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Assessment of Service Quality in the Hotel Industry

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The purpose of this study was to enhance an understanding of service quality in the hotel industry by developing a conceptual framework and measurement scale. Based on an extensive literature review, qualitative and empirical research, a multidimensional and hierarchical model of service quality for the hotel industry is proposed. Analysis of data from a total of 622 customers revealed that the proposed model fit the data well. Reliability and validity of the measurement scale were established through a pilot test and the substantive survey. This study extends the literature on service quality in the fields of hospitality and tourism management by providing a comprehensive framework and measurement scale. Theoretical and managerial implications are discussed.

KEYWORDS multi-dimensional and hierarchical model, hotel industry, scale development, service quality

INTRODUCTION

Since the early 1980s, numerous studies have demonstrated that enhanced service quality has positively influenced customer decision-making (Gummesson, 1991; Parasuraman, Zeithaml, & Berry, 1985, 1990). More specifically, the provision of high-quality services to consumers promotes

customer loyalty and satisfaction, which, in turn, enhances the profitability of the service provider (Anderson & Sullivan, 1993; Dagger, Sweeney, & Johnson, 2007; Fornell, 1992). In the hotel industry, service quality received much attention from both researchers and practitioners because of its positive impact on financial performance, customer satisfaction, and retention (Akbaba, 2006; Ghobadian, Speller, & Jones, 1994; Gržinić, 2007; Martinez Caro & Roemer, 2006; Tam, 2000). Ultimately, quality enhancement is a key determinant for the success of an organization in today's competitive market environment (Anderson, Fornell, & Lehmann, 1994). Therefore, marketers in the service industry should pay close attention to the issue of service quality (Zeithaml, Berry, & Parasuraman, 1996).

The tourism industry and hotel business are not exempt from service quality concerns (Brown, Bowen, & Swartz, 1992; Tsaur & Lin, 2004). In the highly competitive hotel industry, it is very important to differentiate one hotel's services from those of its competitors. To achieve this, managers should understand and satisfy customers' needs and wants by offering high-quality services (Nadiri & Hussain, 2005). These efforts would improve market share and overall profitability (Anderson et al., 1994; Oh & Parks, 1997). As service quality is becoming an important part of business practice in the tourism and hotel industries, it is imperative to define clearly the quality of hotel services and develop a psychometrically sound measurement tool (Mei, Dean, & White, 1999; Nadiri & Hussain, 2005).

In response to the call for more systematic service quality research, Sargeant and Mohamad (1999) and Tsang and Qu (2000) proposed a number of conceptual models in the context of the hotel and tourism industry. However, the psychometrically sound measures of service quality mentioned in the literature remain scarce (Min & Min, 1997). Currently, hotel organizations have difficulties in adequately assessing and improving their service performance from a customers' perspective due to the lack of a psychometrically sound conceptual model and related measurement scale.

Against this background, the purposes of this study are twofold: (a) to propose a conceptual model of service quality in the hotel industry, and (b) to test the psychometric properties of the proposed model by developing a scale for measuring service quality in the hotel service industry. The present study may fill the conceptual void existing in the hotel and tourism industry by offering a comprehensive and industry-specific model of service quality. The accompanying measurement instrument represents a valid and reliable tool for assessing service quality in the hotel industry. The study thus aids future research by providing a foundation for further investigation regarding perceived service quality and a practical assessment tool for evaluating hotel service quality.

The contribution of this study is twofold. First, we conceptualize and measure hotel service quality by using a multi-dimensional and hierarchical approach. This approach helps to overcome some of the

weaknesses of traditional SERVQUAL, SERVPERF, LODGQUAL, LODGSERV, and HISTOQUAL models as the measurement of hotel service quality and thus provides a more accurate tool for assessing service quality in the hotel industry. In addition, we identify the key manifestation of service quality from the customer's point of view. Secondly, we offer some practical implications for using this type of model for measuring perceived service quality in applied research.

THEORETICAL BACKGROUND AND A CONCEPTUAL MODEL

Measurement of Service Quality

Bitner and Hubbert (1994) defined service quality as "the customer's overall impression of the relative inferiority and superiority of the organization and its services" (p. 77). This concept has been considered as the sum of activities that make up a consumers' perception about a service performance (Rossiter, 2002). From a customer's point of view, service quality is a highly subjective and relativistic phenomenon (Holbrook & Corfman, 1985).

Given the complexity of this phenomenon, it is a challenge to assess service quality with a completely objective measurement or scale. Karatepe, Yavas, and Babakus, (2005) indicated that service quality cannot be objectively measured due to its abstraction and elusiveness. Thus, organizations often rely on customers' perceived service quality to identify their strengths and weaknesses, and prescribe appropriate corrective strategies.

In the early stage of growth in service marketing and management, researchers believed that customers' service quality perceptions should be measured based on a comparison between expected and perceived performance, and therefore be the ultimate outcome of a comparative evaluation process (Grönroos, 1984). For example, SERVQUAL has been widely adopted by both scholars and practitioners across many industries in several different countries. The SERVQUAL instrument was originally designed to assess the difference between quality expectations and perceived service by focusing on five dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Curry & Sinclair, 2002). Later, a large number of hotel studies applied the five-dimension SERVQUAL instrument to assess service quality (Akbaba, 2006; Armstrong et al., 1997; Blešić, Tešanović, & Psodorov, 2011; Gabbie & O'Neill, 1997; Gržinić, 2007; Juwaheer, 2004; Markovic & Raspor, 2010; Mey, Akbar, & Fie, 2006; Ramsaran-Fowdar, 2007; Renganathan, 2011; Saleh & Ryan, 1991).

Based on a literature review, there has been much debate over hotel service quality when the construct is measured using SERVQUAL. Even though SERVQUAL may help to identify important aspects of perceived service quality, SERVQUAL alone may not adequately assess service performance (Buttle, 1996; Min & Min, 1997). Several marketing researchers (e.g., Buttle, 1996;

Carman, 1990) have criticized Parasuraman and colleagues' (1985, 1988) gap analysis in measuring customer's service quality perceptions and expectations. Consequently, SERVQUAL should not be used to accurately measure hotel service quality (Saleh & Ryan, 1991).

An alternative approach, a performance-based model of service quality (SERVPERF), was developed by Cronin and Taylor (1992). SERVPERF measures service quality based only on customer perceptions of the performance of a service provider (Cronin & Taylor, 1994). Theoretically, SERVPERF is superior to SERVQUAL (Asubonteng, McCleary, & Swan, 1996; Brochado & Marques, 2007; Cronin & Taylor, 1992, 1994; McAlexander, Kaldenberg, & Koenig, 1994). Cronin and Taylor (1994) argued that the SERVPERF measure should explain more of the variance in an overall measure of service quality than the SERVQUAL instrument. However, Nadiri and Hussain (2005) failed to confirm the five dimensions (reliability, tangibles, responsiveness, assurance and empathy) of the SERVPERF instrument in the hotel industry. Based on the evaluation of the validity and reliability of SERVPERF, Robledo (2001) indicated that SERVPERF was not an effective measurement scale.

Several researchers have extended service quality research to the hotel and tourism industry (Frochot & Hughes, 2000; Getty & Thompson, 1994; Knutson et al., 1991; Mei et al., 1999). For example, Getty and Thompson (1994) developed LODGQUAL based on SERVQUAL dimensions. In addition to the original dimensions of SERVQUAL, the LODGQUAL instrument incorporated the dimensions of tangibles, contact and reliability, which include attributes associated with response capacity, safety and empathy. Similarly, Mei et al. (1999) developed HOLSERV which includes three dimensions: employees, tangibles and reliability. This instrument is more parsimonious and user-friendly than SERVQUAL. They found that "employees" best represent service quality. Frochot and Hughes (2000) developed HISTOQUAL to evaluate customer perceptions of service quality in historical houses. HISTOQUAL includes 24 items which represent five dimensions: responsiveness, tangibles, communications, consumables and empathy (Frochot, 2004). However, they found that tangibles and communications have been considered as the most important aspects of historic house service provision.

Several studies identified that the existing measurement scales (e.g., SERVQUAL, SERVPERF, LODGQUAL, LODGSERV, and HISTOQUAL) are insufficient to capture the assessment of service quality in the hotel and tourism industry (Albacete-Sáez, Fuentes-Fuentes, & Lloréns-Montes., 2007; Buttle, 1996; Ekinci, 1999; Frochot & Hughes, 2000; Mei et al., 1999; Nadiri & Hussain, 2005; Wilkins, 2005). Furthermore, these scales only considered only process quality attributes, rather than service outcome (Baker & Lamb, 1993; Richard & Allaway, 1993; Wilkins, 2005). It is therefore important to re-examine the dimensions of service quality within the hotel segment. Recently, several researchers suggested that service quality is multi-dimensional in nature (Brady & Cronin, 2001; Clemes, Gan, & Kao,

2007, Clemes et al., 2009; Dabholkar, Thorpe, & Rentz, 1996; Ko & Pastore, 2005; Tsitskari, Tsiotras, & Tsiotras, 2006). Accordingly, in light of the gaps associated with the aforementioned scales, the purpose of this study was to present and empirically test a multi-dimensional and hierarchical model that incorporates the specific characteristics of the hotel industry.

Proposed Factor Structure for Hotel Service

Combining the current researchers' findings from qualitative research (i.e., focus group interviews) and an extensive literature review on hotel service, the multi-dimensional and hierarchical model of hotel service quality was developed, and specific dimensions are summarised in Figure 1. Service quality is the global dimension consisting of three primary dimensions: interaction quality, environmental quality and outcome quality. The three primary dimensions are consistent with prior studies (Brady & Cronin, 2001; Rust & Oliver, 1994), each primary dimension has its own sub-dimensions. Following the work of Brady and Cronin (2001), the sub-dimensions for interaction quality are conduct, expertise and problem-solving; atmosphere, room quality, facility, design and location for environmental quality; and sociability, valence and waiting time for outcome quality. The dimensions and sub-dimensions are explained in detail in the text that follows.

Interaction quality mainly focuses on the way the service is delivered (Brady & Cronin, 2001; Czepiel, Solomon, & Suprenant, 1985; Grönroos, 1984). Several studies have indicated the importance of the interaction quality dimension in the delivery of services and have identified this dimension as the one that has the most significant effect on service quality perceptions (Bigné et al., 1996; Grönroos, 1982; LeBlanc, 1992). Several researchers reported that the human variable is very important because services are inherently intangible and characterized by inseparability (Lovelock, 1981, 1983; Shostack, 1977; Parasuraman et al., 1985). Most services of an organization cannot be counted, measured, examined, confirmed and inventoried in advance of sale to ensure quality (Parasuraman et al., 1985). Several sub-dimensions in the proposed model help to define interaction quality: (a) conduct (Clemes, Ozanne, & Laurensen, 2001, 2009; Ko & Pastore, 2005; Martinez Caro & Martinez Garcia, 2007), (b) expertise (Brady & Cronin, 2001; Dagger et al., 2007), and (c) problem-solving (Dabholkar et al., 1996; Martinez Caro & Martinez Garcia, 2007, 2008). The first sub-dimension, conduct, includes the meanings of attitude and behavior. Attitude is referred to as a customer's feeling of the favorableness or unfavorableness through their behavioral performance (Lam, Cho, & Qu, 2007). Alternatively, Czepiel and coworkers (1985) referred to attitude as an employee's traits (e.g., friendliness, warmth, politeness, conduct, concern, openness, helpfulness, etc.). Williams (2005) indicated that certain employee attitudes toward aspects of their job and working environment have been known to be predictive of
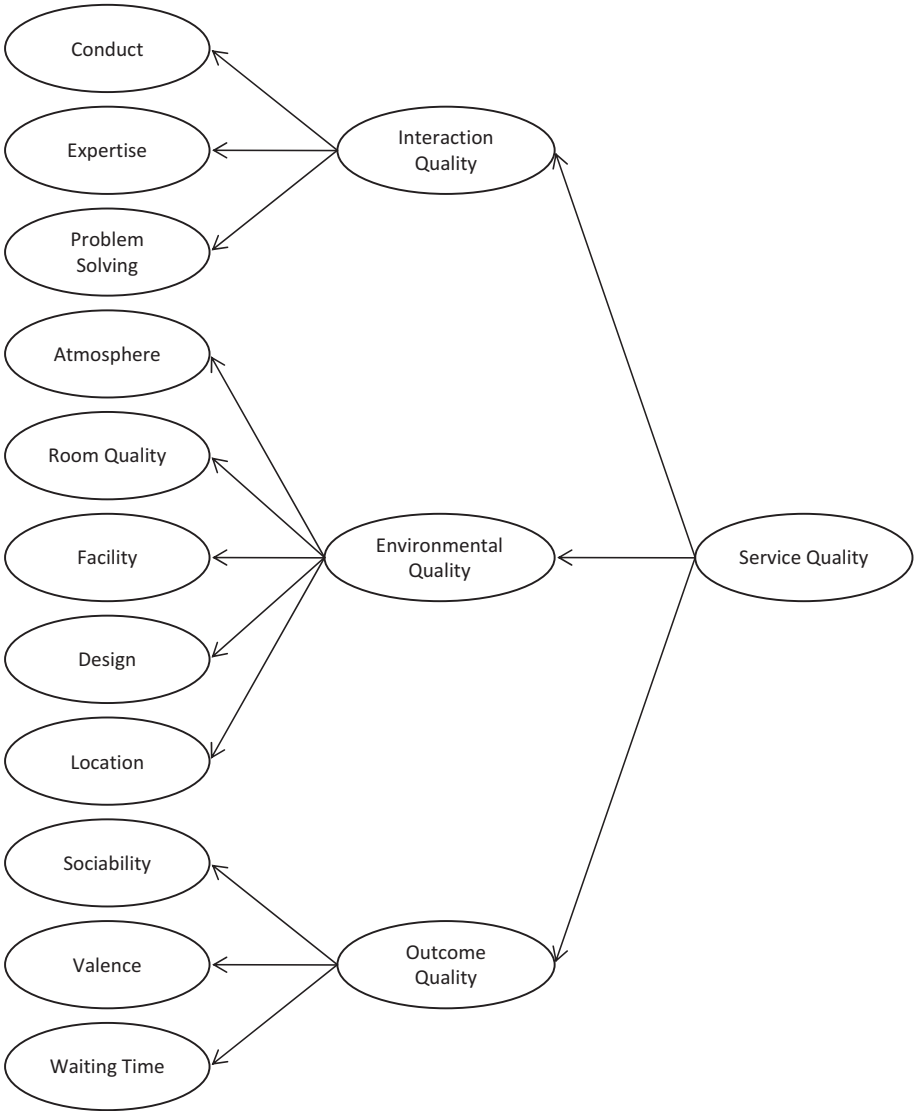
FIGURE 1 A Proposed Multi-dimensional and Hierarchical Model of Service Quality.

future behavior. In contrast, behavior is referred to as the manifest function that influences customer perceptions of interaction quality (Czepiel et al., 1985). Chelladurai and Chang (2000) indicated their support for the importance of service employees' behavior (e.g., service failure and recovery). To develop a clear understanding of customer perceptions of service providers' behavior can assist hotel managers in designing suitable policies and procedures for their customers and employees (Wong & Keung, 2000). However, this sub-dimension has been viewed as "separability" from

the "personal interaction" dimension because "service recovery is identified as a critical part of good service" (Dabholkar et al., 1996, p. 7). The second sub-dimension, expertise, has been identified as the degree to which the interaction was affected by the employee's task-oriented skills (Czepiel et al., 1985). Crosby, Evans, and Cowles (1990) found that expertise had a significant influence on customers' assessments of service quality. The third sub-dimension, problem-solving, is a dimension identified by Dabholkar and colleagues (1996). Kim and Jin (2002) applied the problem-solving sub-dimension to measure a store's employee-ability to handle complains and returns, and other customers' problems.

Second, environmental quality has specifically examined its influences on customer behavior since the early 1970s (Kotler, 1973). Elliott, Hall, and Stiles (1992) referred to environmental quality as the physical features of the service production process. Rys, Fredericks, and Luery (1987) found that customers infer environmental quality based on their perceptions of physical facilities. A large number of researchers have showed that environmental quality is one of the most important aspects in customer evaluations of service quality (Howat et al. 1996; McDougall & Levesque, 1994; Rust & Oliver, 1994; Wakefield, Blodgett, & Sloan, 1996). Environmental quality is defined by five specific attributes or sub-dimensions: (a) atmosphere (Dagger et al., 2007; Kim & Moon, 2009), (b) room quality (Choi & Chu, 2001; Chu & Choi, 2000), (c) facility (Li, 2003; Wu, Lin & Hsu, 2011), (d) design (Bonn & Joseph-Mathews, 2007; Ko & Pastore, 2005; Tripathi & Siddiqui, 2008), and (e) location (Chou, Hsu, & Chen, 2008; Chu & Choi, 2000; Urtasun & Gutiérrez, 2006). Atmosphere refers to the conscious design of space to create certain effects in customers that increase their purchase likelihood (Kotler, 1973). Since atmosphere is an intrinsically ambiguous concept, their perceptions of the role of atmosphere may be different (Heide, Laerdal, & Gronhaug, 2007). The second sub-dimension, room quality, has been considered as the most influential factor in determining western travelers' overall satisfaction with hotels (Mey et al., 2006). Therefore, hotel organizations should secure additional resources to improve the quality of their hotel rooms, including room set-up and temperature control, cleanliness, and quietness (Mey et al., 2006). The third sub-dimension, facility, includes the devices used to enhance the accommodation experience. This sub-dimension has been considered to be an important part of constituting the hotel environmental quality dimension (Akbaba, 2006; Clemes et al., 2009; Hilliard & Baloglu, 2008). The fourth sub-dimension, design, represents the layout or architecture of the service facility, including both aesthetic (visually pleasing) and functional (practical) components of the physical environment (Aubert-Gamet, 1997; Heide et al., 2007; Moye, 2000). Bitner (1992) and Veronique (1997) demonstrated that design has a greater potential to increase positive perceived service quality, as compared to other potential sub-dimensions. In Aubert-Gamet's (1997) hotel study, design was a visual stimulus that was far more apparent

to customers than was atmosphere. The last sub-dimension, location, refers to the provision of an overall distribution blueprint for a particular region (Coltman, 1989). Coltman (1989) proposed that transportation and traffic conditions are important factors when customers consider the location of their accommodation. In addition, Pan (2002) reported that base station suitability, application of certain regulations, traffic convenience, fine visual perception, public facilities and other services, and flexible space are all important factors when customers select their accommodations. According to Chou and colleagues (2008), the selection of a facility location has important strategic implications because a location decision will normally involve a long-term commitment of resources. A good hotel location cannot only help to increase market share and profitability, but can also enhance the convenience of customer lodging because establishing a good location will shorten the payoff period for fixed capital investments.

The third primary dimension of service quality, outcome quality, refers to what customers are left with after their service consumption (Fassnacht & Koese, 2006; Grönroos, 1984). Grönroos (1982, 1990) indicated that outcome quality is the result of the service transaction. Powpaka (1996) showed that outcome quality is associated with what customers actually receive from the service transaction or, conversely, what is delivered by the service provider. Outcome quality is defined by three specific sub-dimensions: (a) sociability (Bonn & Joseph-Mathews, 2007; Brady & Cronin, 2001), (b) valence (Martinez Caro & Martinez Garcia, 2007, 2008), and (c) waiting time (Brady & Cronin, 2001; Dagger et al., 2007). The first sub-dimension, sociability, represents the number and type of people evident in the service setting, as well as their behavior (Aubert-Gamet & Cova, 1999). Milne and McDonald (1999) referred to sociability as positive social experiences that result from the social gratification of being with others who also enjoy the same activity. Ko and Pastore (2005) indicated that the social experience focuses on the overall after-consumption outcome instead of the inter-client interaction that occurs during the service delivery. Clemes and colleagues (2009) identified that sociability has a small impact on service quality in the hotel industry. Therefore, family members, friends and others can be considered important social factors for hotel participants (Baldacchino, 1995). The second sub-dimension, valence, is defined as customers' post-consumption assessments of whether the service outcome is acceptable or unacceptable (Ko & Pastore, 2005). Regardless of customer evaluations of any other aspect of the experience, valence mainly focuses on the attributes dominating whether customers can or cannot accept the service outcome (Brady & Cronin, 2001). Alternatively, Ko and Pastore (2005) referred to valence as customers' post-consumption of intangible evidence that can be totaled and analyzed. Consequently, several researchers found that valence is a key determinant of a service outcome (Brady & Cronin, 2001; Ko & Pastore, 2005; Martinez Caro & Martinez Garcia, 2007). The last sub-dimension, waiting

time, refers to the amount of time that customers spend waiting in line for service (Hornik, 1982; Katz, Larson, & Larson, 1991). Customers have a certain level of expectation regarding an acceptable waiting time that contributes to satisfaction (Taylor, 1994). Therefore, reduced waiting time should be a primary goal for managers (Hwang & Lambert, 2008).

METHODOLOGY

Scale Development

In concert with the criticism of existing scales and conceptualization, several studies have suggested that those scales cannot capture customers' overall perceptions of hotel service quality as a unique and multi-item construct (Albacete-Sáez et al., 2007; Buttle, 1996; Ekinci, 1999; Frochot & Hughes, 2000; Mei et al., 1999; Nadiri & Hussain, 2005). Using a multi-dimensional model of service quality based on a hierarchical structure may overcome some of the weaknesses of the existing measures (Cronin & Taylor, 1992), and provide a more valid tool for assessing service quality in the hotel industry. Thus, the researchers adopted a multi-dimensional and hierarchical model to evaluate hotel service from a customer's perspective. Several studies indicated that a multi-dimensional model not only has theoretical support, but is also considered to be valid (Brady & Cronin 2001; Carman, 1990; Dabholkar et al., 1996; Liu, 2005; Martinez Caro & Martinez Garcia, 2007).

In developing a multi-dimensional and hierarchical scale, the first step in developing psychometrically sound measures is specifying the domain of the construct. According to Churchill (1979), the procedure of specifying the domain of the construct should be conducted through a literature search, generation of scale items and scale purification, data collection, assessment of reliability and validity, and norm development. Therefore, the researchers employed the multi-dimensional and hierarchical method because service quality has been viewed as a higher-order construct made up of three primary dimensions, and their own, unique sub-dimensions. The researchers obtained the measurement scales through the procedures as suggested by Churchill (1979).

Qualitative Research

Chumpitaz and Swaen (2002) indicated that the number and nature of service quality dimensions are in direct relation to the service under analysis. Therefore, to accomplish this, qualitative research was utilized to identify the factors determining customers' perceptions of hotel service quality.

Krueger (1998) reported that focus groups are frequently used to design a questionnaire for a quantitative survey. The qualitative research was

conducted to provide additional insights into the proposed dimensions. To obtain in-depth information, the researchers conducted three mini focus groups in this study. Each group was composed of six participants who had stayed in five-star hotels. Following Brady and Cronin (2001), the respondents were encouraged to list all factors that influenced their perceptions, according to their experience.

Using content analysis, the researchers processed the responses as follows. First, 11 sub-dimensions were identified by examining the responses, coding the sentences based on their frequency, and classifying similar sentences into the same dimension. Second, the researchers identified primary dimensions. Three independent and trained coders were selected to analyze the qualitative data as suggested by several researchers (Brady & Cronin 2001; Martinez Caro & Martinez Garcia, 2007). Then, the sub-dimensions were categorized into the three primary dimensions according to their meanings. Finally, three primary dimensions and 11 sub-dimensions were identified in the hierarchical model. Similar to Dabholkar and colleagues (1996) and Brady and Cronin (2001), the researchers eliminated price from the list of investigated factors, as price was generally seen as a determinant of service value as recommended by Chang and Wildt (1994) and Zeithaml and colleagues (1988) rather than service quality.

Generation of Scale Items and Initial Scale Purification

The items were developed by adopting items from existing scales (e.g., Brady & Cronin, 2001; Dabholkar et al., 1996; Ko & Pastore, 2005; Parasuraman et al., 1988). For example, one item entitled 'it is aesthetically attractive' appears in the 'Design' dimension of Ko and Pastore's (2005) scale, was adopted. On the basis of the literature review, the researchers generated an initial pool of 63 items using performance-only measurement scales. These items were indicators of each theoretical sub-dimension. A 7-point Likert-type scale was adopted, ranging from strongly disagree (1) to strongly agree (7). The purification of the scale was conducted in two steps. The first step consisted of an assessment of content and face validity through a panel of experts and a field test (Ko & Pastore, 2005). The panel consisted of six executive members of the Taiwan Resort Hotel Association and five academicians from departments of tourism and hospitality management. They assessed the items on the basis of their relevance and clarity of wording. Items that were endorsed by six experts were retained, whereas items that were deemed to be unclear, irrelevant, or redundant were eliminated. As a result of this panel, 11 items were dropped. In the second step, the researchers developed a questionnaire by using the 52 remaining items. This questionnaire was pilot-tested with 70 respondents who stayed in five-star hotels in Taiwan. The respondents were asked to examine the items for relevance and clarity. The aim of doing such was to study the correlation structure of the items of each

sub-dimension. According to Parasuraman and colleagues (1988), the purification of the instrument begins with the computation of Cronbach's alpha coefficients, item-to-total correlations and exploratory factor analysis for the 11 sub-dimensions. After that, the researchers examined the dimensionality of the scale in order to prove the factor patterns that emerged were independent of one another. Based on the results of the pilot-test, eight additional items were dropped or reworded. Following these scale-purification procedures, the final version of the instrument had a total of 44 items representing 11 sub-dimensions of hotel service quality (with each sub-dimension having 3–6 items; see Table 1).

Data Collection

According to Vine (1981), a five-star hotel is synonymous with luxury and any "starred" establishment is generally highly regarded by hotel customers. In addition, several studies have shown that hotels categorized as "five-star" provided excellent and extensive facilities, a high quality of service, as well as were able to satisfy customer demands (Akan, 1995; Clavey, 1992; Howe, 1986; Su & Sun, 2007). Su and Sun (2007) demonstrated that the criteria for evaluating four- and five-star hotels are based on the total of the scores of service quality and hotel facilities evaluations in Taiwan. In general, a four-star international tourist hotel typically scores between 601 and 750 points, and a hotel is rated as a five-star international tourist hotel if it scores beyond 750 points.

In order to have convenient access to subjects, the researchers adopted the convenience sampling method. Hotel customers who were willing to fill out the self-administered questionnaire distributed by the hotel front-desk employees were invited to participate in this study.

Sekaran (2003) defined sample size as the actual number of subjects chosen as a sample to represent the population. Alternatively, Kumar (1996) referred to sample size as the number of students, families or electors from whom researchers obtain required information. Though most researchers generally accept that larger samples will be more representative than smaller ones, the advantages of larger samples can be outweighed by their increased costs (Ruane, 2005). Hair and coworkers (1998) noted that a minimum sample size of 200 is required for statistical analysis.

The survey questionnaire was distributed to hotel customers aged 18 years and older. The data were collected at a five-star hotel in Taipei City of Taiwan between 1 August and 1 October, 2009. The questionnaire was conducted in two versions, English and Chinese, to enable foreign and Taiwanese customers to understand the content of the survey. All items used in the questionnaires were reviewed by six academicians in tourism and hospitality and five expert practitioners in the hotel industry to ensure the items were an adequate, and a thorough representation, of the constructs

TABLE 1 Factor Loadings, Construct Reliability (CR), Standard Errors (SE), and Means of Items

Factor (α)	Items	λ	C.R.	S.E.	Mean
Conduct (α = 0.91)	The behavior of the employee allows me to trust their services.	0.80	0.91	0.050	5.1
	The attitude of ___ demonstrates their willingness to help me.	0.85		0.045	5.3
	___ always provide the best service for me.	0.87		0.045	5.2
	I can depend on ___ being friendly.	0.80		0.043	5.3
	The attitude of ___ shows me that they understand my needs.	0.79		–	5.1
Expertise (α = 0.91)	___ understand that their professional knowledge can meet my needs.	0.71	0.92	0.030	5.6
	I can count on ___ knowing their jobs/responsibilities.	0.98		0.022	5.4
	___ are competent.	0.95		–	5.4
Problem- Solving (α = 0.87)	When I have a problem, ___ show a sincere interest in solving it.	0.81	0.88	0.045	5.9
	___ understand the importance of resolving my complaints.	0.86		0.049	5.8
	___ are able to handle my complaints directly and immediately.	0.84		–	5.8
Atmosphere (α = 0.90)	The atmosphere is what I expect.	0.65	0.91	0.045	5.4
	The style of décor is to my liking.	0.86		0.038	5.4
	I really enjoy the atmosphere.	0.77		0.044	5.3
	The décor exhibits a great deal of thought and style.	0.70		0.045	5.3
	The décor is stylish and attractive.	0.82		0.041	5.3
	The ambience is excellent.	0.84		–	5.4
Room Quality (α = 0.92)	The room size is adequate.	0.81	0.92	0.044	5.0
	The bathroom and toilet are clean.	0.78		0.043	5.1
	The bed/mattress/pillow is comfortable.	0.84		0.043	5.1
	The room is clean.	0.79		0.044	5.1

(Continued)

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TABLE 1 (Continued)

Factor (α)	Items	λ	C.R.	S.E.	Mean
	The room is quiet.	0.84		0.042	5.0
	In-room temperature control is of high quality.	0.81		–	5.0
Facility	There are accessible fire exits.	0.86	0.86	0.058	5.5
($\alpha = 0.85$)					
	There are noticeable sprinkler systems.	0.89		0.055	5.5
	There are a variety of food & beverage facilities.	0.62		0.062	5.1
	A secure safe is available in the room.	0.71		–	5.3
Design	It is aesthetically attractive.	0.69	0.83	–	5.3
($\alpha = 0.83$)	The layout makes it easy for me to move around.	0.80		0.066	5.3
	The layout serves my purposes/needs.	0.87		0.068	5.2
Location	The retail stores are conveniently located.	0.80	0.78	–	5.2
($\alpha = 0.77$)	The dining-out facilities are conveniently located.	0.80		0.055	5.1
	There are convenient parking spaces available.	0.60		0.064	5.2
Sociability	I am provided with opportunities for social interaction.	0.83	0.84	–	5.2
($\alpha = 0.83$)	I feel a sense of belonging with other customers.	0.73		0.054	5.3
	I have made social contacts.	0.83		0.060	5.2
Valence	At the end of my stay, I feel that I have had a good experience.	0.71	0.91	–	5.2
($\alpha = 0.90$)	When I leave, I feel that I've got what I wanted.	0.96		0.058	5.1
	I would evaluate the outcome of the services favorably.	0.96		0.057	5.0
Waiting Time	The waiting time for service is reasonable.	0.69	0.86	–	5.4
($\alpha = 0.85$)	The employees try to minimize my waiting time.	0.71		0.064	5.5
	The employees understand that waiting time is important to me.	0.81		0.061	5.4
	The employees provide service for me punctually.	0.70		0.057	5.5
	The employees are able to answer my questions quickly.	0.77		0.054	5.4

Note. Dashes indicate that the items are fixed at 1.0; S.E. = Standard Error.
*$p < 0.05$.

under investigation. Both versions of the questionnaire were pre-tested. Fifty English-speaking and fifty Taiwanese people who had previously stayed in five-star hotels in Taiwan completed the pre-test questionnaires. The respondents were encouraged to comment on any questions or statements that they thought were ambiguous or unclear. In order to ensure confidentiality and anonymity, each customer who was willing to fill out the questionnaire distributed by the front-desk employees was required to return their completed questionnaire to a drop box at the front-desk reception area of the hotel.

Of the 710 questionnaires distributed by front-desk employees, 662 were returned within two months. Forty of the questionnaires were incomplete or unsuitable for use in this study. This resulted in a total of 622 usable responses, or a 93.96% usable response rate.

RESULTS

Exploratory Assessment of the Measures

An exploratory Factor Analysis (EFA) was conducted to reduce data dimensionality and create appropriate factors or dimensions for subsequent analysis. A principal component factor analysis using the alpha method, with varimax rotation, was performed on the individual items for measuring 11 sub-dimensions. Factor loading and Cronbach's alpha were used as the criteria for item reduction. Items that had higher than 0.60 reliability coefficients, as suggested by Churchill (1979), were retained in the item pool. In order to include items with practically significant factor loadings, items with a factor loading less than 0.30 and items with high loadings on more than one factor were removed from the item pool, as suggested by Hair and colleagues (2006). The researchers used eigenvalue (greater than one) as a standard, which accounts for a greater amount of variance than had been contributed by one variable. Such a component is therefore accounting for a meaningful amount of variance, and is worthy of being retained, as recommended by Hair and coworkers (2006).

Model Testing

The efficacy of the proposed model and conceptual properties of the scale were analyzed using the Statistical Package for Social Science (SPSS) 15.0 and the Analysis of Moment Structure (AMOS) 7.0. The conceptualization depicted in Figure 1 can be described as a third-order factor model, which comprises not only the direct primary dimensions but also the 11 sub-dimensions, defining service quality through customers' perceptions of the three primary factors. The researchers examined the efficacy of the proposed model by testing a measurement model and the overall model.

TABLE 2 Results of the Measurement and Structural Model Tests

Model	x^2	df	x^2/df	p	RMSEA	SRMR	TLI	CFI
Measurement model	2418.6	847	2.855	0.000	0.055	0.049	0.902	0.912
Structural model-Overall model	2626.3	888	2.958	0.000	0.056	0.068	0.897	0.903

Note. RMSEA = Root Mean Square of Approximation; SRMR = Standardized Root Mean Residual; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index.
$p < 0.00$.

In the first step, the researchers tested the measurement model using the assessment of the third-order factor model. To establish construct validity, the researchers examined: (a) the relationship between the observable indicators (items) and their latent constructs (11 sub-dimensions), (b) the critical ratio (C.R.) in each item, and (c) correlations among sub-dimensions. According to Janssens and colleagues (2008), using a significance level of 0.05 and the critical ratio greater than 1.96 in magnitude for a two-tail test would be considered statistically significant.

The second step was to test the overall model (see Table 2). The overall fit of the measurement model was found to be adequate. The chi-square/df ratios (2.86) were lower than the suggested threshold (i.e., less than 3.0; Carmines & McIver, 1981; Kline, 1998). The root mean square error of approximation (RMSEA) value (0.06) and standardized root mean residual (SRMR) value (0.05) were lower than 0.08, indicating adequate fit (Browne & Cudeck, 1993; Hair et al., 2006; Hu & Bentler, 1999). In addition, all other indices (i.e., TLI and CFI estimates) were greater than the recommended 0.90 (Browne & Cudeck, 1993; Kline, 1998).

Reliability and Validity of the Scales

The results of the confirmatory factor analysis (CFA) and descriptive statistics are depicted in Table 1. Cronbach's coefficient alpha estimates for the 11 sub-dimensions of service quality ranged between 0.77 and 0.92, exceeding the minimum value of 0.70, as recommended by Nunnally and Bernstein (1994).

An examination of the indicators' factor loadings on their respective constructs provides evidence of convergent validity of the scale. More specifically, except for five items (see Table 1), the standardized regression weights for all items were greater than the conservative threshold of 0.70 (Hair et al., 2006; Litwin, 1995). The significant relationship between the three primary dimensions (i.e., interaction quality, environmental quality and outcome quality) and the overall outcome variable (i.e., service quality) further supported the convergent validity of the scale (Anderson & Gerbing, 1988; see Table 3). The critical ratios for all indicators ranged from 13.7 to 48.4 and each of them was significant at the 0.05 level (see Table 1). Discriminant

TABLE 3 Parameter Estimates for Structural Model 2

Relationships		Estimates	SE	CR
Interaction Quality -	Service Quality	1.00	0.17	4.4
Environmental Quality -	Service Quality	0.82	0.21	7.5
Outcome Quality -	Service Quality	0.79	—	—
Conduct -	Interaction Quality	0.86	0.67	5.1
Expertise -	Interaction Quality	0.49	0.47	4.8
Problem-Solving -	Interaction Quality	0.25	—	—
Atmosphere -	Environmental Quality	0.66	0.10	10.4
Room Quality -	Environmental Quality	0.34	0.07	7.0
Design -	Environmental Quality	0.68	0.10	9.7
Location -	Environmental Quality	0.55	0.10	8.9
Facility -	Environmental Quality	0.67	—	—
Sociability -	Outcome Quality	0.41	0.13	6.2
Valence -	Outcome Quality	0.56	0.16	7.4
Waiting Time -	Outcome Quality	0.54	—	—

Note. Dashes indicate that the factors are fixed at 1.0; Parameter estimates were found in standardized regression weight; CR = critical ratios were found in unstandardized regression weight, SE = Standard Error.
$^*p < 0.05$.

TABLE 4 Correlations Matrix for the Sub-dimensions

Variables	1	2	3	4	5	6	7	8	9	10	11
Conduct	.68[a]										
Expertise	.40*	.79[a]									
Problem-Solving	.28*	.03	.70[a]								
Atmosphere	.47*	.36*	.12*	.63[a]							
Room Quality	.38*	.26*	−.02	.22*	.66[a]						
Facility	.52*	.23*	.15*	.42*	.17*	.61[a]					
Design	.50*	.21*	.22*	.52*	.17*	.48*	.62[a]				
Location	.42*	.26*	.32*	.37*	.14*	.41*	.33*	.55[a]			
Sociability	.21*	.22*	−.08	.14*	.16*	.13*	.18*	.26*	.64[a]		
Valence	.41*	.24*	.07	.20*	.31*	.25*	.28*	.21*	.38*	.78[a]	
Waiting Time	.46*	.26*	.13*	.10*	.30*	.26*	.18*	.22*	.23*	.21*	.61[a]

[a]Average Variance Extracted.
$^*p < .05$.

validity is established when the estimated correlations between the factors or dimensions are not excessively high (i.e., > 0.85; Kline, 1998). The correlation estimates for the 11 sub-dimensions were lower (−0.02 – 0.52) than the suggested threshold ($r = .85$; except for six cases (see Table 4). However, the correlated sub-dimensions of the six cases were representing the same factors, and the sub-dimensions are conceptually different (e.g., facility and room quality). Therefore, the data recommended that strong evidence of construct validity and reliability exists for the Scale of Service Quality in Hotels (SSQH).

Results of Structural Equation Analyses

The results of the structural model test are presented in Table 2, indicating an adequate fit to the data (RMSEA $= 0.06$, SRMR $= 0.07$, TLI $= 0.90$, CFI $= 0.90$). The chi-square (x^2/df) ratio of 2.96 was lower than the suggested criterion ($x^2/df < 3$).

DISCUSSION AND CONCLUSIONS

This study proposed and tested a service quality framework for hotel service, and developed the SSQH based on a comprehensive description of possible facets of service quality. The results indicated that the framework and measurement scale is psychometrically sound. All in all, despite the aforementioned limitations, the proposed conceptual model and developed scale can fill the gap existing in the hotel literature.

Major Findings

The findings of this study contribute to the hotel management and marketing literature in two important ways. First, the proposed research model provides a systematic understanding of the concept of service quality in the hotel industry. Second, this study conceptualizes and measures customer perceptions of hotel service quality using a multi-dimensional and hierarchical approach. This approach helps to overcome some of the weaknesses of traditional measurement methods (SERVQUAL, SERVPERF, LODGQUAL, HOLSERV, LODGSERV and HISTOQUAL), and thus provides a more conceptually sound method for assessing service quality in the hotel sector. The SSQH developed in this study can provide marketers and researchers with a diagnostic tool to assess service quality from the perspectives of customers and identify areas that need improvement during service delivery.

First, in terms of the theoretical implications, the findings of this study indicate that the proposed research model adequately describes the concept of service quality in the hotel industry. Specifically, the overall fit of the model was good and the hypothesized relationships were confirmed. All factor loadings depicted in the research model were statistically significant. Some of the 11 sub-dimensions identified in this research are also similar in content to those factored by other researchers who have focused on hotel studies (Ekinci & Riley, 2001; Heide et al., 2007; Lennon & Wood, 1989; Sánchez-Hernándeza et al., 2009; West & Purvis, 1992). Conversely, the 11 sub-dimensions differ in number from other hotel studies (Callan, 1996; Choi & Chu, 2001; Chu & Choi, 2000; Gu & Ryan, 2008; Saleh & Ryan, 1992).

The sub-dimensional factor structure supports the view that the dimensionality of the service quality construct depends on the service

industry under investigation and adds support to the claims that industry and culture-specific measures of service quality need to be developed (Brady & Cronin, 2001; Clemes et al., 2001, 2007; Dabholkar et al., 1996; Kang, 2006; Powpaka, 1996). The significant correlations among dimensions, theoretical interpretability, and good fit of the model supported the third-order factor structure of the proposed model. The SSQH was developed to test the proposed model. The findings of the CFA indicate strong evidence of the reliability and convergent validity of the scale.

The results of this study increase support for the use of a multi-dimensional and hierarchical structure, such as those developed by Brady and Cronin (2001) and Dabholkar and colleagues (1996), and conceptualize and measure service quality in the hotel services context. However, the three primary dimensions identified in this research may not be generalizable for all service industries outside the accommodation sector, or for different cultures. The primary dimensions identified in this study should be confirmed for other service industries through the use of appropriate qualitative and quantitative analyses. In addition, the sub-dimensions need to be confirmed using appropriate qualitative and quantitative analyses because they may vary across industries and cultures. It is also valuable to compare the derived importance of the three primary dimensions and 11 sub-dimensions of the hotel service quality construct identified in this research with the derived importance of these dimensions identified in additional studies. Overall, the findings of this study have expanded the research of service quality by providing a conceptual framework and measurement scale for the hotel industry.

Secondly, this study also provides several important implications for hotel marketers. Managers can use this framework and scale as a diagnostic tool to identify strengths and weaknesses in their services, offering the guidance for potential areas of improvement. However, because the dimensions of service quality vary across industries and cultures, hotel managers should note that the primary and sub dimensional structures must be determined for their own specific organization and cultural setting to accurately measure customer perceptions of their hotel experiences. The service quality measurement scale developed in this study can also be used to monitor and improve the quality of service delivered to customers. In sum, the findings of this study provide managers with valuable insights into the dimensions that reflect customers' perceptions of hotel service quality.

Limitations and Directions for Future Research

Although this study provides a number of important contributions to hotel service management, organizations and individuals wishing to use the results in relation to specific strategic decisions should note several characteristics of the study that may limit overall generalizability. First, despite the amount of

literature on service quality, it has been difficult to offer a full description of the nature of the hotel service quality construct. Despite this difficulty, this study conducted in-depth focus group interviews to identify and examine all of the dimensions of the service quality construct for hotels, because focus group interviews are believed to be more useful than relying only on a literature review. However, there may be some other dimensions of service quality that have not been identified in the conceptual framework of this study. Additionally, the sociability sub-dimension included in our proposed model may not be an important consideration for some customers in the hotel industry. Future studies need to further explore the importance of this element in evaluating customers' perception of overall service quality. Second, the data were collected from customers who had stayed at a five-star hotel in Taipei City of Taiwan. This may limit the ability to generalize the results to five-star hotels in other regions or countries.

This study represents an important step in understanding the issues involved in the operationalization of hotel service quality. However, several additional research areas of interest have surfaced. First, it is necessary to further improve the scale by refining the five items with relatively low factor loadings. Second, this research was only limited to a five-star hotel in Taiwan. Future studies should attempt to examine service quality across different hotel ratings and in other regions. This may provide an opportunity to compare the quality of service based on different hotel ratings (e.g., three- or four-star hotels) in other regions. In addition, it is necessary to establish reliability and validity of the scale to further analyze the items in different ratings of hotels. Third, future studies can analyze changes in the importance of the dimensions. For example, a longitudinal study focusing on hotel customers from check-in to check-out may provide information about their levels of satisfaction with service and the importance of the relevant constructs over time. Fourth, future researchers should seriously consider the issue of cultural differences when applying the results of this study to other countries.

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