



Total quality management, market orientation and hotel performance: The moderating effects of external environmental factors

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ABSTRACT

With the market competition of hotel industry being heated, it is critical that hotels have a breadth of resource and more flexible forms to meet the needs of a changing marketplace. In the past, the relation of total quality management (TQM), market orientation, and performance are equivocal. These mixed results may be due to some factors or not to include the environmental factors. This study adopts the Input-Processing-Output (IPO) concept model to construct all variables research model. The research surveyed samples of 588 and used Structural Equation Model and discriminate analysis for analysis and testing. The results show that TQM positively affects hotel performance. Market orientation positively affects hotel performance. Market orientation has the mediating effect between TQM and hotel performance. External environment factors truly play a moderator between TQM, market orientation and hotel performance, especially when external environment factors greater changes are going to help to build relationship with customer, to enhance hotel performance and further to gain chance of hotel's survival.

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1. Introduction

Total quality management (TQM) is a widely recognized management philosophy, and has become the key slogan as organizations strive for competitive advantage in markets (Sureshchandar et al., 2001). TQM focuses on continuous process improvement within organizations to provide superior customer value and meet customer needs. Meeting customer needs involves company operations focused on understanding, sharing, and responding to customers through marketing concept. Firms adopting and implementing the marketing concept are said to display a market orientation (Lamb et al., 2005). Market-oriented firms have been demonstrated to be successful at maintaining a strong competitive position (Walker et al., 2006). Therefore, TQM and market orientation can constitute a valuable firm strategy and provide a competitive advantage to respond to the competitive business environment.

Studies have claimed that marketing and TQM are complementary business philosophies (Longbottom et al., 2000; Mohr-Jackson, 1998a,b). However, departments responsible for implementing TQM policy may consider increasing sales through higher quality products or service needs rather than marketing. Poor coordination among departments, or even rivalries and distrust, are not

unusual. Moreover, partial enterprises that have conducted TQM have not considered their attributes or properly used them in marketing, preventing top managers from understanding marketing topics. Therefore one-third of TQM-adopting enterprises continue to exhibit prejudice (Witcher, 1995), or have failed in TQM implementation. These factors cause many organizations to have little or no to complement to TQM and market orientation together. However, even when both are linked in hotel performance effect, the empirical findings are mixed, and homogeneous results regarding their relationships are lacking. Furthermore, scholars have also argued that relationships among TQM, market orientation and organization performance often vary considerably in terms of magnitude, or when improving performance, generating mixed and controversial results. Additionally, the hotel industry suffers a lack of information regarding TQM or barriers to developing market orientation (Gray et al., 2000; Harris and Watkins, 1998; Lazari and Kanellopoulos, 2007); few studies have addressed this lack of information or the existence of such barriers in the Taiwanese hotel industry.

In the competitive market environment, quality is considered the basic consuming condition. Hotels seeking to improve their performance cannot simply rely on quality, but must also design inducements to attract customers. Longo and Cox (1997) and Youssef et al. (1996) addressed the IPO (Input-Processing-Output) model of TQM, which displays the relationships between the TQM system and participants. This model defines input to enlarge the process and involve both internal and external environments. Process improvement and products are designed to focus on present

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and future customer needs. Output describes the way in which participant quality is enhanced to ensure profitability and custom satisfaction. To gain competence of hotels faster than competitors and create superior customer value strategically within conflicts and interest of inter-departments are critical for hotel survival. This study adopted the IPO concept model of TQM to develop a research model and further probed the relationship between TQM and market orientation to understand its influence on hotel performance.

Environmental uncertainty arises from organizational ability to make environmental forecasts (Milliken, 1987). As a result, organizational decision making is influenced by environmental complexity and volatility (May et al., 2000). Organization attempting to ignore environmental factors or that refuses to respond to such factors create trouble for themselves and placing themselves at a competitive disadvantage. On the contrary, understanding and responsiveness can contribute to hotel effectiveness and benefits. Several studies have argued that market and technological turbulence and competitive intensity may moderate the relationship between market orientation and performance (Kirca et al., 2005; Qu and Ennew, 2003; Rose and Shoham, 2002; Subramanian et al., 2009), or that this relationship does not moderate effects (Aziz and Yassin, 2010; Jaworski and Kohli, 1993; Slater and Narver, 1994; Subramanian and Gopalakrishna, 2001). TQM is an open system that interacts with the surrounding environment (Steel and Jennings, 1992). However, scholars have argued that TQM does not adapt to dynamic situations (Dooley and Flor, 1998). Business environment is complicated by the dynamics of change and competition producing a degree of uncertainty such that the results after TQM implementing are unclear (Montes et al., 2003). Moreover, prior scholars have studied the influence of external environmental factors on the hotel performance effect; most studies have probed legal, political, social, economic, cultural, and technological dimensions. New advanced technologies and a changing market environment have provided quality and marketing concepts with a new dimension. Empirical studies have largely overlooked external environmental factors (for example, market and technological turbulence, and competitive intensity) related to hotel performance. This study incorporates these factors to examine and fill the gaps in the literature.

The maturing of the hotel industry has seen competition gradually intensifying and customers become increasingly sophisticated. To compete, hotels require a breadth of resources to transform them into more flexible forms to meet the needs of the changing hotel industry marketplace. This study simplifies the complex reality of the hotel industry, in which hotels examine their performance using TQM, market orientation, and the moderating effects of external environmental factors. This study tested the research model using data gathered from hotels using a questionnaire survey method, and used the Structural Equation Model and discriminate analysis for analysis and testing. This paper is organized as follows. A literature review discusses four variables and establishes the study hypotheses. Subsequent sections then describe the methodology, results, and analysis. Finally, the last section discusses conclusions and presents limitations and recommendations.

2. Literature review

2.1. Total quality management

From Saraph et al. (1989), many studies have attempted to develop an appropriate set of critical quality management constructs to represent an integrated approach to TQM implementation in a business unit (Ahire et al., 1996a,b; Anderson et al., 1995; Flynn et al., 1995; Grandzol and Gershon, 1998; Rao et al., 1999). Montes et al. (2003) synthesized and induced their works to classify five generic constructs: (1) managerial leadership and com-

mitment; (2) human resources management; (3) the relationship between customers and suppliers; (4) internal organizational culture; and (5) process management. Subsequent studies have relied on these works to assess TQM program effectiveness. TQM is widely recognized as a management philosophy. Numerous controversies exist regarding the elements proposed by different researchers and professionals in relation to TQM. These elements do not fully coincide, and not all such fundamentals that compose the TQM theoretical framework can be called TQM without management factors being implemented in the organizations where they are based (Montes et al., 2003).

TQM is largely not applied because executives have not contended with it or consider it unnecessary in the hotel industry (Lazari and Kanellopoulos, 2007). The TQM system accords to the IPO (Input-Processing-Output) concept model to display the relationships between the TQM system and participants (Longo and Cox, 1997; Youssef et al., 1996). Input is defined as that which enlarges the process and involves both internal and external environments. Processing is focused on both present and future customer needs until top management must combine input with organizational ability to achieve desired goals. Output is defined as all participants (that is, organization members and departments, suppliers and customers) delivering designed services as reliably and economically as possible to ensure profitability and customer satisfaction. Hotels thus satisfy customer needs not only through continuous improvement (Dale and Plunkett, 1990), but also through process management in preventing problems from recurring. Cooperation between internal and external elements is critical for successful TQM implementation. Such successful implementation enhances the morale of employee fulfillment, increasing hotel efficiency (Lazari and Kanellopoulos, 2007). Leadership and guest focus are the principles most commonly incorporated into TQM programs of hotels (Breiter and Bloomquist, 1998; Li et al., 2007). Learning involves company-wide training that acquires a strategic value for hotels (Boudreau et al., 2001; Claver et al., 2006; Tihanyi et al., 2000) and enhances both staff skill level and service commitment (Costa, 2004; Haynes and Fryer, 2000). This study finds that TQM-adopting hotels focus on customer focus, continuous improvement, leadership, internal/external cooperation, employee fulfillment, learning, and process management. This study adopted the constructs of TQM stated by Grandzol and Gershon (1998).

Studies have assessed hotel performance using the lodging index (Wassenaar and Stafford, 1991), revenue growth rates (Van Doren and Gustke, 1982), both “objective” and “perceptual” (Haber and Reichel, 2005), or financial and non-financial performance (Banker et al., 2000, 2005). “Objective” is measured by occupancy rate per room, gross operating profit, and gross operating profit per available room per day. “Perceptual” contains competitive performance and stakeholder satisfaction. Any organization needs finance support. To maximize long-term performance businesses must build and maintain mutually beneficial relationships with buyers (Narver and Slater, 1990). Therefore, this paper adopts that Moorman and Rust (1999) and Narver and Slater (1990) developed measures of hotel performance that included financial and customer-based performance.

Some studies have suggested that TQM-adopting firms enjoy a competitive advantage over non-TQM (Brah et al., 2002; Powell, 1995). Furthermore, studies have variously reported that TQM and organizational performance are positively related (Demirbag et al., 2006a; Feng et al., 2006), or no effect of TQM on various performance measures (Harari, 1993; Salegna and Fazel, 1995), or that TQM is negatively related with organizational performance (McCabe and Wilkinson, 1998; Yeung and Chan, 1998), which may result from different measures of TQM, ineffective implementation, or a lack of management support, among other reasons (Tari et al.,

2010). However, hotel industry has identified outperformance in TQM-committed hotels (Claver-Cortés et al., 2008; Langer, 1997) and TQM is likely to improve customer satisfaction, and ultimately financial performance (Agus et al., 2000; Claver-Cortés et al., 2008). This study proposes that hotel adoption of TQM may improve hotel performance. Therefore:

Hypothesis 1. TQM positively affects hotel performance.

2.2. Market orientation

TQM stresses viewing employees as internal clients who deserve special attention (Eskildsen and Dahlgaard, 2000), aiming to achieve organization's objectives. Satisfaction of external clients is central to the marketing concept (Santos-Vijande and Álvarez-González, 2009). Firms that adopt and implement marketing concepts are said to be market oriented (Lamb et al., 2005). Market orientation is defined differently within different parts of the research community (Deshpande et al., 1993; Kohli and Jaworski, 1990; Narver and Slater, 1990). However, the basic concept still involves generating, disseminating, sharing information, and responding appropriately to changing market needs to achieve organizational goals and satisfy customer needs and wants whilst simultaneously considering the interests of all company stakeholders.

Several scales exist for measuring market orientation. Kohli et al. (1993) developed a valid measure that includes intelligence generation, dissemination and responsiveness. Furthermore, Gray et al. (1998) proposed a parsimonious model of market orientation based on the work of Deng and Dart (1994), Jaworski and Kohli (1993), and Narver and Slater (1990) comprising five dimensions: customer orientation, competitor orientation, inter-functional coordination, responsiveness, and profit emphasis. Additionally, Anwar (2008) determined that market orientation should include customer focus, competitive focus, environmental scanning, strategy implementation, and new service development. Different firms may adopt different strategies. This study believes that market orientation is better suited to data collection, including information generation and dissemination, shared interpretation, and organization responsiveness. Previous studies have investigated the antecedents and consequences of market orientation. Vieira (2010) used Brazilian Meta-Analysis and International Mega-Analysis to determine that interdepartmental connectedness, interdepartmental environment, and rules for job execution significantly and positively influence market orientation, displaying consequences in improved performance, organization commitment, innovation, and learning. Market orientation is positively related to firm performance (Kara et al., 2005; Li et al., 2008; Zhou et al., 2005). Similarly, Han et al. (1998), Harris (2001), Nwokah (2008), and Perry and Shao (2002) failed to find a direct relationship between market orientation and firm performance, even hotel performance (Sargeant and Mohamad, 1999). However, Sin et al. (2005) found market orientation to be critical to hotel performance. These references show that empirical findings related to market orientation have yielded complex and mixed results (Voss and Voss, 2000).

Effective information acquisition and dissemination produced high market orientation that is essential for creating and managing closer customer relationships and requires a solid understanding of customer wants (Ahire et al., 1996a). A market-oriented hotel can afford enhanced product or service quality based on consumer data to boost customer satisfaction. Satisfied customers increase sales and market share through more frequent purchases. This study thus hypothesizes that:

Hypothesis 2. Market orientation positively affects hotel performance.

Numerous similarities exist between the concepts of TQM and market orientation (Morgan, 1992). However, partial researchers have thought that TQM implementation is an important mediator helping strengthen the association between market orientation and performance (Demirbag et al., 2006b); market orientation is statistically significantly associated with quality orientation (Lai, 2003; Mokhtar and Yusoff, 2009); TQM directly and positively affects market orientation (Santos-Vijande and Álvarez-González, 2009; Yam et al., 2005). TQM also benefits market orientation (Mohr-Jackson, 1998b). Despite the clear relationship between TQM and market orientation, the empirical findings are mixed and has failed to obtain homogeneous results about their relationship.

Marketing practices are important in improving firm performance (Santos-Vijande et al., 2005). Market orientation means the implementation of marketing concepts (Kohli and Jaworski, 1990), borrows from the management and strategy domains to avoid an isolationist perspective (Dobni and Luffman, 2003; Stoelhorst and Van Raaij, 2004), and depends on other constructs to strengthen its relationship with performance (Menguc and Auh, 2006). These constructs may arise in relation to where the influences that may determine market orientation originate (Avlonitis and Gounaris, 1997). TQM is considered fundamental to the successful application of the marketing concept and is considered a means of increasing marketing preponderance (Santos-Vijande and Álvarez-González, 2009). These show mutual need for TQM and market orientation. TQM involves ongoing monitoring of market forces by implementing organizational processes, and engages all departments of a firm to develop the right market response, all of which are also hallmarks of operative market orientation (Kohli and Jaworski, 1990). Restated, TQM promotes the generation and dissemination of market information to enable firms to consistently and rapidly respond to changing market conditions (Ahire et al., 1996a). TQM thus positively affects market orientation. Hypothesis 3 thus is proposed.

TQM linked activities to help the development of distinctive competencies which is a mediating variable in the relationship between TQM and performance (Tena et al., 2001). Thus, TQM and market orientation are complementary. TQM encourages competencies of adept at generating and sharing market knowledge to enhance customer value and satisfaction, a prerequisite for long-term success (Kerin et al., 2006). Market orientation positively impacts firm effectiveness and boost market share in TQM (Wang and Wei, 2005). Market orientation mediates the effect of quality orientation on competitive superiority, and competitive superiority drives business performance (Raju and Lonial, 2002; Sittimalakorn and Hart, 2004). Quality orientation originates from TQM (Mokhtar and Yusoff, 2009). Based on the above literature, this study proposes that hotels link TQM and market orientation. TQM will be help for effective and efficient of implementing market orientation, in turn enhancing performance. TQM-adopting hotels on performance might be channeled through market orientation. Hypothesis 4 thus is proposed.

Hypothesis 3. TQM positively affects market orientation.

Hypothesis 4. Market orientation has the mediating effect on the relationship between TQM and hotel performance.

2.3. Moderating effect of external environmental factors

Different organizations are affected by different numbers of environmental factors. External environmental factors change rapidly, are uncertain, and complex, and also create problems for organizations. Any organization ignoring or being unresponsive environmental factors is creating trouble for inviting trouble.

Hotel external environment affects the relationship between strategic planning and performance (Phillips, 1999). Competition is a key characteristic of the external environment. Within their com-

petition environment hoteliers tend to understand the strengths, weaknesses, and performance associated with providing specific products or services when seeking information about customers and modifying their offerings based on customer data. Market turbulence describes the rate of change in customer composition and customer preferences (Kohli and Jaworski, 1990; Slater and Narver, 1994; Subramanian and Gopalakrishna, 2001). As the pace of change accelerates, the need for managers to change their products and services grows. Technological turbulence describes technological change (Kohli and Jaworski, 1990). Technologically advanced organizations can stay ahead through continuing product and service improvement or advanced process management. When market and technological turbulence and competitive intensity are low, organizations can concentrate on competitive advantage by focusing on customer satisfaction (Subramanian et al., 2009). Nevertheless, as market turbulence, competitive intensity, and technological turbulence increase, firms must move away from existing customer needs and seek to satisfy latent needs to maintain a competitive advantage (Slater and Narver, 1998).

Several researchers have argued that links between market orientation and performance depend on organizational environment (Jaworski and Kohli, 1993); for example, the relationship between market orientation and performance may be moderated by market and technological turbulence and competitive intensity (Kirca et al., 2005; Qu and Ennew, 2003; Rose and Shoham, 2002; Subramanian et al., 2009), or such a relationship has not moderating effects (Aziz and Yassin, 2010; Jaworski and Kohli, 1993; Slater and Narver, 1994; Subramanian and Gopalakrishna, 2001). TQM is based on the system perspective as a method of managing change in situations involving organizations that are open systems interacting with the environment (Steel and Jennings, 1992). For example, managers should relate changes in consumer perception and competitor activity to management commitment by inspiring and motivating staff and obtaining feedback to improve hotel performance (Aziz and Yassin, 2010). Changes in technology, such as computerization and e-commerce, can create a quantum leap in work communication, process management, and product and service innovation. Therefore, TQM can flexibly create an environment where organizations are committed to customer satisfaction through continuous improvement (Bayraktar et al., 2008) and external impacts customer satisfaction through the market (Tari et al., 2010). However, scholars have argued that TQM is not adaptable to dynamic situations (Dooley and Flor, 1998). Business environment is complicated by dynamics of change and competitive, producing a degree of uncertainty such that the nature of the improvement of results after TQM implementation is unclear (Montes et al., 2003).

TQM stresses systematic angles to solve management problems, and stresses external environmental changes in organizational operations. Market orientation depends on changes in external demand to respond to customer needs. External environmental factors significantly impact business strategies in the hospitality industry (Oparanma et al., 2009). Environmental variables can moderate the effect of management strategies (Atuahene-Gima, 1995). This study adopts external environmental factors based on the concept of Jaworski and Kohli (1993), including market and technological turbulence and competitive intensity. External environmental factors are inferred to exert moderating efforts on TQM, market orientation, and hotel performance. This study thus hypothesizes:

Hypothesis 5. The effect of TQM on hotel performance is moderated through external environmental factors.

Hypothesis 6. The effect of market orientation on hotel performance is moderated through external environmental factors.

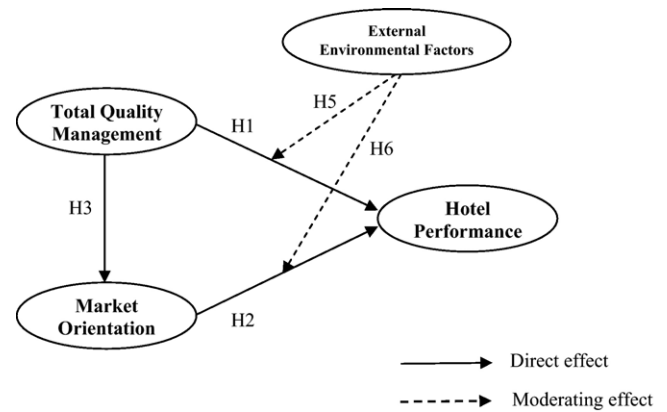


Fig. 1. Research model.

3. Methodology

3.1. Questionnaire development and pilot test

Fig. 1 depicts a path diagram for the research model, and is based on a literature review. The main method used in this study was a survey research. To do so, a questionnaire was designed. First, the authors met several times with the managing directors of three hotels to determine which questions should be included in the survey. This process obtained three main conclusions. First, the questions had to reflect features necessary for hotels and which respondents can feel. Second, the questions had to help hotels outperform their competitors in the changing marketplace. Third, the survey had to be concise. Based on the above conclusions, all the focal constructs of the model were measured using multiple items based on validated scales derived from Grandzol and Gershon (1998), Huber (1991), Jaworski and Kohli (1993), Kohli et al. (1993), Moorman and Rust (1999), and Narver and Slater (1990). Table 1 lists the constructs, definitions and sources of scales.

The questionnaire was first developed in English, but as the survey was conducted in Chinese, hotel management directors and academics helped with the translation. The wording and interpretation of items, and the extent to which respondents felt they possessed the knowledge required to respond appropriately were considered until a final draft of the questionnaire was obtained. Following the development of the draft questionnaire, used respondent anonymity, meaning anonymity of the measurement items and pilot-tested by 60 hotels' managing directors to correct possible defects and doubts. The result of the pilot-test was that all variables had reliability exceeding the standard value 0.7 suggested by Hair et al. (1998). Items that did not significantly contribute to the reliability were eliminated, as were those with lower reliability. Finally, total quality management has seven sub-dimensions with 28 items, market orientation has four sub-dimensions with nine items, external environmental factors have three sub-dimensions with 12 items, and hotel performance has two sub-dimensions with eight items. The questionnaire included 57 items that are retained for the main study (shown in Appendix A). Items were measured on a seven-point Likert-type scale ranging from strongly disagree to strongly agree.

3.2. Sample and data collection

The Tourism Bureau, M.O.T.C. of the Republic of China are responsible for administering domestic and international tourism policy making, execution and development in the R.O.C. The sample frame used in this study is derived from Tourism Bureau statistics for December 30th 2009 statistics and includes 2613 hotels. The

Table 1
Construct measurement.

Construct	Construct definition	Construct sources
Total quality management	The hotel adopts customer focus, internal/external cooperation, continuous improvement, leadership, employee fulfillment, learning and process management.	Grandzol and Gershon (1998)
Market orientation	A series of market information handle including information generation and dissemination, shared interpretation, organization responsiveness.	Kohli et al. (1993) and Huber (1991)
External environmental factors	The hotel lies in market turbulence, technological turbulence and competitive intensity.	Jaworski and Kohli (1993)
Hotel performance	Finance performance and customer performance of the hotel.	Moorman and Rust (1999) and Narver and Slater (1990)

questionnaire was mailed to managing directors because they are widely believed to provide the best information regarding the business of hotels. A personalized cover letter and a pre-paid envelope accompanying each questionnaire explained the study purpose and assured confidentiality of the responses. Furthermore, to encourage high participation, respondents were offered an executive summary of the study findings on completion of the study. The effective sample size was 588, and the overall response rate was 22.4% (588/2613). The sample size of 588 was adequate for models with four constructs recommendations of Hair et al. (2006).

As in any type of survey research, non-response bias shall be test. This study adopted the approach used by Armstrong and Overton (1977) of testing for non-response bias in mail surveys and assuming non-respondents to be late respondents. The dataset was divided into two parts according to the number of days from initial mailing until receipt of the returned questionnaire. Early respondents were compared with late respondents in terms of the questionnaire items contained in each of the scales, and the *t*-test procedure indicated no significant differences between the early and late respondent group variances, showing non-response bias is not a problem and does not influence the study findings. Additionally, all measurement items are filled out a single respondent easily have Common Method Variance (CMV) problem (Podsakoff and Organ, 1986), which is one of the main sources of measurement error. Measurement error threatens the validity of the conclusions regarding the relationships between measures (Bagozzi and Yi, 1991; Nunnally, 1978; Spector, 1987). This study used the Harman's single-factor test to CMV (Andersson and Bateman, 1997; Aulakh and Gencturk, 2000). All factors were extracted, with the first factor explaining 0.09832 of the total variance. It is lower than 0.50 (Peng et al., 2006). Clearly the observed relationships among constructs are largely unexplained by the systematic variance associated with the measurement technique.

4. Results and analyses

4.1. Reliability and validity analyses

Two-step structural equation modeling was used for model testing. Maximum likelihood was used for all parameter estimation with Amos 16. First confirmatory factor analysis (CFA) is conducted to evaluate the model used to measure the modeled constructs. CFA enables testing of the reliability, convergent validity and discriminate validity of the measurement model. The reliability and internal validity of the measurement model is examined by calculating the composite reliability (CR) and average variance extracted (AVE). Table 2 shows that all the constructs have acceptable composite reliability coefficients, since they exceed 0.6 (Bagozzi and Yi, 1988; Hair et al., 1998). The AVE of each measure accounts for more than 50% of the variance, as suggested by Bagozzi and Yi (1988), and indicates that the variance captured by the construct exceeds that due to the measurement error (Fornell and Larcker, 1981). Therefore, the measurement model has adequate internal validity.

Convergent validity measures the correlation between two observed variables used to measure the same construct and is expected when the estimated pattern coefficient on the underlying construct factor of the estimated pattern of each coefficient is significant. Items have factor loadings exceeding 0.45 (Jöreskog and Sörbom, 1996). Table 2 lists the convergent validity result of each latent variable. The standardized factor loadings of each sub-dimension all exceed 0.45 and are significant. Convergent validity thus was achieved for all the study constructs. Discriminate validity was assessed using the approach suggested by Fornell and Larcker (1981). Examining the AVE for each of the latent constructs and comparing this with the squared correlations among the constructs revealed that the shared variance among any two constructs (that is, the square of their inter-correlation) was always less than the average variance explained by the construct, suggesting discriminate validity. Table 3 lists the result of discriminate validity. This study concludes that all measures exhibit construct validity. Based on all of the reliability and validity analysis, the construct scale appears to exhibit satisfactory measurement qualities and is adequate.

4.2. Structural model and hypotheses testing

The simultaneous maximum-likelihood-estimation procedures are used to examine the hypothesized relationships among total quality management, market orientation and hotel performance. Fig. 2 shows that the structural model exhibits a good fit with the data, with fit indices of Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), and Comparative Fit Index (CFI) fulfilling the respective benchmarks (Bagozzi and Yi, 1988; Hair et al., 1998).

Fig. 2 also shows the path coefficients for the model and their significance. Regarding the hypothesis tests, all of the hypothesized relationships are supported for the estimated structural model. Total quality management significantly and positively affects both hotel performance ($\gamma_{TQM-HP} = 0.446$, *t*-value = 8.581) and market orientation ($\gamma_{TQM-MO} = 0.388$, *t*-value = 7.343). Furthermore, market orientation also significantly and positively affects hotel performance ($\gamma_{TQM-MO} = 0.269$, *t*-value = 4.906). Hence, H1, H2 and H3 are supported.

For the actual mediation analyses, the indirect effects are estimated using the methods of both Sobel (1982) and Shrout and Bolger (2002). The former provided an approximate significance test for the indirect effect of the independent variable on the dependent variable via the mediator. Fig. 3 shows the testing formula. As $|z| > 2$, the indirect effect of which is significant. The latter is calculated using 95% confidence interval for indirect effect. If the 95% confidence interval does not include zero, then the indirect effect is not zero. The variable thus exerts a mediating effect. The testing formula is $(ab - 1.96 \times se(ab), ab + 1.96 \times se(ab))$. The analytical results show that $z = 3.88 > 2$, $0 \notin (0.052, 0.157)$. These results reveal that market orientation mediates the influence of TQM on hotel performance. Hypothesis 4 thus is supported.

Table 2
Construct reliability and convergent validity coefficients.

Construct	Number of items	SFL ^a (min–max)	t-Value ^a (min–max)	α^a	CR ^a	AVE ^a
Total quality management (2nd order CFA)	7	0.65–0.77	13.1–13.86	0.96	0.90	0.50
Customer focus (TQM1)	3	0.92–0.93	22.01–22.37	0.95	0.95	0.85
Internal/external cooperation (TQM2)	5	0.90–0.91	22.84–23.30	0.96	0.96	0.82
Continuous improvement (TQM3)	3	0.92–0.93	24.21–24.32	0.95	0.95	0.85
Leadership (TQM4)	4	0.91–0.92	24.56–24.97	0.96	0.96	0.84
Employee fulfillment (TQM5)	3	0.90–0.93	23.68–24.71	0.94	0.94	0.84
Learning (TQM6)	4	0.91–0.93	25.48–25.96	0.96	0.96	0.85
Process management (TQM7)	6	0.91–0.93	24.97–25.77	0.97	0.97	0.85
Market orientation (2nd order CFA)	4	0.65–0.75	10.98–11.54	0.90	0.80	0.50
Information generation (MO1)	2	0.88–0.96	17.67–18.57	0.92	0.92	0.85
Information dissemination (MO2)	2	0.92–0.94	18.95–19.22	0.93	0.93	0.86
Shared interpretation (MO3)	2	0.92–0.93	21.38–21.52	0.92	0.92	0.86
Organization responsiveness (MO4)	3	0.91–0.93	21.07–21.58	0.94	0.94	0.84
External environmental factors (2nd order CFA)	3	0.60–0.79	8.78–10.76	0.94	0.76	0.52
Market turbulence (EEF1)	4	0.93–0.94	14.00–14.11	0.96	0.96	0.86
Competitive intensity (EEF2)	5	0.92–0.93	16.34–16.52	0.97	0.97	0.86
Technological turbulence (EEF3)	3	0.92–0.94	23.94–24.56	0.95	0.95	0.86
Hotel performance (2nd order CFA)	2	0.82	Fixed	0.95	0.80	0.67
Customer performance (HP1)	4	0.92–0.93	25.00–25.24	0.96	0.96	0.86
Finance performance (HP2)	4	0.92–0.94	24.87–25.45	0.96	0.96	0.86

^a SFL, standardized factor loading; α , Cronbach's α coefficient; CR, composite reliability; AVE, average variance extracted.

4.3. Moderating influence of external environmental factors

4.3.1. Grouping

To test the moderating role of external environmental factors, respondents were divided into high and low groups based on their responses to external environmental factors. K-means cluster analysis was used for grouping because it allows the user to specify the number of clusters; this analysis is useful for large samples (200 or more cases) (Hair et al., 1998). The number of cases using the responses for the score of external environmental factors was split sequentially into two groups. Specifically, the cases were divided into high (243 cases) and low preference groups (345 cases). Furthermore, Press Q, *t*-test and hit ratio were used to test the effectiveness of the grouping, and see whether the means differed significantly between the two sample groups. In this case, grouping by score is effective under the K-means method, and Press Q of 588 significantly exceeds 6.63 (χ^2 as $df = 1$ and $p < 0.01$). Hit ratio is 98.80%. On the other hand, the *t*-test reached significance given significance of 0.00 and *t*-value of 69.536. The analytical results reveal good K-means grouping. The High-score groups and low-score groups of external environmental factors differ significantly when the respondents are split into sub-samples.

4.3.2. Invariance test of the path for hypothesized moderation

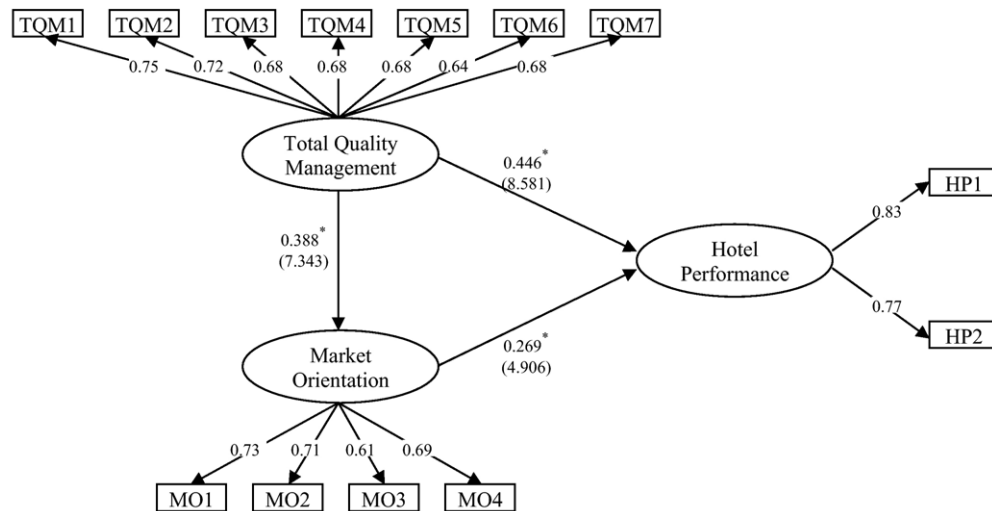
As a next step, the invariance of specific paths was tested. The particular parameters of paths of interest (total quality management $\rightarrow$ hotel performance and market orientation $\rightarrow$ hotel performance) in the nested models were constrained to equality across groups, and all paths in the baseline models can be freely estimated. Tests for chi-square differences between the baseline and the constrained models were performed to ensure path coefficient equality (Yoo, 2002). Table 4 lists the results of the invariance test for the specific path. As expected, significant chi-square differences were found across groups for Model 2 ($\Delta\chi^2 = 4.215$, $\Delta df = 1$, $p < 0.05$) and Model 3 ($\Delta\chi^2 = 7.250$, $\Delta df = 1$, $p < 0.05$), indicating that external environmental factors significantly moderate the path of total quality management $\rightarrow$ hotel performance and market orientation $\rightarrow$ hotel performance. This result supported Hypothesis 5 and 6.

As Table 5 shows the path coefficient values of the high-external environmental factor group (total quality management $\rightarrow$ hotel performance: $\gamma_{TQM-HP}^{high} = 0.383$, $p < 0.05$; market orientation $\rightarrow$ hotel performance: $\gamma_{MO-HP}^{high} = 0.231$, $p < 0.05$) were lower than those of the low-external environmental factor group (total quality management $\rightarrow$ hotel performance: $\gamma_{TQM-HP}^{low} = 0.523$,

Table 3
Discriminate validity coefficients.^a

	TQM1	TQM2	TQM3	TQM4	TQM5	TQM6	TQM7	MO1	MO2	MO3	MO4	EEF1	EEF2	EEF3	HP1	HP2
TQM1	0.92															
TQM2	0.49	0.91														
TQM3	0.47	0.57	0.92													
TQM4	0.50	0.50	0.45	0.92												
TQM5	0.47	0.58	0.51	0.47	0.92											
TQM6	0.54	0.42	0.39	0.46	0.39	0.92										
TQM7	0.59	0.42	0.45	0.46	0.39	0.47	0.92									
MO1	0.30	0.20	0.20	0.25	0.21	0.19	0.21	0.92								
MO2	0.21	0.22	0.18	0.17	0.21	0.15	0.20	0.49	0.93							
MO3	0.11	0.11	0.09	0.20	0.10	0.11	0.16	0.48	0.43	0.93						
MO4	0.20	0.19	0.18	0.20	0.14	0.15	0.15	0.48	0.51	0.41	0.92					
EEF1	0.02	−0.03	0.00	0.03	0.02	−0.01	0.01	0.00	−0.11	−0.05	−0.08	0.93				
EEF2	0.04	−0.06	0.01	0.01	0.02	0.06	0.03	−0.04	−0.11	−0.06	−0.15	0.57	0.93			
EEF3	0.03	0.00	0.03	0.02	0.05	−0.04	0.00	−0.03	−0.11	−0.16	−0.12	0.45	0.44	0.93		
HP1	0.33	0.31	0.29	0.30	0.32	0.27	0.33	0.31	0.30	0.19	0.26	0.06	0.06	0.03	0.93	
HP2	0.32	0.34	0.31	0.29	0.28	0.31	0.32	0.23	0.20	0.14	0.24	0.04	0.03	0.04	0.65	0.93

^a Diagonal elements (bold) are the square root of average variance extracted (AVE) between the constructs and their measures. Off-diagonal elements are correlations between constructs.



Note:

1. The figure within the parentheses () is t-value, * denotes $p < 0.001$.
2. $\chi^2 = 169.801$, $df = 62$, $\chi^2/df = 2.739$; GFI = 0.954, SRMR = 0.034, RMSEA = 0.054, AGFI = 0.933, NFI = 0.940, CFI = 0.961, RFI = 0.924, IFI = 0.961, NNFI = 0.950, PNFI = 0.747, PGFI = 0.650.

Fig. 2. Path diagram of the research model. Note: 1. The figure within the parentheses () is t-value, * denotes $p < 0.001$. 2. $\chi^2 = 169.801$, $df = 62$, $\chi^2/df = 2.739$; GFI = 0.954, SRMR = 0.034, RMSEA = 0.054, AGFI = 0.933, NFI = 0.940, CFI = 0.961, RFI = 0.924, IFI = 0.961, NNFI = 0.950, PNFI = 0.747, PGFI = 0.650.

$$z = \frac{a \times b}{se(ab)}$$

$$z = \frac{a \times b}{\sqrt{a^2 (se(b))^2 + b^2 (se(a))^2}}$$

Note:

1. The path from TQM to market orientation is denoted as a and its standard error is $se(a)$.
2. The path from market orientation to hotel performance is denoted as b and its standard error is $se(b)$.
3. $se(ab)$ is standard error of mediator.

Fig. 3. Sobel test formula. Note: 1. The path from TQM to market orientation is denoted as a and its standard error is $se(a)$. 2. The path from market orientation to hotel performance is denoted as b and its standard error is $se(b)$. 3. $se(ab)$ is standard error of mediator.

$p < 0.05$; market orientation $\rightarrow$ hotel performance: $\gamma_{MO-HP}^{low} = 0.280$, $p < 0.05$).

5. Discussion, conclusions and limitations

5.1. Discussion and conclusions

Based on literature review, this study proposes and hypothesizes H1–H6. The analytical results support all of the above hypotheses. However, empirical discussions of the test results and the conclusions state that:

(1) Total quality management or market orientation positively affects organizational performance (Demirbag et al., 2006a;

Feng et al., 2006; Kara et al., 2005; Li et al., 2008). This study shows that TQM or market orientation positively affects hotel performance. These analytical results are consistent with those obtained by Claver-Cortés et al. (2008), Langer (1997), and Sin et al. (2005) in hotel industry studies. These may be that hotels implementing TQM or market orientation, which strengthen service detail, teamwork, and reward systems, and help in modifying business operating patterns and responding to customer feedback, are more responsive to changes in internal and external customer needs (Youssef et al., 1996), thus reducing uncertainty in business management (Van Zyl and Mathur-Helm, 2007) and improving hotel performance.

(2) Literature review revealed a lack of academic research on the links between TQM and market orientation in the hotel

Table 4

Structural invariance.

	Models	Chi-square	DF	RMSEA	GFI	CFI	NFI
Model 1	Baseline models	244.748	124	0.041	0.909	0.956	0.916
Model 2	Constrained models: $\gamma_{TQM-HP}^{high} = \gamma_{TQM-HP}^{low}$	248.963 ^a	125	0.041	0.937	0.955	0.915
Model 3	Constrained models: $\gamma_{MO-HP}^{high} = \gamma_{MO-HP}^{low}$	251.998 ^b	125	0.042	0.936	0.954	0.914

^a Chi-square difference test: $\Delta\chi(1) = 4.215$, $p < .05$ (significant), thus full metric invariance is not supported.

^b Chi-square difference test: $\Delta\chi(1) = 7.250$, $p < .05$ (significant), thus full metric invariance is not supported.

Table 5
Structural parameter estimates for two-external environmental factors-group comparisons.

Paths	Standardized estimates	
	High-external environmental factors group	Low-external environmental factors group
TQM → HP	0.383*	0.523*
MO → HP	0.231*	0.280*

* $p < 0.05$.

industry. This study found that TQM is an antecedent of market orientation. Market orientation mediates the relationship between TQM and hotel performance. The results of market orientation thus differ from those of TQM and play an important mediating (Demirbag et al., 2006b) or moderating role (Day, 1994). This shows that TQM offers a holistic and systematic approach for developing a work environment to build an organization engaged in market orientation behavior, and creating a market orientation atmosphere and environment (Yam et al., 2005). Marketing helps in strategic planning (Piercy, 1998), in turn improving hotel performance. The analytical results also indicate that the value criterion hotels provide for customers also require close co-ordination between the marketing and quality departments (Lai, 2003), which helps promote customer satisfaction (Yam et al., 2005) and financial performance (Han et al., 2007).

- (3) This study finds that external environmental factors moderate the relationship between TQM or market orientation on hotel performance. The moderating effects of external environmental factors resemble those described by Atuahene-Gima (1995), Kirca et al. (2005), Qu and Ennew (2003), Rose and Shoham (2002), and Subramanian et al. (2009). Additionally, the moderating effects of low external environmental factors are stronger than those of high external environmental factors. This effect may result from low market and technological turbulence and competitive intensity, where customer preferences change little once the hotel focuses its attention and resources on improving or modifying product and process, forming closer customer relationships, and concentrating on acquiring and managing resources to keep pace with market demand (Walker et al., 2006). Since high external environmental conditions produce high uncertainty from competitors and customers, hotels increase their customer focus and carefully respond to competitor actions before making final decisions, especially when being more aggressive than competitors in improving the efficiency and the reliability of products or services, and in advanced technological process management. Responding to competitor actions may be more important than a strong customer focus. Clearly, TQM or market orientation practices create a breadth of resources and a flexible form to slow the influence of external environmental factors and absorb their complexity, enhancing hotel performance.

5.2. Theoretical and managerial implications

- (1) TQM positively affects hotel performance. TQM-adopting hotels achieve improvements in customer focus, internal/external cooperation, leadership, continuous improvement, process management, employee training, empowerment, and rewards. It also shows that hoteliers identify the areas of TQM in which they invest, and the areas requiring improvements. However, the degree of implementation of the basic elements of TQM influences business performance (Powell, 1995). In this study, elements of TQM such as customer focus (factor loading = 0.75) and internal/external cooperation (factor loading = 0.72) are

most important for hotel TQM practice. Hoteliers more effectively reinforce these elements in ways such as supplying customized products or services or highlighting the importance of interdepartmental or external (that is, customers or suppliers) connectedness via networks or through information or communication technology systems.

- (2) Market orientation enhances hotel performance. Hoteliers are aware that changes in consumer perception and competitor activities are important for hotels. Hoteliers must also continuously educate and train employees to detect and understand such changes. Furthermore, sharing customer and competitor information within the hotel fulfills customer needs and expectations with new solutions.
- (3) TQM identifiably affects market orientation. Market orientation has a mediating effect on the relationship between TQM and hotel performance, showing that TQM offers a rich array of tools that organization can transform to achieve a market orientation (Yam et al., 2005). Market orientation can be a catalyst to help hotel design and offer a service mix that customers perceive as superior quality, in turn enhancing hotel performance. Hotels request close co-ordination between their marketing and quality departments, and do not only use TQM strategies, but also strengthen marketing strategies to meet and satisfy customer needs in hotel management systems.
- (4) The external environment is constantly changing. Adopting TQM and market orientation as a business strategy is critical, especially as external environmental factors challenge the ability of hotels to understand competitor activities, strive to improve products, services and processes, improve responses to competitor actions and track the most profitable customers using new technologies such as email, websites or online communities to grasp initiative living chance. Consequently, hoteliers adopt TQM and market orientation as a “save for rainy days” method, or as a breadth of resource and more flexible forms to meet changing market needs.

5.3. Research limitations and recommends

- (1) The questionnaire in this study comprised 57 items that were completed by hotel managers. Methods were used to eliminate Common Method Variance, including respondent anonymity, meaning anonymity of the measurement items. This study suggests dividing the questionnaire into half items to be completed by marketing directors, general managers or by multiple participants separately to eliminate measurement errors.
- (2) Many hotels have successfully outsourced security, maintenance, laundry, and baking, thus reducing costs and improving operating results (Espino-Rodríguez and Padrón-Robaina, 2005). However, the question of how outsourcing hotels adopt TQM and market orientation between hotels and vendors remains unclear. Future studies can further investigate this area and thus help further enrich the theory on this area.
- (3) This study was based on cross-sectional data. Does TQM or market orientation positively affect long term hotel performance? A major gap exists in the related literature on longitudinal studies. This study suggests that subsequent researchers perform longitudinal studies based on long-term observations or interviews regarding actual implementation in hotels to provide further insights regarding probable causations.

Appendix A.

Questionnaire items

[1] Total quality management**Customer focus**

1. Our activities are centered on satisfying our customers.
2. Satisfying our customers, and meeting their expectations, is the most important thing we do.
3. Senior executives behave in ways that lessen the importance of customers.

Internal/external cooperation

1. Managers emphasize activities that lead to a lack of cooperation between our hotel and our suppliers.
2. Managers, supervisors, and employees from different departments work independently to achieve their own department's goals.
3. In the hotel, teamwork is commonplace—the expected way of doing business.
4. Employees are hesitant to voice their opinions, make suggestions, or inquire about any of the activities of the hotel.
5. In the hotel, everyone participates in improving our products, services, and processes.

Continuous improvement

1. Employees usually do not get an opportunity to suggest changes or modifications to existing processes.
2. The hotel encourages continual study and improvement of all its products, services and processes.
3. The hotel has received recent compliments and recognition for improving its products/services/processes.

Leadership

1. Senior executives share similar beliefs about the future direction of this organization.
2. Activities and investments that have long-term benefits receive little support from management.
3. Managers and supervisors rarely allow employees to take necessary action on their own.
4. Senior executives anticipate change and make plans to accommodate it.

Employee fulfillment

1. My work duties and responsibilities contribute little to satisfying my need to create quality products/services.
2. I like my job because I'm doing what I want to do.
3. Employees in the hotel are dedicated to their jobs.

Learning

1. Managers and supervisors ensure that all employees receive training that helps them understand how and why the hotel does what it does.
2. Managers and supervisors participate in specialized training on how to conduct business, whether dealing with employees or external customers.
3. Many employees in the hotel do not possess sufficient knowledge about the basics of our industry.
4. Few employees in the hotel understand the basic processes used to create our products/services.

Process management

1. Preventing defective products/services from occurring is a strong attitude in the hotel.
2. The processes used in the hotel do not include in-process measures of quality.
3. The processes for designing new products/service in the hotel ensure quality.
4. Explaining the variation in processes is rarely used as an analysis technique in the hotel.
5. Senior executives look at the total costs of products and service, including indirect and overhead costs.
6. Managers and supervisors understand how to motivate employees and encourage them to perform at their highest levels.

[2] Market orientation**Information generation**

1. We are fast to detect changes in our customers' product preferences.
2. We are fast to detect fundamental shifts in our industry (e.g., competition, technology).

Information dissemination

1. When something important happens to major customers, the whole hotel knows about it shortly.
2. When one unit finds out something important about competitors, it is fast to alert other units.

Shared interpretation

1. We develop a shared understanding in our hotel of the available market information.
2. We develop a shared understanding in our hotel of the implications of a marketing activity.

Organization responsiveness

1. It takes us a short time to decide how to respond to our competitor's price changes.
2. We are fast to respond to changes in our customer's product or service needs.
3. If a major competitor launched a campaign to our customers, we implement a response immediately.

[3] External environmental factors**Market turbulence**

1. In our kind of business, customers' product preferences change quite a bit over time.
2. Our customers tend to look for new product all the time.
3. New customers tend to have product-related needs that are different from those of our existing customers.
4. We cater to many of the same customers that we used to in the past.

Competitive intensity

1. Competition in our industry is cutthroat.
2. There are many "promotion wars" in our industry.
3. Anything that one competition can offer, others can match readily.
4. One hears of a new competitive move almost every day.
5. Our competitors are relatively weak.

Technological turbulence

1. Technological changes provide big opportunities in our industry.
2. A large number of new product ideas have been made possible through technological breakthroughs in our industry.
3. Technological developments in our industry are rather minor.

[4] Hotel performance**Customer performance**

1. Customer is loyal.
2. Customer is satisfied.
3. Our products/service bring for customer lifetime value.
4. Customer is willing to retain.

Finance performance

1. Our market share is growth.
2. Our sales are growth.
3. Our selling cost is reducing.
4. Our ROI is growth.

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