Emerald Insight

International Journal of Contemporary Hospitality Management

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Article information:

To cite this document:
Jorge Pereira-Moliner Eva M. Pertusa-Ortega Juan José Tarí Maria D. Lopez-Gamero Jose F. Molina-Azorin , (2016),"Organizational design, quality management and competitive advantage in hotels", International Journal of Contemporary Hospitality Management, Vol. 28 Iss 4 pp. -
Permanent link to this document:
http://dx.doi.org/10.1108/IJCHM-10-2014-0545

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Submitted: 30 October 2014

1st Revision: 03 March 2015

2nd Revision: 18 May 2015

Accepted: 13 June 2015

1. Introduction

Quality management (QM) is used in many manufacturing and service firms (Boulter *et al*., 2013; Lee *et al*., 2009; Phan *et al*., 2011), including organizations in the tourist industry (Alonso-Almeida *et al*., 2012; Wilkins *et al*., 2007), as a way of improving performance and competitiveness. QM is a management system that includes a set of practices (e.g. people management, customer focus, information and analysis) for managing an organization. When organizations implement QM, they usually introduce changes in some organizational design characteristics (Aghasizadeh *et al*., 2012; Shea and Howell, 1998). This idea suggests that QM practices promote certain characteristics of organizational design. Organizational design is concerned with constructing and changing an organization's structure in order to achieve the organization's goals, and organizational structure defines how tasks are allocated, who reports to whom, and the formal coordinating mechanisms and patterns of interaction that will be followed (Robbins, 1990). Organizational design characteristics include specialization, decentralization, formalization, and link mechanisms, among others.

The relationship between QM and competitive advantage has been analyzed in the academic literature but little has been written about the effects of QM on organizational design, especially in the hotel industry. Regarding the effects of QM on

competitive advantage, many studies have analyzed the positive effects of QM on cost (and efficiency) or on issues related to differentiation (e.g. image) but few studies have investigated the relationship between QM practices and competitive advantage arising from both cost and differentiation simultaneously. The few studies that have examined the relationship between QM and competitive advantage derived from both cost and differentiation have focused on manufacturing industry, and produced mixed results (Prajogo, 2007; Prajogo and Sohal, 2006; Zatzick *et al*., 2012). In relation to the effects of QM on organizational design characteristics, in the QM field, a number of scholars have argued that a supportive organizational structure is needed to enhance the effectiveness of QM implementation (Douglas and Judge, 2001; Shea and Howell, 1998). The studies of organizational design characteristics that relate to the implementation of QM are not conclusive. Some scholars suggest that organic structures (e.g. high levels of decentralization, and low degree of specialization and formalization) are more appropriate for the successful implementation of QM (Jabnoun, 2005; Tata and Prasad, 1998), while others describe organizations that implement QM in a completely mechanical way (high levels of centralization, formalization and specialization) (Clemmer, 1992).

The results of these previous studies relating to the influence of QM on the characteristics of organizational design and the relationships between QM and both cost and differentiation competitive advantage are mixed. In addition, although we can find studies in the hotel industry examining the effects of QM on cost or differentiation levels (Nield and Kozak, 1999; Benavides-Chicón and Ortega, 2014), few studies has been conducted on the characteristics of organizational design (Tavitiyaman *et al.*, 2012) in the hotel industry. In addition, we have not found any study that analyses the association between QM and organizational design characteristics in the hotel industry.

The present paper investigates the relationships between QM and competitive advantage in the case of hotels, and between QM and organizational design characteristics, in order to provide a better understanding of the extent to which QM practices promote certain characteristics of organizational design in hotels. It also examines how QM practices help hotels to improve competitive advantage. For hotel managers, it may be important to know the possible organizational changes that occur during the implementation of QM, because this knowledge may help them to be more successful in addressing such changes.

The aim of this study is to examine the relationship between QM practices and organizational design characteristics, and between QM and competitive advantage. Additionally, the study analyzes which QM systems have more influence in these relationships, because QM comprises different practices that can influence each variable in a different way (organizational design characteristics and competitive advantage). Accordingly the research questions are: a) does QM drive the characteristics of organizational design? and b) does QM influence both cost and differentiation competitive advantage? The findings show that QM practices positively influence specialization, formalization, informal social relations and link mechanisms, and that QM practices have positive effects on both cost and differentiation competitive advantage. The contribution of this paper is to shed light on the effects of QM on organizational design and competitive advantage, extending knowledge that has been gathered about these issues in other sectors to the hotel industry. Moreover, it makes an important contribution by clarifying the relationships between these variables, supporting understanding that QM mainly predicts formalization and differentiation competitive advantage. This will help managers to plan QM implementation

appropriately, to balance formalization with others effects such as specialization and interdepartmental interactions.

The study uses the partial least squares (PLS) approach to test these relationships in 350 hotels in Spain. In the international sphere, Spain is the second most important country in terms of income from international tourism, after the United States, and the third most important in terms of the number of international tourist arrivals, after France and the United States (UNWTO, 2014). The paper is structured as follows. First, the paper reviews the literature about QM and organizational design characteristics and about the relationship between QM and competitive advantage. Next, we describe the method used and the results based on the partial least squares approach to test these relationships in Spanish hotels. Finally, we present the discussion, conclusions, implications, limitations and future research.

2. Literature review

2.1. Quality management and organizational design

Organizations implementing QM can introduce control activities (e.g. data analysis, process control) to reduce process variation and fulfill quality standards, increase the autonomy and learning of workers to ensure customer satisfaction (Jabnoun, 2005), and encourage teamwork and communication (Dean and Bowen, 1994). This indicates that QM practices may drive certain organizational design characteristics. However, studies on characteristics of organizational design in a QM context have found mixed results. Some studies have shown that organizational structures characterized by high levels of decentralization and low degree of specialization and formalization are most appropriate for QM success (Jabnoun, 2005; Tata and Prasad, 1998). Other scholars have found that

organizations oriented towards QM have high levels of centralization, formalization and specialization (Brkic *et al*., 2011; Clemmer, 1992).

For example, according to Menon *et al*. (1997) specialization has been considered a barrier to group cohesion, and it has been found to lead to a lack of coordination and fragmented responsibility. Individuals who are over-specialized are driven to accomplish their specific task assignments and are not motivated to ensure that their outputs have synergistic effects on the overall quality goals of the organization. When employees develop only a few tasks, it is more difficult to develop QM practices, because QM requires that employees participate in teams and use quality techniques and tools to improve products/services, and this leads to a lower level of specialization (Germain and Spears, 1999). Specialized job specifications make it more difficult for individuals to assume responsibility for their own actions, hindering their freedom to act to reduce detected discrepancies between their actual performance and expected standards (Shea and Howell, 1998). In contrast with this, a low degree of specialization, in which jobs include several tasks rather than a single, low-level task, reduces fragmentation of jobs and generally results in higher quality work and greater customer satisfaction (Evans, 2011).

Nevertheless, more specialization among employees can imply more knowledge, and consequently the organization is more receptive to dealing with quality related problems and more proactive in seeking solutions to problems (Brkic *et al*., 2011; Germain and Spears, 1999). This idea suggests that a higher level of specialization can allow employees to know better how to develop their tasks in order to accomplish them at a higher standard, with implications for the quality for their products or services, and can facilitate the rapid solution of customer problems and suggest ways to improve the quality of services. Therefore, the implementation of QM can involve more

specialization, because employees are more expert in their respective areas, making it easier for workers to understand the purpose and importance of their work for the improvement of the quality of the product or service offered to the customers. Accordingly the following hypothesis is proposed:

H1: The implementation of QM practices positively influences specialization.

Decentralization means transferring part of the coordination and control from the top management to the employees, who assume responsibility for their task and commit to the quality objectives of the organization (Moreno-Luzón and Peris, 1998). Thus, the success of QM implementation can be ensured if responsibility for quality is extended to all employees and all departments in an organization (Kim *et al*., 2012) in order to control and identify quality problems and identify improvement actions to correct them (Germain and Spears, 1999). Decentralization provides employees with freedom and autonomy in decision-making and problem solving (Shea and Howell, 1998) which is needed to allow the workers to explore and experiment with creative ideas (Douglas and Judge, 2001).

Organizations should focus on encouraging employees to be involved in quality efforts and to be motivated and empowered. This is because they can better understand the ways that products/services are designed and improved, and they may discover other ways that products/services could increase customer satisfaction (Kim *et al*., 2012). Decentralized decision making induces resource exchanges, mutual assistance, accurate communication and confidence among functional groups within an organization (Menon *et al*., 1997).

Accordingly, QM provides employees from all levels of the hierarchy with greater responsibility and it implies empowerment and decentralization, which enriches their work. Delegating, which is supported by the active commitment and participation of the organization's members, contributes decisively to gaining a competitive advantage through quality and reduction in response times (Moreno-Luzón and Valls-Pasola, 2011). Based on these ideas, we suggest the following hypothesis:

H2: The implementation of QM practices positively influences decentralization.

In relation to formalization, although initially we can think that rules and written procedures limit the free flow of information and stifle individual initiative, Germain and Spears (1999) point out that formalization should be seen as a mechanism that makes it possible to encode and transmit knowledge to facilitate QM. In a QM context, procedures are designed and written down in order to improve efficiency and regularity in the execution of processes. These serve as a guide for their execution. Therefore, the definition of procedures is a necessary requisite in the application of QM. In this way, formalization, the degree to which procedures, instructions and communications are formalized and written down (Khandwalla, 1977), increases considerably when QM practices are implemented.

Formalization generates discipline in the organizational context given that the members of the organization develop habits of systematic verification in relation to quality (Moreno-Luzón and Valls-Pasola, 2011). For example, employees know better how to develop and control their activities. Thus, methods, processes and procedures (formalization) are designed with the aim of reaching the expectations of external and internal customers (Moreno-Luzón and Peris, 1998). In addition, formalization can also

promote quality innovation and change. This is due to the fact that creating the necessary knowledge for innovation does not happen spontaneously; it needs to be stimulated in order to surface, and regulations can direct behaviour towards the desired goal (Moreno-Luzón and Valls-Pasola, 2011). For example, the application of quality techniques and tools to systematic problem-solving may encourage formalization (Shea and Howell, 1998). This leads to the formulation of the following hypothesis:

H3: The implementation of QM practices positively influences formalization.

Barriers to departmental interaction need to be removed in order for QM to operate successfully. Teams or other link mechanisms which concentrate on improving cross-functional interaction can favour QM (Mann and Kehoe, 1995; Menon *et al*., 1997) and are critical issues for QM implementation (Dean and Bowen, 1994; Flynn *et al*., 1994; Tarí *et al*., 2007). Following the study of Menon *et al*. (1997) we consider two specific aspects of interdepartmental interactions: formal and informal direct contact among employees across departments. Formal interaction refers to the degree of use in the organization of different link mechanisms, like cross-functional teams. Informal interaction refers to informal social relations, that is, the extent to which informal information exchange between any organizational members occurs frequently.

Lateral interaction in organizations may lead to unrestricted access to information and knowledge required for individuals to assess quality issues (Shea and Howell, 1998). Interactions between members of different areas of the company can provide ideas to improve products and/or identify innovative solutions to the problems of customers. If this happens the company can improve the quality of the product and/or

conform to the needs of customers. In this way, the information exchange between various departments may favor the development of QM practices (Menon *et al*., 1997).

The literature on market orientation argues (e.g. Kohli and Jaworski, 1990) that interdepartmental interactions facilitate responsiveness to customers in terms of the quality of the entire marketing mix. Positive interdepartmental connectedness, by fostering greater *esprit de corps*, allows for early and quick exchange of customer and market information. This is made possible because employees across departments use direct formal and informal ties to discuss and solve project-related issues. Such interactions can facilitate the early definition of product quality requirements (Menon *et al*., 1997).

Rees *et al*. (1989) suggest that overall quality can be increased through positive group interactions. Increased team interaction and group cohesion should increase the level of output quality. This is because increased team interaction can help clarify the often murky product/service requirements and also identify innovative solutions for customer problems. In other words, teamwork enables the participation of the organization's members in the effective solution of problems and is used in establishing commitment and co-operation (Moreno-Luzón and Valls-Pasola, 2011). Therefore, the implementation of QM practices is related to information exchange and open communication, both formal and informal (as are found with high interdepartmental connectedness). Accordingly, the following hypotheses are proposed:

H4a: The implementation of QM practices positively influences informal social relations.

H4b: The implementation of QM practices positively influences link mechanisms.

2.2. Quality management and competitive advantage

QM practices may have positive effects on performance and competitive advantage in manufacturing and service firms (e.g., Prajogo, 2007; Tarí *et al*., 2007), including hotels (Dortyol *et al.,* 2014; Koyuncu *et al*., 2014; Nicolau and Sellers, 2010; Rubio-Andrada *et al*., 2011). Although the literature has shown that QM practices may impact performance and competitive advantage, initially it was thought that quality had a cost and that if quality increased then costs also increased. This vision of quality has been changing and today it is considered that a commitment to quality improvement can improve differentiation and also reduce costs. Studies have shown that companies implementing QM experience a greater reduction in costs over sales because they successfully control costs (Boulter *et al*., 2013). Thus QM may have positive effects on cost reduction (Jang and Lin, 2008; Singh, 2008). QM practices also lead to cost reduction through eliminating scrap and rework. This is due to the fact that the organization can control and improve processes, reducing variation. Thus, they reduce the production costs. In addition, QM also has positive effects on, for example, improving image and product/service quality (Feng *et al*., 2008; Magd, 2008). Quality may have positive effects on both differentiation and cost leadership (Reed *et al*., 1996; Suchanek and Klapalova, 2012).

In the context of the hotel industry, Birdir and Pearson (1998) found that QM practices can be a tool to promote and improve a firm's image, both internally and externally. Nield and Kozak (1999) showed that benefits resulting from QM are an improved competitive advantage and a nation-wide reputation. Thus, the development of QM practices promotes customer satisfaction when they visit a hotel. This can improve the hotel's image. Wang *et al.* (2012) find that quality management influences customer performance and financial performance in the hotel industry in a significant

way. Benavides-Chicón and Ortega (2014) show a direct and significant effect of quality on labor productivity in the hospitality sector. Benavides-Valeasco *et al.* (2014) find that quality management improves the capacity of hotels to create benefits for their stakeholders, and these results have a positive effect on hotel performance.

Nevertheless, other works have indicated different results. Prajogo and Sohal (2006) and Prajogo (2007) found that the QM is linked with differentiation competitive advantage but not with cost competitive advantage. Zatzick *et al*. (2012) showed that "the relationship between QM and performance is positive for organizations with high cost leadership and negative for organizations with low cost leadership" (pp. 1325-1326) and that the relationship between QM and performance is negative for organizations with high differentiation while it is positive for organizations with low differentiation. Yunis *et al*. (2013) found that soft QM practices are related to both cost leadership and differentiation competitive advantage, but hard QM practices do not have an impact on cost and differentiation competitive advantages. Although the results are inconclusive, some evidence suggests that QM practices can reduce cost by improving processes and can improve differentiation by improving image and service quality. Thus, the following hypotheses are proposed for the hotel industry:

H5: QM practices positively influence differentiation competitive advantage.

H6: QM practices positively influence cost competitive advantage.

Figure 1 shows the hypothesized model.

Figure 1 about here

3. Methodology

3.1. Sample and data collection

The population is formed by 3-, 4-, and 5-star individual hotels operating in Spain taken from the Hostelmarket Database of September 2011. The population consist of 4,770 hotels. Specifically, 2,417 are 3-star hotels, 2,063 are 4-star hotels and 290 are 5-star hotels. A structured questionnaire was sent by post to the population with an introductory letter which also gave the possibility of replying through a website. The invitation to complete the survey instrument was addressed to two respondents, the hotel manager and quality manager, to minimise the potential for bias from a single respondent, or common method variance. First, a pretest was carried out with 13 experts (7 hotel managers, 4 representatives of hotel associations, 1 representative of a quality institute in the tourism industry, and 1 manager of a consulting firm specializing in quality management in hotels). Participants were asked to complete identically worded, multiple-item Likert-type scales for each of the research variables. Finally, 350 hotels filled in the questionnaire, that is, we achieved a 7.34% response rate. Regarding the sample, 45.1% of the respondents were 3-star hotels; 47.6% 4-star establishments and 7.3% were 5-star hotels. The average size of the hotels was 128 rooms and 265 beds, and 41.6% of the establishments were chain-affiliated.

We tested for evidence of response bias (Armstrong and Overton, 1977) in terms of the differences in (a) the number of rooms and beds between responding and non-responding firms; (b) all variables in the survey between early and late responding firms and between online and mail responding firms. We found no evidence of any bias. We also tested for common method bias using Harman's one-factor test (Podsakoff and Organ, 1986). According to this test, if a single factor emerges from the exploratory factor analysis or one factor accounts for more than 50% of the variance in the items,

common method bias is present (Mattila and Enz, 2002). All of the items measuring constructs were entered in to a common factor analysis. The results reveal an eleven-factor structure with no single factor accounting for more than 50% of the variance. Therefore, the observed relationships among constructs were not mainly accounted for by the systematic variance associated with the measurement technique.

3.2. Measures

Quality management. The managers had to assess the number of practices, within a range of 7 points (from 1, if their establishment had never adopted a given quality practice, to 7, if it always used it). Four dimensions of QM were used: operational systems, information systems, strategic systems, and technical systems (Table I). These dimensions and their items are based on Curkovic *et al*. (2000).

Table I about here

Organizational design. A measurement was made of the level of specialization, decentralization, formalization, informal social relations and link-mechanisms in the hotel (Table II), based on the contributions by Jansen *et al*. (2006, 2009), Menon *et al*. (1997), Miller and Dröge (1986), Olson *et al*. (2005) using a Likert scale from 1 (completely disagree) to 7 (completely agree).

Table II about here

Competitive advantage. Seven items were considered in order to measure the competitive advantage variable based on previous studies (Beal, 2000; Govindarajan, 1988; Lee and Miller, 1996; Miller, 1988) (Table III). The hoteliers had to indicate, on a scale from 1 (they did not use such a strategy at all) to 7 (the strategy is very important for their establishment), their opinion concerning the cost and differentiation competitive advantages pursued by their organization. As can be seen in the Table III, the items were divided into two groups (items belonging to differentiation competitive advantage and cost competitive advantage respectively).

Table III about here

4. Analysis and results

The hypotheses were tested using a partial least squares (PLS) approach and PLS-Graph Software Version 3.0 (Chin and Frye, 2003). We chose PLS because it can accommodate models that combine formative and reflective constructs (Chin, 1998). We decided to employ PLS because we consider QM to be a second order formative construct, that is, the variables or the systems which form this second order construct are treated as their cause, and not as their effect (Fornell, 1982). The items in this construct need not necessarily co-vary at a high level empirically; each may occur independently of the others, they are not conceptually interchangeable, and they need not have similar nomological networks (Calvo-Mora *et al*., 2005; Chin and Gopal, 1995; MacKenzey *et al*., 2005; Podsakoff *et al*., 2006). For all these reasons, a formative measurement model represents the best option for the measurement of this construct.

QM systems, constructs related to organizational design and competitive advantage are considered to be reflective constructs because their items are perceived as the effects of a construct; indicators may be interchangeable, there is a strong correlation among indicators, and indicators have the same antecedents and consequences (Gruber *et al*., 2010).

4.1. The measurement model

Establishing the validity of constructs which have reflective indicators requires techniques that are different from those required to establish the validity of constructs having formative indicators (Hair *et al.,* 2014; Mackenzie *et al*., 2005; Podsakoff *et al*., 2006). For reflective constructs, Tables I, II and III show individual item reliability (λ) that should be above 0.707 on their respective factors, composite reliability (ρ_c) (always above 0.7), and the average variance extracted (AVE) (always above 0.5) (Barclay *et al*., 1995). A matrix was constructed where the square root of AVE was on the diagonal, and the correlations between the constructs were off-diagonal (Table IV). For adequate discriminant validity, the diagonal elements should be greater than the off-diagonal elements in the corresponding rows and columns (Fornell and Larcker, 1981). This is the case here, and is further evidence in support of the discriminant validity of our constructs.

Table IV about here

Regarding formative constructs, it is necessary to check the multi-collinearity among the items, which could produce unstable estimates. A collinearity test was performed. For the QM construct, the results showed minimal collinearity with the

variance inflation factor (VIF) of all items ranging between 1.08 and 4.22, below the common cut-off threshold of 5-10. In addition, all condition indexes of all items are below 30. Therefore, VIF and condition indexes did not indicate multi-collineartiy problems. Moreover, in the case of formative measures, instead of examining factor loadings, one examines factor weights. This examination is conducted using a canonical correlation analysis to provide information about how each indicator contributes to the respective construct. Table I shows the weights of the items in the second order formative constructs. The items that influence the explanation of QM most strongly are strategic and operational systems.

4.2. The structural model

Next, the structural model, which employs the formative construct, was assessed. A model using multiple indicators and multiple causes (MIMIC) was examined, together with the external validity of the formative construct. A MIMIC model serves to check the appropriateness of a set of formative indicators (Diamantopoulos and Winklhofer, 2001). The construct in the formative version was related to that in the reflective version. In this test, all R^2 were close to 1, all β were above 0.7 ($p < 0.001$) and the Stone-Geisser statistic (Q^2) reached a minimum value of 0.50. Regarding external validity, the relationship between QM – measured from a reflective and from a formative point of view – revealed that all R^2 between the different variables decreased when the formative construct was treated as though it was reflective. The path coefficients were also examined using a bootstrapping test with 500 subsamples (Chin, 1998) and all path coefficients turned out to be bigger when the QM construct was treated as formative. This provides a justification for the assumption that the construct should be treated as formative rather than reflective.

4.3. Results

Regarding the relationship between QM and organizational design variables, Figure 2 shows that paths from QM to specialization, formalization, informal social relations and link mechanisms are positive and significant, and the path from QM to decentralization is negative and significant. Therefore, Hypothesis 2 is not supported, and the research gives support to Hypotheses1, 3, 4a and 4b. As for the analysis related to the link between QM and competitive advantages, Figure 2 shows that these relationships are positive and significant, i.e., Hypotheses 5 and 6 are supported.

Figure II about here

In addition, Table V shows the predictive relevance of QM (Q^2). We examined Stone-Geisser's Q^2 value (Geisser, 1974; Stone, 1974) to evaluate the magnitude of the R^2 values as a criterion of predictive accuracy. Table V shows the Q^2 values, estimated by the blindfolding procedure, which represent a measure of how well the path model can predict the originally observed values. This measure is an indicator of the model's predictive relevance and values larger than zero for a certain reflective endogenous latent variable indicate the path model's predictive relevance for this particular construct. The Q^2 value is obtained by using blindfolding to obtain cross-validated redundancy measures for each reflective endogenous construct. As a relative measure of predictive relevance, values of 0.02, 0.15, and 0.35 indicate that the exogenous construct has a small, medium, or large predictive relevance for a certain endogenous construct (Hair *et al.,* 2014, p. 184).

Table V about here

Table V shows that the relationship between QM as a formative second order construct in this structural model is relevant to predicting formalization and differentiation competitive advantage. Although QM offers significant paths for the other variables, the predictive validity of QM is not enough to explain them. This means that the implementation of QM can explain an increase in the formalization of organizational structure and the improvement of differentiation competitive advantage but QM alone cannot predict the changes in the other variables. In other words, QM practices can increase specialization, informal social relations, link mechanisms, and cost competitive advantage, because a positive and significant path exists, but we cannot be certain that QM alone can bring about changes in these variables in the Spanish hotel context. We would need more variables to predict these relationships better.

In order to understand which QM systems are more important in these relationships, Table VI shows an analysis of the relationship of each QM system with the organizational design variables and the competitive advantage, that is, the results of the structural model considering each QM system as a reflective first order construct. This analysis makes it possible to know exactly which QM systems significantly influence the other variables analyzed in this paper. Table VI shows the standardized β coefficients and Student's t values taken from PLS Graph 3.0. Table VI shows that the positive influence of QM on specialization derives from operational and strategic systems, and this is also the case for informal social relations. The negative effect of QM on decentralization is due to the operational systems. Regarding formalization, three QM systems influence formalization: technical systems, strategic systems, and operational systems. Finally, link mechanisms are influenced by strategic and technical

systems. Moreover, information systems do not significantly influence any of the organizational design variables. That is, the use of quality information does not imply in principle any modification to the organizational structure of the hotel.

Table VI about here

Furthermore, Table VI shows how each QM system influences differentiation and cost competitive advantage. Differentiation competitive advantage is positively and significantly influenced by operational, information and strategic systems. However, cost competitive advantage is only positively and significantly explained by operational systems. It is interesting to note that technical systems do not influence any aspect of competitive advantage. This could be because the technical system is the minimum required to compete in the Spanish hotel industry.

5. Discussion and conclusions

5.1. Conclusions

This study examines the relationship between QM and organizational design characteristics, and cost and differentiation competitive advantage. The findings show that QM practices positively influence specialization, formalization, informal social relations and link mechanisms. Therefore Hypotheses 1, 3, 4a and 4b are supported, while Hypothesis 2 is not supported. The results also indicate that QM practices have a positive effect on cost and differentiation competitive advantage, supporting Hypotheses 5 and 6. In addition, the supplementary analyses show that QM predicts the increase in the formalization and differentiation competitive advantage.

Accordingly, this study has found links between QM and organizational design characteristics. QM practices have a positive effect on formalization. The use of formal rules and procedures reduces the variability in services activities and makes it possible to disseminate best practices and procedures across the whole organization. This means that QM practices allow employees to develop their tasks better and that they can be more expert in their jobs. This result supports previous findings (e.g., Brkic *et al*., 2011; Germain and Spears, 1999) that show that greater specialization of technical employees implies more knowledge and, thus, the organization is more able to deal with quality related problems and more proactive in seeking solutions to problems.

Greater job specialization is complemented by greater use of link mechanisms and informal social relations. In this way, frequent interdepartmental connectedness between organizational members favors the interchange of specialized information and knowledge that can contribute to the resolution of tourists' problems and complaints, or the generation of new ideas to improve the quality of services. Therefore, hotel employees both know better how to develop their tasks and feel free to exchange ideas and knowledge, although they are not directly involved in the decision making processes. In this regard, QM practices have negative effects on decentralization, and this contradicts the findings of some previous studies in other industries (Germain and Spears, 1999; Shea and Howell, 1998). Therefore, future studies are needed to clarify this relationship. In addition, job specialization can facilitate knowledge and skill development, improving the quality of service and therefore increasing tourist satisfaction. In this context, it may be important that each employee specializes in a part of the service to offer a better deal to the tourist.

Moreover, as other researchers have recently suggested (Kim *et al*., 2012), not all QM practices are related to organizational design variables. In this research, the

results show that QM strategic and operational systems influence specialization, interdepartmental interactions and formalization. Similarly, the technical system has positive effects on formalization and link mechanisms. These findings are in accordance with theory and research on organizational structure. Shea and Howell (1998) suggest that QM practices favour an organizational structure which balances the need for control (i.e. formalization and centralization) with the flexibility needed to respond quickly to the changing market (i.e. link mechanisms and informal social relations). Similarly, Sutcliffe *et al*. (1999) argue that organizational structure can both standardize operations across an organization to ensure reliability (that is, more formalization and specialization) and at the same time keep the organization open and flexible to explore new ideas (for example, with the use of link mechanisms and informal social relations). The findings of Douglas and Judge (2001) in the hospital industry support the idea that QM implementation enhances the need to balance control (e.g. formalization) and learning and exploration (e.g. link mechanisms and informal social relations).

In addition, this study also shows that QM practices have positive effects on differentiation and cost competitive advantages. This relates to those studies of the relationships between QM practices and cost and differentiation competitive advantage in other industries (Prajogo and Sohal, 2006; Zatzick *et al*., 2012; Yunis *et al*., 2013). The positive effect on cost competitive advantage derives from operational systems. This means that training for managers and employees, employee motivation, quality standards in services, and collaboration with intermediaries and suppliers (QM operational system) allow people to know how to develop their tasks better (this can improve efficiency, produce fewer errors) and develop processes more efficiently through collaboration with suppliers and other intermediaries.

Similarly, QM practices influence differentiation competitive advantage. This positive effect derives from three quality practices, that is, operational systems, information systems and strategic systems. When a hotel implements QM operational systems, it can improve the services offered (because employees receive more training). When hotels develop QM information systems they use quality information/data to analyze and improve processes and services and may even introduce innovations based on data impacting on quality service and image. When hotels develop strategic systems, they focus on tourist satisfaction and continuous improvement. All of this leads to an improvement in differentiation competitive advantage. Accordingly, hotels implementing QM can develop practices oriented toward cost efficiencies and practices oriented toward differentiation.

5.2. Theoretical implications

This study has theoretical implications that researchers can use in future studies. First, the results of this work extend pre-existing knowledge about the relationship between QM and the characteristics of organizational design to the particular context of the hotel industry. The findings also highlight the QM practices that are more closely related with each of the organizational design variables analyzed. Thus QM practices can promote certain characteristics of organizational design, because QM usually produces changes in the companies that implement it (such as an increase in the degree of formalization, specialization, or interdepartmental interactions). In this way, this paper contributes to the general organizational literature on hotels.

Moreover, this study also contributes to the literature in the field of strategy management, showing the possibility of achieving both cost and differentiation competitive advantage through the positive effects of QM practices, exemplified in this

case in the hotel industry. QM practices should be viewed as a culture that can be created in an organization to enhance competitive advantage. Thus QM practices can be drivers, along with other features, of competitive advantage. Therefore, the paper extends our previous knowledge about these relationships to the case of hotels, and highlights which QM practices seem to be more related with each organizational design and competitive advantage variable.

5.3. Practical implications

When implementing QM, awareness of the changes required in organizational structure will help hotel managers to plan QM appropriately and implement it successfully. The successful implementation of these QM practices drives formalization and might lead to more job specialization and interdepartmental interactions. QM practices drive formalization because organizations implementing QM formalize processes as a way of knowing better how to develop tasks and reduce variability in processes. Managers should see formalization as a way of increasing the knowledge base of the organization. Managers should also ensure that a high level of specialization is not an obstacle to employee participation in improvement activities. In this context, QM practices facilitate the development of employees so that they are more expert in their tasks and this can facilitate the development of the knowledge and skills of employees. Consequently, hotel managers should think about these issues in order to ensure that specialization is supplemented with inter-departmental connectedness to facilitate the interchange of ideas and knowledge. Managers must achieve a balance between specialization, formalization and inter-departmental interactions.

Moreover, hotel managers should understand that QM practices lead to positive effects on competitive advantage. When they develop these practices more fully, the competitive advantage can be higher. For example, QM practices (e.g. training, quality standards in services) facilitate a better development of tasks, so that mistakes can be avoided and efficiency improved. This means that costs can be reduced. Similarly, QM practices (e.g. training, information and analysis) allow employees to develop processes more fully and offer a better service. These improvements make it possible to achieve higher levels of differentiation.

5.4. Limitations and future research

First, this paper reports a cross-sectional study and future studies could analyze these relationships in a longitudinal study. In this context, qualitative studies, supporting the current quantitative studies, could help us to understand how QM practices drive changes in organizational characteristics in different organizations. Second, the results that relate to the relationships between QM practices and decentralization do not support the hypothesis suggested on theoretical grounds. This suggests that further studies are needed to shed light on the possible effects of QM practices on decentralization. Third, the study examines QM in isolation from other management systems, such as environmental management, with which QM might interact. Future studies could examine the impact of QM and its organizational design changes on other management systems (e.g. environmental management). Fourth, although a significant relationship exists between QM and the other variables analysed, we would need to add more exogenous variables to increase the R^2 and to predict the values of specialization, informal social relations, link mechanisms and cost competitive advantage. That is, although QM can lead to positive effects in specialization, informal social relations, link

mechanisms and cost competitive advantage, we cannot predict that QM, on its own, will always produce these positive effects. Other exogenous variables could also play a mediating or moderating role in these relationships. Finally, this study has focused on 3-, 4-, and 5-star individual hotels operating in Spain and future studies could be extended to chains, other tourism industries and even other service industries.

Acknowledgement

This work has been carried out as part of the research project ECO2009-12231 funded by the Science and Innovation Ministry (Plan Nacional de I+D+i). The authors are grateful for and acknowledge the support received.

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Table I: Measurement model assessment (quality management)

Scale items	Weight	Loadings (item reliability) (λ)	Composite reliability (ρ_c)	Average Variance Extracted (AVE)
QUALITY MANAGEMENT (second order, formative)			n.a.	n.a.
Operational systems (reflective)	**0.313**		0.887	0.568
Quality training courses are offered for all hotel managers and area managers	0.1959	0.7441		
Quality training is offered to all employees	0.2029	0.7319		
Employee motivation is encouraged	0.2261	0.7556		
Quality issues are considered when the services are offered	0.2473	0.7717		
The firm collaborates with intermediaries in order to improve the product offered in the establishment	0.2182	0.7294		
The firm collaborates with suppliers in order to improve the product offered in the establishment	0.2376	0.7867		
Information systems (reflective)	**0.165**		0.923	0.751
Quality information / data is used in day to day in different areas	0.2956	0.8944		
Quality information / data is available for all employees	0.2650	0.8662		
Quality information / data is used to improve the quality of the service	0.3034	0.8961		
Financial and operational indicators are used to measure quality effects	0.2914	0.8073		
Strategic systems (reflective)	**0.503**		0.920	0.697
Quality policy is formally communicated to all employees	0.2258	0.8280		
Quality is highlighted by a well defined set of policies and procedures	0.2582	0.8642		
Required resources are provided to improve quality service	0.2471	0.8460		
The needs of customers are used to improve the quality	0.2450	0.8439		
Complaints and suggestions from customers are evaluated to improve the service quality	0.2205	0.7919		
Technical systems (reflective)	**0.115**		0.900	0.693
Internal audits are performed	0.2890	0.7631		
Satisfaction surveys are conducted	0.2664	0.8270		
Complaints and suggestions system is employed	0.3039	0.8489		
A system of quality indicators is used for continuous improvement	0.3410	0.8866		

Table II: Measurement model assessment (organizational design)

Scale items	Weight	Loadings (item reliability) (λ)	Composite reliability (ρ_c)	Average Variance Extracted (AVE)
Specialization (reflective)			0.846	0.733
1. Most of the employees are specialized, because they carry out a limited number of tasks	0.5162	0.8229		
2. The employees are experts in their respective areas	0.6526	0.8878		
Decentralization (reflective)			0.826	0.612
1. Few actions are implemented without a supervisor approving of the decision (inverted)	0.5993	0.7895		
2. Even issues of little significance need consultation with a supervisor for a final decisions to be made (inverted)	0.2949	0.7859		
3. Employees must ask their supervisors before doing anything (inverted)	0.3899	0.7670		
Formalization (reflective)			0.909	0.667
1. For any situation that may arise, there are written procedures available in order to deal with the matter	0.2607	0.8730		
2. Rules and procedures play central role in the organization	0.2667	0.8717		
3. Employees' work is registered in forms	0.1962	0.7685		
4. There are periodic checks on whether employees comply with rules and procedures	0.2387	0.8118		
5. There are job descriptions written for all positions	0.2631	0.7514		
Informal social relations (reflective)			0.855	0.598
1. It is easy to speak with any person, independently of his/her position	0.3481	0.7703		
2. Usually informal discussions arise between employees from different areas	0.2957	0.7779		
3. Employees from different areas can be called freely when they are needed	0.3515	0.8463		
4. Employees of an area are always available to those in other areas	0.2989	0.6906		
Link mechanisms (reflective)			0.865	0.683
1. Inter departmental groups to allow different areas to engage in joint decision making	0.4355	0.8530		
2. Temporary workgroups that facilitate the collaboration between areas in a specific project	0.3895	0.8696		
3. Liaison personnel whose specific job is to coordinate the tasks of different areas	0.3891	0.7515		

Table III: Measurement model assessment (competitive advantage)

Scale items	Weight	Loadings (item reliability) (λ)	Composite reliability (ρ_c)	Average Variance Extracted (AVE)
Differentiation competitive advantage (reflective)			0.897	0.686
1. Creation of a brand image identifying the firm	0.2386	0.7443		
2. Quality service offered is better than that offered by competitors	0.3262	0.8490		
3. A greater number of supplementary services is offered adding value for customers	0.3157	0.8542		
4. Important innovations are made in the service	0.3211	0.8598		
Cost competitive advantage (reflective)			0.872	0.695
1. General costs are minimized	0.4029	0.8577		
2. An attempt is made to improve productivity	0.4954	0.9066		
3. Efforts are made to reach scale economies, i.e., high occupancy rates in order to get the maximum performance from the hotel size	0.2835	0.7252		

Table IV: External validity of the measurement model

		1	2	3	4	5	6	7	8
1.	Quality management	(0.793)	---	---	---	---	---	---	---
2.	Specialization	0.461	(0.733)		---	---	---	---	---
3.	Decentralization	-0.177	-0.205	(0.612)	---	---	---	---	---
4.	Formalization	0.669	0.464	-0.212	(0.667)	---	---	---	---
5.	Informal social relations	0.417	0.321	-0.071	0.323	(0.598)	---	---	---
6.	Link mechanisms	0.468	0.316	-0.193	0.472	0.346	(0.683)	---	---
7.	Differentiation competitive advantage	0.600	0.378	-0.127	0.402	0.349	0.384	(0.686)	---
8.	Cost competitive advantage	0.463	0.310	-0.228	0.380	0.284	0.410	0.563	(0.695)

Square root of AVE are in the diagonal, and the correlations between the constructs are off-diagonal.

Table V: Predictive relevance of the structural model (Stone-Geisser's Q^2 values)

Reflective construct	Q^2	Predictive Relevance	Level of Predictive Relevance
Specialization	-0.015	No	---
Decentralization	-0.403	No	---
Formalization	0.226	Yes	Medium
Informal social relations	-0.107	No	---
Link mechanisms	-0.03	No	---
Differentiation competitive advantage	0.133	Yes	Small
Cost competitive advantage	-0.047	No	---

Table VI: Effects of each QM systems on organizational design constructs and competitive advantages (first order structural model)

	Specialization		Decentralization		Formalization		Informal social relations		Link mechanisms		Differentiation competitive advantage		Cost competitive advantage	
Quality management	β	t	β	t	β	t	β	t	β	t	β	t	β	t
Operational Systems	**0.189**	**2.043***	**-0.243**	**2.678****	**0.115**	**1.574†**	**0.240**	**2.765****	0.097	1.070	**0.265**	**3.168*****	**0.253**	**2.752****
Information Systems	-0.002	0.015	-0.113	0.895	0.085	0.936	-0.075	0.560	0.139	1.145	**0.164**	**1.451†**	0.173	1.223
Strategic Systems	**0.238**	**2.465****	0.068	0.572	**0.171**	**1.952***	**0.306**	**2.690****	**0.145**	**1.546†**	**0.298**	**2.325***	0.108	0.836
Technical Systems	0.083	0.766	0.090	0.903	**0.412**	**5.092*****	-0.014	0.130	**0.150**	**1.518†**	-0.086	0.853	-0.018	0.182
R^2	*0.219*		*0.051*		*0.509*		*0.198*		*0.233*		*0.377*		*0.232*	
Stone-Geisser Q^2	*-0.023*		*-0.394*		*0.263*		*-0.103*		*-0.037*		*0.139*		*-0.043*	
Predictive relevance	*No*		*No*		*Yes*		*No*		*No*		*Yes*		*No*	
Level of predictive relevance	---		---		*Medium*		---		---		*Small*		----	

† 0.05<p≤0.10; * 0.01<p≤0.05; ** 0.001<p≤0.01; *** p≤0.001 (n=500 subsamples, one tail Student's t distribution, $t_{(499)}$)

Figure 1: Hypothesized model

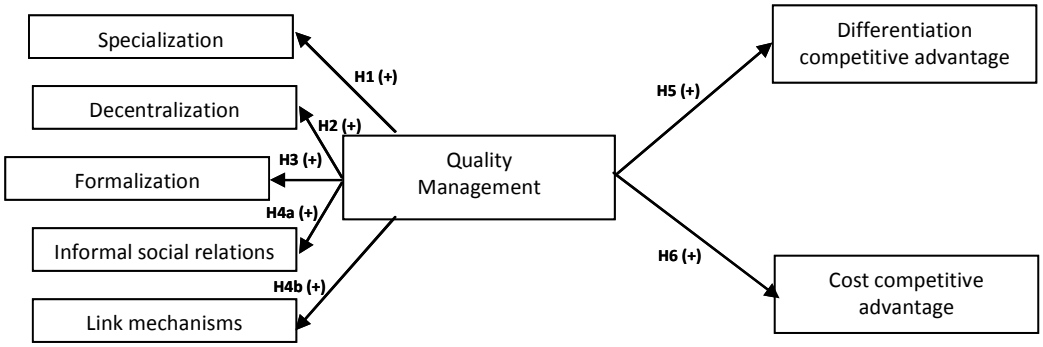
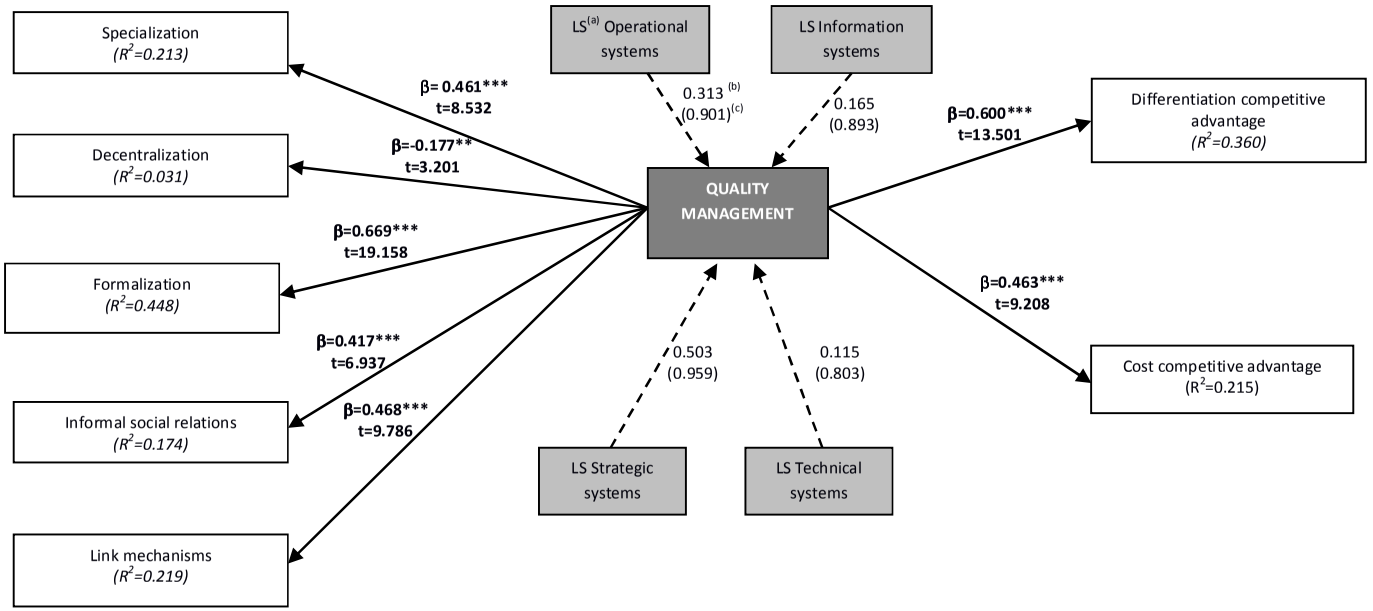


Figure 2: Structural model results considering QM as a second order construct



† 0.05<p≤0.10;* 0.01<p≤0.05; ** 0.001<p≤0.01; *** p≤0.001 (n=500 subsamples, one tail Student's t distribution, $t_{(499)}$)

(a) LS: latent score.

(b) Weight

(c) Loading