals by consumers not only depends on their informational value but also on the level of perceived risk intrinsically linked to service features and travel situational variables. Thus, certification utility can be substantially different, depending on travel circumstances and tourist profiles (travel expertise, etc.). We are going to use the extant literature about the utility and effectiveness of quality certifications along with the signaling theory to propose several hypotheses to explain differences in managers' decisions with respect to quality standards' adoption.

We analyze two stages of decision-making:

(1) the decision to adopt the standard; and

(2) the decision to increase or decrease the number of certified properties.

There are different theories and models to explain managers' decision-making processes (see Lord and Maher's study [1990] for a review). In all of them, managers' expectations about the consequences of their decisions play a relevant role. However, in most cases, decision-making processes are subject to the lack of perfect information and uncertainty. Making a decision and experiencing its consequences provide managers with additional information that normally clarifies the outcomes and values of those decisions. At the same time, it is possible to examine the relationship between expectations and realizations (Harrison and March, 1984). If the decision is really efficient for the firm, it will improve firm's results so managers will go on with the policy or even will reinforce it. However, if the decision does not produce acceptable outcomes, managers will decide to limit the resources assigned to the policy.

On the one hand, we rely on the *quality certifications literature* (which, in turn, partially relies on signaling theories) to propose several hypotheses on the effectiveness of quality standards for hotel chains. On the other hand, we rely on *limited capacity models* to explain the differences between decision-making processes before and after the adoption of the certification system. As two related decision stages are involved, we use an econometric procedure that allows us to analyze both stages avoiding biased results. In that way, we will analyze whether managers overweight or underweight some factors in the first stage of decision-making.

2. Benefits and incentives related to certification in the hotel industry

Implementing a quality management system can bring benefits to hotel organizations, as it can improve efficiency and corporate image. There is a vast literature studying motives, barriers and benefits in relation to adopting a quality management system, paying special attention to International Organization for Standardization (ISO) standards.

Substantial research has highlighted the existence of internal and external drivers for certification (Tarí *et al.*, 2014). On the one hand, with respect to internal drivers, certification can be used as a management tool that changes the operations and internal processes of hotels. Studies report motives such as improving internal control, reducing cost, enhancing service quality to reduce failures and complaints, improving efficiency, increasing labor productivity and motivating employees or providing the first step toward more developed quality models, such as Total Quality Management (TQM) (Alonso-Almeida *et al.*, 2012; Álvarez García *et al.*, 2012; Casadesús *et al.*, 2010; Chan and Hawkins, 2010; Mak, 2011; Rubio-Andrada *et al.*, 2011; Sánchez-Ollero *et al.*, 2015).

On the other hand, literature also points out the existence of external drivers. Certification improves hotel quality image and quality differentiation (Alonso-Almeida *et al.*, 2012; Álvarez García *et al.*, 2012; Carmona-Moreno *et al.*, 2004; Casadesús *et al.*, 2010; Chan and Hawkins, 2010; Mak, 2011; Rubio-Andrada *et al.*, 2011; Viada-Stenger *et al.*, 2010). In addition, it is also an important quality certification in response to pressure from customers or competitors. In markets with many certified competitors, the quality seal could become imperative to make it possible to compete.

However, there seems to be no consensus concerning the influence of quality certification on the financial and operating performance of hotels. Some authors evidence a positive impact on efficiency (Alonso-Almeida *et al.*, 2012; Nicolau and Sellers, 2010; Nield and Kozak, 1999; Pereira-Moliner *et al.*, 2012; Rubio-Andrada *et al.*, 2011). In contrast, Huertas (2005) found no differences between quality certified and non-certified hotels in terms of return on assets. As Segarra-Oña *et al.* (2012) pointed out, it is difficult to specify what part of the better performance of certified hotels is due to the improvements introduced by the standard. The evidence supports the notion that quality certification has a positive influence on hotel occupancy rates (Álvarez *et al.*, 2001; Tarí *et al.*, 2009) or hotel room sales (Tarí-Guilló and Pereira-Moliner, 2012), which, together with cost reduction, entails higher

business profits (Álvarez *et al.*, 2001; Molina-Azorín *et al.*, 2009; Tarí *et al.*, 2009; Tarí *et al.*, 2014). The effects of certification on performance are not only direct. Hernández-Perlines (2016) found a positive moderating effect of certification on the relationship between entrepreneurial orientation and hotel performance. However, other authors have found that the gross operating profit of certified versus non-certified hotels is not always significantly different (Tarí-Guilló and Pereira-Moliner, 2012). In Mak's (2011) opinion, the benefits of certification diminish over time as the number of certified competitors increases.

The maintenance of quality certification is subject to periodical audits so managers have to decide on certification renewal. In relation to this, some authors have researched the reasons why firms fail to maintain a quality standard. Top management commitment and support have an impact on the success and implementation of a quality management system (Casadesús *et al.*, 2010; Viada-Stenger *et al.*, 2010). In Lo and Chang's (2007) view, those firms that adopt a standard for internal reasons are willing to maintain it when the number of certified competitors rises. The fulfilment of standard requirements forces firms to modify their internal processes and procedures. Furthermore, quality standard implementation involves a high volume of documentation, consuming considerable time and effort; this works as an obstacle to its widespread adoption (Casadesús *et al.*, 2010; Chan, 2008, 2011; Lo and Chang, 2007; Viada-Stenger *et al.*, 2010). Finally, some companies also report a lack of skilled consultants (Chan, 2008, 2011).

3. Influence of hotel chain characteristics on certification decisions

The importance of the benefits of quality certification cited in Section 2 can be different from one firm to another. The relevance of the advantages and disadvantages of quality certification for each chain can be related to firms' internal or external circumstances. The effectiveness of quality certification will depend on a combination of factors, which, in turn, will have an influence on the decision of being part of the system as well as on the tendency to increase or decrease the number of certified hotels. Factors as company size, its operational dependence and type of customers (business vs leisure) are shown by literature as significant antecedents of the adoption of quality standards (Alonso-Almeida and Rodríguez-Antón 2011). Moreover, the strategic positioning of the firm and the type of competitors that the firm faces might increase the relevance of external drivers for certification in comparison with internal drivers and this, in turn, may affect the degree of interiorization of quality norms and the impact of the certification on business profits (Tarí *et al.*, 2017).

The majority of the extant literature has focused on the productive unit to analyze the relationship between hotel strategic variables – predominantly firm's size, category, form of governance, market segment and price level – and quality management practices (see Pereira-Moliner and Tarí's study [2015] for an exception). The aim of this article is to deepen this theoretical perspective taking into account new relevant variables at the corporate level. We consider that analyzing tendencies in the adoption of quality certifications by hotel chains can be really fruitful and extend previous research. Adopting a corporate perspective allows us to use a new dependent variable: the evolution (trend) in the proportion of certified hotels of each chain. In so doing, it is possible to understand which factors affect the true effectiveness of quality certifications after their implementation. Based on this argument, we analyze the influence of hotel chain characteristics on the propensity to implement quality certification and on the trend to increase or decrease certification intensity level. Moreover, the adoption of a corporate perspective also allows us to incorporate in the analysis several explaining variables that, as far as we know, have never been considered as antecedents of quality certification practices in previous empirical research, for example, the proportions of foreign and regional customers and the geographical concentration of a hotel chain.

In the following sections, we propose some hypotheses about the factors that can have an influence on the decision of:

- being part of a quality certification system; and
- the tendency to increase or decrease the proportion of certified hotels.

Before deciding to take part in quality certification process, managers could anticipate the advantages of certifications. Thus, we expect that there will be many strategic and situational factors (for instance, chain size or geographical concentration) affecting both type of decisions (the decision to adopt the standard and the decision to increase or decrease the number of certified properties). However, the weight of each factor could change in the second stage, as experience with certification might also play a role. Managers' decision-making processes could be substantially different from one stage to the other, as the first decision takes place without a direct evidence about the effects of quality certification on the firm's results.

Confronted with a complex decision and in a context of imperfect information, managers rely on a limited number of heuristic principles. That is, information processing is heuristic instead of systematic. There are many models to explain this kind of processes. Lord and Maher (1990) referred them as *limited capacity models*. These heuristics are quite useful, but sometimes lead to severe and systematic errors (Tversky and Kahneman, 1974). An example of this kind of bias is the Planning Fallacy, which states that managers tend to underestimate the costs, time and risks of future actions and to overestimate the benefits of the same actions (Lovallo and Kahneman, 2003). There are other sources of bias. The heuristics guide the meaning of stimulus by directing attention to some of its elements and away from others (Palich and Ray Bagby, 1995). In that sense, the existence of a conventional wisdom in the sector would be possible so that it would create biased prior beliefs and expectations about the effectiveness of quality certification and its utility for hotel chains. For instance, if there exists a prior belief about the highest utility of quality certification for leisure hotel chains, we could expect that urban hotel chains would show less probability of being part of the system. Organizational, mimetic and normative factors may result in the decision of firms to incorporate into a quality system even in situations where a rational calculation would not suggest this decision (DiMaggio and Powell, 1983; Tarí *et al.*, 2017).

The extent of information available for decision-making changes substantially after having some certified hotel (Harrison and March 1984), as managers will have facts and figures about the outcomes of certification. At this point, the second stage starts where they have to decide about increasing or decreasing the number of certified properties. If previous factors have a real influence on the effectiveness of quality certification, we anticipate that managers will tend to maintain or increase the number of certified hotels. However, if observed results are worse than expected, we expect that managers will tend to decrease the number of certified units.

These differences between information availability before and after the first level of decision (that is, being part of the system) can modify the weight of each factor or, moreover, the sign (positive or negative) of their effects on decision-making. Following the previous example, if conventional wisdom about the highest utility of quality certification for leisure hotel chains becomes false, managers will observe bad figures derived from being part of the system so it seems logical to expect a general tendency to decrease the number of certified hotels among leisure chains. As a consequence, the focus on leisure segment will be joined to a positive influence on the decision about being part of the system and to a negative one on the second level of decision, that is, the decision to increase the number of certified hotels.

In summary, the adoption of a corporate approach not only allows us to incorporate new variables in the analysis but also helps us in deepening in the analysis of the differences between ex ante and ex post certification decisions. The ex post decisions are enriched with experience and thus these differences can shed light on deficiencies in the ex ante decision-making stage.

3.1 Hotel chain size

Literature suggests the existence of a relationship between hotel chain size and the relevance of both types of motives for certification: internal and external (Alonso-Almeida *et al.*, 2012; Álvarez García *et al.*, 2012; Casadesús *et al.*, 2010; Chan and Hawkins, 2010; Mak, 2011; Rubio-Andrada *et al.*, 2011). Even in studies where a significant relationship between size and certification has not been found (Pereira-Moliner and Tarí, 2015), the researchers stated that certification could play a role as an enabler. On the one hand, hotel chain management becomes more difficult and complex as companies become larger in terms of the total number of hotels or employees. Thus, larger hotel chains are interested in quality management systems as control mechanisms and a means of improving internal processes and procedures (Mak, 2011). Such a system could be considered a way of partially outsourcing quality control toward the entity responsible for certification provision. Moreover, larger companies can assign more resources to the quality management system (Tarí-Guilló and Pereira-Moliner, 2012) so they are less exposed to certification and maintenance costs (Chan, 2008, 2011). Larger companies are more capable to defray the costs of implementing new standards and draw from economies of scale to capitalize on standardized management schemes (Rao *et al.*, 1999, Alonso-Almeida and Rodríguez-Antón, 2011).

The relationship between hotel chain size and external motives for certification is not so clear. Some arguments point to a negative relationship, whereas other arguments point to a positive one. On the one hand, according to Tarí-Guilló and Pereira-Moliner (2012), larger chains have a lower proportion of certified establishments as their brand name constitutes a powerful quality cue. On the other hand, larger hotel chains seek to assure a consistent service quality level across all their establishments, which may induce them to adopt a quality standard. Moreover, companies can use certifications as an efficient advertising tool (Alonso-Almeida and Rodríguez-Antón, 2011).

Economies of scale (in quality management and communication policies) can be decisive for the adoption of standards as well as for the certification intensity (proportion of certified hotels in the chain). Companies gain experience and knowledge as the number of certified properties increases. As a result, the marginal cost of incorporating a new hotel in the system becomes lower. Taken this into account, we propose the following hypothesis:

H1. Hotel chain size, measured by the total number of hotels, has a positive influence on (a) the probability of certification adoption and (b) the increase in the certification intensity.

3.2 Hotel location

Hotel location (urban versus coastal or rural) affects clientele composition in terms of travel motive and length of stay. The type of tourism prevailing among clientele composition is a strategic aspect related to hotel location and its service offer (Álvarez *et al.*, 2001). In general, urban hotels are frequently chosen by business travelers, whereas leisure travelers tend to stay in coastal or rural hotels. Clientele composition can influence the internal and external motives of hotel chains for certification depending on hotel location.

However, there is little evidence linking certification adoption and hotel location as it usually works as a prior criterion in sample selection. As an exception, Alonso-Almeida and

Rodríguez-Antón (2011) showed that hotels that focus on leisure tourism have a higher probability of adopting a quality standard. Longer stays provide more opportunities to interact and use a wide variety of hotel facilities and services. The internal benefits of certification could stimulate a higher level of adoption. On the other hand, Segarra-Oña *et al.* (2012) maintained that hotel size and location are behind the disparity in hotel operating performance after the adoption of ISO 14001.

Literature has studied the differences in hotel selection behavior between leisure travelers and business travelers, which might also influence on the external benefits of certification. Lewis and Chambers (1989) and McCleary *et al.* (1993) found that location was the most important factor influencing hotel selection by business travelers. This can help to explain the differences in location policies of leisure-oriented hotel chains versus business-oriented chains. However, the role of quality certifications as risk relievers' tools is not very important here, as hotel location can be seen as a search attribute that can be observed directly by tourists.

In contrast, leisure travelers seem to be more concerned with a hotel's safety and security (Knutson, 1988). Leisure trips often involve families, and these travelers have a high sensitivity to what may occur around them when their families are involved (Chu and Choi, 2000). The image of safety and security plays a very important role in hotel selection by leisure travelers. Quality standards can provide a hotel chain with a very relevant quality cue that reduces information asymmetries and signal its underlying safety and security attributes to its potential customers.

As a promotional tool, quality certification can be crucial to hotel chains focused on leisure travelers, but its benefits are not so strong for business-oriented chains. Business tourists tend to use the same hotel repeatedly or be brand loyal, so brand name and previous experience are quality cues most commonly used in this segment. Prior experience reduces the extensity and intensity of information search (Sirakaya and Woodside, 2005). Thus, the presence of a quality standard will not be so useful for hotels in those cases. On the other hand, Rubio-Andrada *et al.* (2011) suggested that quality standards can help companies to choose their customers, these being tour operators and travel agencies. Assuming that these kinds of customers are vital to the leisure sector, we anticipate that hotel chains mainly located in leisure destinations will be more interested in adopting certification to attract those customers most suitable for their strategy and market position.

For all these reasons, we hypothesize as follows:

H2. The proportion of hotels located in non-urban destinations has a positive influence on (a) the probability of certification adoption and (b) the increase in the certification intensity.

3.3 Star categorization

The signaling theory (Heil and Robertson, 1991; Connelly *et al.*, 2011) proposes that signal interpretation depends on a signal's consistency with the rest of signals that a firm has sent or is sending to the market. When signal consistency increases, uncertainty of attribution is lower, and the reaction is quicker (Heil and Robertson, 1991). However, as the firm has just decreased information asymmetries through its previous quality signals, it could have no sense to invest more money on getting new instruments or tools aimed to the same goal. In that sense, quality certification will be crucial for those firms that lack strong quality signals and need to reinforce existing signals with new consistent signaling tools. In contrast, if tourists already receive other strong quality signals, information asymmetries are reduced and the marginal effect of quality certification on customer attraction will be low.

Evidence shows a positive relationship between the number of stars and the adoption of a quality management system (Abrate *et al.*, 2011; Chan, 2008; Claver Cortés *et al.*, 2006; Tarí *et al.*, 2010). However, there are some reasons to question the linearity of this relationship. On

the one hand, companies operating in lower category segments can face strong price competition, which reduces the profitability of the certification strategy. On the other hand, being in the five-star category can be in itself a very strong quality cue. Thus, neither the hotels in the low category nor the hotels in the high category will be persuaded of the benefits of certification. In the case of hotels in the low category, taking into account the characteristics of their target market, the effort and cost of certification will make them less competitive. Moreover, the lack of consistency between the two signals (quality standard and low star categorization) will lead to a lower efficacy of the signals (Connelly *et al.*, 2011). For hotels in the high category, having five stars may provide a very strong guarantee of quality to their customers, so investing additional resources in the adoption of a quality certification, which they share with competitors in lower categories, could be unnecessary. If this is true, the contribution of quality certification would be lower than in the case of intermediate category hotels. As a result, the incentive to adopt this kind of quality certification will be stronger for hotels in intermediate categories. In these hotels, the signal sent by star category is not strong enough to provide firm with an effective differentiation from competitors. However, the combined use of the two signals can reinforce their own effects. Thus, we propose the following hypothesis:

H3. There is an inverted U relationship between star category and (a) the probability of certification adoption and (b) the increase in the certification intensity.

3.4 Proportion of international, national and regional customers

Together with signal consistency and strength, signal visibility represents a key concept in the signaling theory (Connelly *et al.*, 2011). To be effective, a signal must be recognized by customers in the target market. Thus, awareness and recognition of certification condition its ability to work as a quality cue.

However, we anticipate that the level of consumer awareness depends on the geographical scope of quality certificate. Not all accreditations have international recognition. Some are developed by national entities to certify those hotel chains or establishments located in their particular country (Alonso-Almeida and Rodríguez-Antón, 2011). Moreover, there are regional certifications addressed at those hotels placed in a specific region.

We consider that a crucial aspect in ensuring the success of a certification strategy is the coherence between the geographical scope of the certification used by a hotel chain and the origin of its customers. A national certificate may experience greater difficulty in gaining awareness among international tourists. A seal can hardly be used as a quality cue if its visibility is scarce and customers do not recognize it (Connelly *et al.*, 2011). On the other hand, a national certificate could be widely recognized by regional customers. However, such customers become familiar with the firm brands and regional certifications operating in their place of resident, making the use of a national certificate less necessary. These alternative cues might be strong enough for regional customers so the investment in a quality standard could be less efficient for those hotel chains with a higher proportion of regional guests. Consequently, chains focusing on national customers would be the most interested in adopting national quality certifications. Thus, taking the proportion of national tourists as a reference point, we propose the following hypotheses:

H4. There is a negative relationship between the proportion of international tourists in clientele composition and (a) the probability of national certification adoption and (b) the increase in the national certification intensity.

H5. There is a negative relationship between the proportion of regional tourists in clientele composition and (a) the probability of national certification adoption and (b) the increase in the national certification intensity.

3.5 Degree of geographical concentration

As literature has shown, the strength of a quality signal determines its effectiveness (Heil and Robertson, 1991; Connelly *et al.*, 2011). The effort of making additional investments to send more signals to the market can be no advisable for those firms that are just meeting their goals. The presence of a strong quality signal (as hotel chain brand) can make the strategy less attractive to invest money in having a quality standard. In this case, the marginal benefit derived from quality certification is low, as customers have strong enough signals about firm quality. However, for this being true, quality signals have to be very strong. There are some factors that can influence on the strength of a quality signal as hotel chain brand. One of those is the level of hotel brand awareness. The degree of geographical concentration of the chain can play a role here, as it is related to the visibility of the brand.

Some hotel chains are more geographically concentrated than others; that is, their establishments are located in a few regions (for instance, in the Canary Islands), although their customers come from a wide range of areas. The degree of geographical concentration can lessen the level of a hotel chain's brand visibility in the markets of origin. In contrast, those chains that are geographically dispersed can easily be recognized by their potential customers (they have seen or visited their hotels in other tourist areas or even in their region of origin).

The relative lack of visibility of regional chains' brands can give rise to a greater interest in adopting quality certification. The standard can make up for the mistrust associated with the lower awareness of hotel's own brands. Thus, we propose the following:

H6. There is a positive relationship between the degree of geographical concentration of a hotel chain and (a) the probability of certification adoption and (b) the increase in the certification intensity.

4. Methodology

Our empirical study uses secondary sources of information. Sample selection is based on the Hostelmarket census, which provides information on the structure and financial/economic ratios for 729 hospitality firms located in Spain. From these firms, we removed independent hotels as the aim of the article is the analysis of the certification decision by hotel chains. We focused on those chains that exceeded a minimum level to select the more relevant companies and set as a rule an annual sales figure equal to or above €5m, as these firms represent 94.56 per cent of the total sales in the hospitality sector. As a result, the final sample comprised 295 chains and 2,727 hotels. This sample includes all the firms in the Hostelmarket census that exceeded the minimum level of €5m in sales. The size of the hotel chains in the sample ranges from chains with 2 hotels to chains with 172 hotels in Spain (see Table I for a distribution of this variable). The sample takes into account hotels in every Autonomous Community in Spain.

4.1 Quality certification variables

To test our hypotheses, we have focused on the norm UNE-EN 182001: 2008 (Spanish Q for Quality in Tourism), a national standard valid only for Spanish tourist firms. This certification is a highly recognized seal in the sector with national scope. Consequently, it has an intermediate geographical scope, which allows us to analyze its usefulness in relation

to markets of superior (international) and inferior (regional) geographical scope. Thus, it is suitable to test all our hypotheses.

Our empirical study on the adoption of quality certification by hotel chains should take into account two levels of decision making: the first is whether to become a member of the quality system, and the second concerns whether to extend quality certification to other establishments, i.e. the change in certification intensity level (the tendency to increase or decrease the proportion of certified establishments).

Regarding the first decision, while some chains have no certification, there are others that have at least one certified hotel. In our opinion, this behavior points to a difference of degree as well as a qualitative difference between those firms. In most cases, having no certified properties may indicate lack of interest in certification; for instance, in the case of low-cost companies, certification could be incompatible with chain positioning. Firms have to make costly investments to become certified, which are not compatible with low-cost positioning.

In relation to the second decision, although corporate image strategy is often developed at chain level, a chain rarely certifies all of its properties. Thus, it is interesting to analyze the certification intensity level (the proportion of certified hotels) and its progression. As time goes by, managers can observe the costs and, to a certain extent, the true returns of quality certification in their hotels. Thus, we expect an increasing tendency toward certification in those chains in which it is more effective.

The study of two levels of decision-making translates into the consideration of two dependent variables strongly joined together. One of these (Q-period) is a dichotomous variable reflecting whether or not the chain had a certification for any of its hotels over a period of nine years (2005-2013). If a chain had no certification for any of its hotels during this period, we assume that it has had little interest in the standard, or an offer incompatible with the certification (e.g. moving the chain away from its target market), or with its associated investments and costs. When a hotel chain combines these three characteristics (high interest, coherent market positioning and willingness to make investments and to bear associated costs), it hardly will be out of the certification system (i.e. all its properties without certification) for a nine-year period. The other dependent variable (Trend) was measured as the slope of the change in the proportion of certified properties in 2005-2013. A positive sign for this variable shows an increasing tendency to make investments in the seal during the period, whereas a negative sign demonstrates a decreasing tendency.

4.2 Variables

Taking into account the national scope of the Q brand, the independent variables relate to those establishments located in Spain. Following Tarí-Guilló and Pereira-Moliner (2012), *chain size* was measured as the number of hotels in the chain, taken as a logarithm to avoid normality problems. The variable related to *location* (urban) was measured as the proportion

Table I. Description of the sample

No. of hotels in the chain	Freq.	(%)	Cum. (%)
Less than 5	128	43.24	43.24
From 5 to 9	109	36.82	80.07
From 10 to 19	36	12.16	92.23
From 20 to 49	16	5.41	97.64
50 or more	7	2.36	100.00
Total	296	100.00	

of a chain's hotels located in urban destinations. Urban locations include capital of the province (and its metropolitan area) and settlements with more than 50,000 inhabitants.

For inclusion in the hotel *category*, we take as our reference the hotel classification system in terms of the number of stars, ranging from one to five. To estimate the average category of hotels, we created an index weighted by the number of rooms. Due to the lack of figures on the percentage of *foreign customers* for each chain, we used as a proxy an index weighted by the percentage of foreign travelers arriving in each Spanish Autonomous Community and the percentage of establishments owned by the chain in that Community. Then, we used a similar method to estimate the percentage of *regional customers*. Even focusing in a single Autonomous Community, some hotel chains might have a very high percentage of foreign customers, whereas other firms might have a very low one. Nevertheless, the range in the percentages of foreign travelers by Spanish regions ranges from 15.1 per cent (Principado de Asturias) to 86.6 per cent (Balearic Islands) (INE - Instituto Nacional De Estadística, 2015). This wide range points to a great effect of regional location on the hotels' clientele origin. Moreover, as our sample is formed only by hotel chains with at least €5m sales per year, the variance is probably lower within an Autonomous Community. Unlike independent hotels and very small chains, these companies are hardly specialized in national or foreign travelers. They probably make communication efforts in different markets to maximize their occupation rates. They all have resources to access international markets (the internet made these markets much more available even for small- and medium-sized companies). Thus, in those Spanish Autonomous Communities where the presence of foreign travelers is high, we anticipate that the hotels in the sample will mostly have a high proportion of foreign customers.

To measure the level of geographical *concentration*, we calculated a standard location coefficient (Table II) (Hoover and Giarratani, 1971; Pazos-Casado, 2006). It is an adaptation of the specialization coefficient to analyze the degree of geographical concentration of an activity, a resource or, in this case, a hotel chain. While the specialization coefficient would show the degree of specialization of a territory, the location coefficient shows the degree of geographical concentration of (in this case) a hotel chain. It takes values from 0 (minimum level of concentration of the chain) to 1 (maximum level).

As room *price* can work as a quality cue (Rao and Monroe, 1989), it seems reasonable to consider that those chains operating at upper-intermediate price levels would be more interested in certification. As price may also be correlated with several variables in the model, we decided to use the average price for a chain's hotels weighted by the number of rooms as a control variable. Finally, the age (in years) of the hotel chain has also been included as a control variable in the first stage of the analysis. A longer age could provide the firm with the opportunity to be prepared for the certification. However, although this variable could affect the number of certified hotels in the chain, it is not foreseeable a substantial effect on the pace of change in this number (i.e. the dependent variable in the second stage of the analysis). Thus, this control variable has not been included in the second stage.

4.3 Model

In our study, the dependent variable (Trend) is only observable for those chains that have at least one certified establishment in 2005-2013. Consequently, it is an example of a censored dependent variable. In these circumstances, the ordinary least square (OLS) estimation could be biased. We decided to use two-step Heckman estimation as it allowed us to analyze simultaneously the variables that influence certification decision as well as certification intensity level (Kim and Jang, 2010). An additional advantage of using the Heckman model

Variable	Definition
Q-period	Dependent variable in the probit model 1 if the chain has at least one certified hotel from 2005 to 2013, 0 otherwise
Trend	Dependent variable in second stage Slope (b_i) of the least squares line in the regression analysis: $QI_{it} = a + b_i\, t + e_{it}$ where: QI_{it} = proportion of hotels of the chain i that are certified in the period t a = intercept b_i = slope estimated for hotel chain i t = time variable (from 2005 = 0 to 2013 = 8) e_{it} = residual term
Size	Logarithm of the total number of hotels
Urban	Percentage of hotels located in urban destinations: capital of the province (and its metropolitan area) and settlements with more than 50,000 inhabitants
Category	Average star category weighted by the number of rooms in each category
Cat_squared	Squared-category
Foreign	Fs: Proxy for the proportion of foreign customers of the hotel chain *s*: $Fs = \Sigma \left(PF_r \times \frac{Xsr}{Xs} \right)$ where: PF_r: proportion of foreign tourists in Autonomous Community r *Xsr*: number of hotels owned by chain (*s*) in Autonomous Community (*r*) *Xs*: number of hotels owned by chain (s) in Spain
Regional	Rs: Proxy for the proportion of regional customers of the hotel chain *s*: $Rs = \Sigma \left(PR_r \times \frac{Xsr}{Xs} \right)$ where: PR_r: proportion of regional tourists in Autonomous Community *r* *Xsr*: number of hotels owned by chain (*s*) in Autonomous Community (*r*) *Xs*: number of hotels owned by chain (*s*) in Spain
Concentration	Location coefficient (LCs): $0 \leq LCs \leq 1$ $LCs = \Sigma \frac{1}{2} \left\lvert \frac{Xsr}{Xs} - \frac{Xr}{X} \right\rvert$ where: *Xsr*: number of hotels owned by chain (*s*) in Autonomous Community (*r*) *Xs*: number of hotels owned by chain (*s*) in Spain *Xr*: number of hotels in Autonomous Community (*r*) (number of hotels owned by all chains in the sample in that community) X: number of hotels in Spain (number of hotels owned by all chains in the sample)
Price	Average rate weighted by the number of rooms. Based on the minimum rate in euros for a double room, breakfast not included, in each hotel of a single chain
Age	Age of the firm in years

Table II.
Description of variables

is that it allows examination of the existence of sample selection bias, that is, the possibility that the relevance to the sample of certified chains is not random (Heckman, 1979).

In the first stage, we estimated the selection equation, using the probit model for the probability $z = 1$, where the chain had at least one certification along the period, using all of the observations. As a result, we obtained the factors that determine the decision to be part of the quality system. In the second stage, or the result equation, the inverse Mills ratio was

incorporated as an additional regressor in the model, which was estimated using OLS, producing consistent estimators. In doing so, we were able to determine the influence of explanatory variables on the progression of certification intensity.

5. Results and discussion

5.1 First stage: certification decision analysis

The model was estimated using STATA software. In the first stage, the probit model analyzes how many strategic variables have an influence on the decision to certify at least one hotel in 2005-2013. In line with the recommendations presented in the literature, we included the chain's age as an additional variable in the selection equation as it did not have an influence on the Trend variable. Results are shown in Table III.

As we expected (*H1a* and *H2a*), the larger chains and those with a higher proportion of hotels located in non-urban destinations have a higher probability of having at least one certified establishment during the period analyzed. However, *H3a*, which proposes an inverted U relationship between the average star rating of a chain's hotel and interest in certification, is not supported. A reasonable explanation is that the hotel category, even at the highest level (five stars), is not a sufficiently strong signal to make unnecessary the information provided by quality certification.

Our evidence does not confirm the existence of a statistically significant relationship between the certification decision and the proportion of regional customers or the level of geographical concentration, so *H5a* and *H6a* are not supported. However, as *H4a* proposes, we observe a negative relationship between the proportion of foreign customers (with respect to national customers – the reference category in our analysis) and the probability of quality standard adoption. Finally, our results do not support the proposition that quality certification is more probable among those chains with higher price levels.

5.2 Second stage: certification intensity level analysis

In the second stage, we estimate the result equation. The value of the F statistic indicates that the model is significant taken as a whole, with a value for the R^2 of 0.195. The significance of the lambda coefficient indicates the lack of randomness in the sample of certified chains so the use of the Heckman procedure is more appropriate than a standard OLS regression procedure.

Variable	Coef.	z	Significance
log_hotels	1.496218	4.67	***
Urban	−0.6706135	−2.69	**
Category	1.061332	0.71	ns
cat_squared	−0.1052336	−0.51	ns
Foreign	−2.856535	−4.76	***
Regional	−1.775158	−1.49	ns
Concentration	1.009745	1.43	ns
Price	0.0024607	1.21	ns
Age	0.0096339	1.50	ns
_cons	−3.261519	−1.20	ns

Notes: Dependent variable Q-period; number of obs = 295; LR χ^2 (9) = 60.95; Prob > χ^2 = 0.0000; Log likelihood = −161.58291; Pseudo R^2 = 0.1587; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (one-tailed test)

Table III.
Heckman first stage

The estimation results support most of our hypotheses (Table IV). In line with *H1b*, chain size has a positive and significant influence. The tendency to leave the system is higher among the smaller chains. This suggests the existence of economies of scale in certification so bigger chains would be exposed to lower costs in terms of certification implementation and maintenance. Moreover, they could also perceive higher internal benefits due to their greater complexity.

The negative coefficient of the urban variable provides support for *H2b*. The tendency to increase certification intensity is positive for those chains that have a higher proportion of leisure-oriented hotels. In contrast, chains operating in the urban segment tend to decide to keep constant or even decrease the number of certified properties. This result can be explained by the type of customer and seasonality of demand typical of leisure tourism. The inclination to seek variety in vacation trips results in fewer chances to achieve customer loyalty. Consequently, firms are more interested in having quality cues that provide customers with information and reduce the risk associated with first time service acquisition. Moreover, the seasonality of demand entails hiring temporary staff during periods of peak demand, increasing the value of certification as an internal administrative and control tool.

However, our results do not provide support for *H3b*. It seems that quality certification is not more profitable for those chains with a higher proportion of hotels in high categories.

As we expected, the tendency to increase the certification intensity level is lower in those chains with a higher proportion of foreign customers as proposed by *H4b*. The low awareness of quality certification among customers could explain this result as the adoption of the Q brand has been growing among chains aimed at the national market. However, we must reject *H5b*, which proposes a negative relationship between the proportion of regional customers (with respect to national customers) and the progression of certification intensity. As expected, the coefficient is negative, but it does not reach significant levels.

Geographical concentration has a significant and positive relationship with the Trend variable. As proposed by *H6b*, the coefficient associated with the concentration variable shows that the tendency to increase the proportion of certified establishments is lower among those chains that are more geographically dispersed.

6. Discussion and conclusions

We have analyzed the effects of hotel chain characteristics on the decision to be part of a quality certification system, as well as on the change in the proportion of certified hotels of the chain. The use of two dependent variables, associated but different, is interesting as the

Variable	Coef.	*t*	Significance
log_hotels	0.0788405	2.02	*
Urban	−0.0476232	−2.27	*
Category	−0.0336079	−0.46	ns
cat_squared	0.0057502	0.55	ns
Foreign	−0.2080733	−2.48	**
Regional	−0.1074913	−1.12	ns
Concentration	0.1102116	2.50	**
Price	0.0003108	2.73	**
Lambda	0.0759199	1.80	*
_cons	−0.0765369	−0.45	ns

Table IV.
Heckman model second stage

Notes: Dependent variable: Trend; number of obs = 104; F (9, 94) = 3.33; Prob > F = 0.0014; R^2 = 0.1951; Root MSE = 0.0405; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$ (one-tailed test)

first of these is primarily linked to the strategic perspective of chain managers and their initial (*ex ante*) interest in adopting certification as a support for their own brand. In contrast, the second variable is related to the results of certification and increasing or decreasing interest on the part of managers after observing the effects of quality certification in those properties that have been certified. In sum, the last variable is related to the *ex post* effectiveness of the Q brand, whereas the first can be affected more directly by managers' prior beliefs about this certification.

We consider our result for the antecedent variable "geographical concentration" very intriguing as in the Heckman first stage (with the dependent variable Q-period), the resulting coefficient is not significant ($p = 0.15$), whereas in the Heckman second stage (with the dependent variable Trend), this coefficient is clearly significant ($p = 0.01$). Thus, it seems that the degree of geographical concentration has no influence on the decision to be part of the quality certification system. However, among certified chains, it affects their increasing or decreasing tendency to use the certification. So, this factor might play a relevant role in certification results, meaning that those chains that are concentrated in a location and that have some certified establishments (that is, those that have been able to observe certification results) tend to increase their level of certification use. Results suggest that the effect of the geographical concentration of the chain on the effectiveness of the certification is underrated by managers in their initial certification adoption decisions. Although it is not frequently taken into account by managers in their ex ante decisions, certification is especially interesting for those hotel chains characterized by their geographical concentration.

In the price variable (a control variable in the model), the results are similar: a non-significant coefficient in the first stage ($p = 0.23$) and a clearly significant one in the second stage ($p = 0.01$). High prices can be seen as quality cues that are coherent with the Q certification. As predicted by signaling literature, this seems to be a relevant factor for improving the outcomes of certification policies; however, it also seems to be underrated by managers in the initial decision-making process. Although the certification adoption practices are similar between low-price and high-price hotel chains, the ex post practices are different: low-price chains show a lower tendency to maintain or increase the number of certifications. The coherency between certification policies and price policies is relevant to the final success of certification, and this point is often disregarded in initial adoption decisions.

In line with most previous research, our results support the higher probability of certification among large hotel chains and those with an orientation toward leisure tourism (Alonso-Almeida and Rodríguez-Antón, 2011; Alonso-Almeida *et al.*, 2012; Álvarez *et al.*, 2001; Tarí *et al.*, 2009). Specifically, we observe that hotel chain size and non-urban location are linked to both a higher tendency to enter into the system and a higher tendency to increase the proportion of certified hotels. The results obtained can be considered as an additional support for the extant literature about internal and external benefits of certification.

To the best of our knowledge, no other investigation has tested the hypothesis that proposes an inverted U relationship between hotel category and the adoption of a quality management system. Five-star hotels could be less interested in quality certification as they already have a strong quality cue. However, we have to reject this hypothesis. It seems that hotel categorization, even at its maximum level of five stars, can effectively be complemented by a quality certification. There is no substitution effect that makes certification unnecessary. Moreover, we have not found a direct significant effect of hotel category on certification practices. The adoption of quality certifications does not show relevant differences between low-category and high-category hotel chains. Not only medium- and high-category hotels

could be interested in the Q certification, but also low-category hotels show similar certification adoption practices. Nevertheless, we must take into account that the effect of price is significant in the second stage of the analysis and that this variable is correlated with hotel categorization. The high-categories' hotel chains are prone to increase the number of certifications inasmuch as their prices are higher. The category *per se* is not related to the efficacy of certification but the price associated with the category.

On the other hand, our results suggest that a quality certification strategy could depend on the type of seal and its level of awareness among customers. Thus, the national scope of the Q brand could act as an obstacle to its major diffusion, as it seems to be less attractive to those chains aimed at international tourism. As we expected, those chains oriented to foreign customers are less interested in Q certification as it is not recognized by their target market due to its national scope. However, we have not detected significant differences between chains oriented to regional travelers and those oriented to national travelers. Unlike international markets, in regional markets, the awareness of a national quality standard can be high and its strength as a quality signal seems to be as high as in the case of national markets. Those hotel chains focusing regional markets do not significantly replace the use of national standards by regional brands or regional certifications as quality cues. The efficacy of national certifications (at least in the case of the Spanish Q for Quality in Tourism) is not lower for those hotel chains focusing regional customers than for those focusing national customers. However, when a hotel chain focuses on foreign markets, the use of an international certification is much more advisable.

Several managerial implications can be drawn from our study. First, a national certification system is highly suitable for chains addressed at national or regional leisure tourism. In such cases, the certification can act as a guarantee with the potential to attract new customers. Second, the size of a hotel chain and an urban location seem to have some additional influence on the effectiveness of certification. Managers of those chains characterized by their size or urban location should take into account the special advantages that certification has in these cases. Third, for one explaining variable (geographical concentration), we detect an effect on the tendency to certificate but not on the decision to certify. It seems that managers do not take this variable into account in the initial decision to become a member of the system. However, when geographical concentration is high, managers of certified chains tend to increase the number of certificates. So, the potential role of certification as a quality cue especially useful in the case of geographical concentration seems to be frequently underrated in the adoption decision. However, this should be taken into account in both stages of decision-making, otherwise managers run the risk of losing future opportunities.

Our study is subject to some limitations. First, future investigations could use longer time series as we considered only a span of nine years. Second, the use of aggregate data (chain vs individual hotels) can affect the significance level of some coefficients; nevertheless, aggregation is necessary for other chain-level variables (e.g. concentration). Third, the lack of information for each chain in the database forced us to use proxy variables to measure certain constructs (e.g. the location of hotels as a proxy for the prevalent type of customer, i.e. leisure vs business customers). This could negatively affect the significance level of some of the results obtained. Finally, this quantitative research could be complemented with quantitative research (e.g. interviews with managers) to deepen in the decision-making processes concerning certification and thus in the interpretation of the results obtained. This is an interesting further research line. In spite of the mentioned limitations, we hope to shed some light on this interesting research area.

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Appendix

Table AI.
Correlation matrix

Variable	1	2	3	4	5	6	7	8	9
1. Trend	1.00								
2. log_hotels	−0.16	1.00							
3. Urban	−0.13	0.30	1.00						
4. Category	−0.11	−0.06	0.17	1.00					
5. Foreign	−0.28	0.13	−0.27	0.08	1.00				
6. Regional	0.10	−0.06	0.13	0.07	−0.59	1.00			
7. Concentration	0.28	−0.79	−0.36	−0.17	−0.26	0.08	1.00		
8. Price	0.05	0.07	0.05	0.40	0.17	−0.15	−0.19	1.00	
9. Age	−0.18	0.02	0.22	0.24	0.08	−0.13	−0.10	0.09	1.00
Mean	0.005	0.873	0.277	3.607	0.438	0.180	0.753	101.8	22.9
SD	0.051	0.459	0.372	0.515	0.211	0.091	0.202	46.35	13.80
N	295	295	295	295	295	295	295	295	295

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