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# Evaluating Applicability of E-Service Quality in Online Hotel Bookings

## **Abstract**

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## **Keywords**

Online hotel booking, e-service quality, hedonic dimensions, EFA.

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By Seung Hyun Kim, A.J. Singh and Sungsik Yoon

## ABSTRACT

This study evaluates applicability of E-service quality measurements in the context of online hotel bookings. Data was collected from an online survey of undergraduate college students at two universities in the United States. The Transaction Process-based Framework (eTransQual) conceptualized by Bauer et al. (2006) was adapted, and the dimensionality of e-service quality was identified. The study identified process/reliability as the most important factor influencing overall quality of booking websites.

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## INTRODUCTION

For the past decade the internet has undoubtedly become the emergent communication and distribution channel by collapsing all geographical and physical barriers, and making it a competitive marketing medium in the hospitality and tourism industry (Doolin et al., 2002). It is clear that travelers increasingly prefer interacting with travel businesses online to conveniently gather information on destinations, prices, and schedules (Greenspan, 2004; Tanford et al., 2012). In 2010, 271 million room nights were reserved through Online Travel Agencies (OTA) and the hotel's own Web page (Brand.com) representing a 28 million increase from the previous year while whole year's reserved room nights increased as much as 71 million room nights from the previous year (Smith Travel Research, 2011).

For that reason, hotels regard the internet as an effective and efficient marketing interface. For example, one of the main advantages for hotels by using electronic strategies as a distribution system is the reduction of costs (O'Connor and Frew, 2004). The cost reduction can be a crucial factor which has led to an increase of revenue by online distribution channels including OTA and Brand.com (Smith Travel Research, 2011). According to Smith Travel Research (2012), OTAs increased their revenue by \$0.7 billion, and Brand.com had \$2.0 billion increase in the year of 2010. In addition to the monetary benefits, Theodosiou and Katsikea (2012) found that hotel companies adopting electronic business (i.e. internet marketing) improved their organizational performance as a result of their superior e-business performance.

Due to the rapid expansion of internet users and channels, however, service firms have realized the importance of electronic service quality for survival in the competitive online market (Evanschitzky et al., 2004). In other words, better e-service quality has become critical for the electronic channels that have large growth potential for delivery of products and services (Evanschitzky

et al., 2004; Yen and Lu, 2008). Therefore, it is critical for management to evaluate electronic service quality in order to measure performance of electronic channels (Barrutia and Gilsanz, 2009).

A comprehensive research study published in 2012 by the HSMIAI Foundation highlighted the importance of online hotel booking channels. The study concluded with the following summary: “Distribution costs have been rising steadily. As current and emerging intermediaries take advantage of an active digital travel market, they will wield substantial influence as gatekeepers, imposing fees and charges for directing the consumer traffic to the hotel. Growth in digital travel shopping will expand the transparency of hotel pricing structures putting additional competitive pressure on rates. The combination of the higher booking volumes passing through intermediaries, the costs imposed for intermediation and the pressure on rates will challenge the hotel owner and manager to maintain profit levels” (Green and Lomanno, 2012).

### **Study Objectives**

In recent years, numerous studies have extensively attempted to find and explore e-service quality in the general internet market (i.e. clothes, cosmetics, or online banking). Curiously, despite the fact that hotel reservations constitute the second most frequently purchased travel product online according to Card et al. (2003)’s empirical study, relatively few have attempted to address a detailed examination of online hotel reservation web sites. Furthermore, regarding of e-service quality dimensions, there has been minimal research examining the relationship of hedonic scale (i.e. enjoyment) while most research focused on utilitarian aspects of e-service quality.

In order to address this research gap the purpose of this study is twofold: 1) examining factor structure of e-service quality scale in the online hotel business sector, and 2) testing e-service quality dimensions’ relationships to examine whether the booking web site was influenced by e-service quality factors identified from Exploratory Factor Analysis (EFA). In order to examine not only utilitarian dimensions of e-service quality but also hedonic scales, this article adapted the Transaction Process-based Framework (eTransQual) conceptualized by Bauer et al. (2006). The present study is expected to provide marketers a better understanding of both the strengths and weaknesses of their web pages, so they can design appropriate strategies for their distribution channels. Thus, hotel companies are likely to improve their effectiveness in motivating travelers to reserve a room directly from their website (Morosan and Jeong, 2008). Furthermore, in the United States, the aggregate hotel demand growth has been minimal, an average of 1.6 percent for the past 20 years (Green and Lomanno, 2012). As such, market share increases will be dictated by those online booking sites that can shift demand from the competitor’s site to their own. In this hyper competitive distribution landscape it is critical for hotel marketers to understand factors which are important for customers when making hotel reservations online. The current study seeks to address this critical issue.

## LITERATURE REVIEW

### Online Hotel Reservation

Due to the rapid diffusion of Internet users (Li and Law, 2007), most travel arrangements have been recently conducted online. As hotels use the internet to sell and advertise their rooms and products, they are able to enhance their electronic strategies on a more cost effective distribution system (O'Connor and Frew, 2004).

Despite the benefits of online marketing, hotels are still facing substantial challenges in terms of electronic distribution due to the emergence of several online travel agents, serving as travel intermediaries between the customer and suppliers of travel products (O'Connor and Murphy, 2004). As a one-stop hotel booking portal that provides extensive and transparent information about travel products across several companies, with the benefit of deeply discounted rates, they have been attracting customers to visit and purchase the products through their channels (Morosan and Jeong, 2008). Based on the distribution channel study cited above (Green and Lomanno, 2012), the number of room night bookings at OTA sites grew from 42.5 million in 2009 to 56.5 million in 2011, representing a 33 percent increase. According to Carroll and Siguaw (2003), selling large volume of hotel rooms on OTA web sites draw hotels into a "disadvantageous position" in the travel market. To counteract the penetration of OTAs in the online hotel booking space and to persuade travelers to reserve rooms directly through the hotel-owned web sites firms are adopting several strategies (Morosan and Jeong, 2008).

### E-service Quality

While the items in the scale of traditional offline service quality were measured by comparing customers' expectations with the firms' actual service performance (Sasser, Olsen, and Wyckoff, 1978), items evaluating electronic service quality were adapted to match the electronic context (Parasuraman et al., 2005). For example, items which were part of the tangible assessment need to be substituted to items about website design or appearance on evaluations of electronic service quality (Parasuraman et al., 2005). By accepting the difference in measuring service quality between online and offline, dimensions in the evaluation of electronic service quality would be need to be developed rather than simply adapting traditional offline scales (Parasuraman et al., 2005).

Much scholarly work has been done on the topics of e-service quality and its dimensions. According to Santos (2003), E-Service Quality can be described as entire customer perceptions or evaluations of electronic service experience of the online marketplace. Several different scales have been developed to measure E-service quality.

With twelve dimensions which are informational fit to task, trust, interaction, response time, intuitiveness, design, visual appeal, innovativeness, flow-emotional appeal, integrated communication, business processes, and

substitutability, Loiacono, Watson, and Goodhue (2007) created WebQual to measure websites quality, which greatly assisted website designers. Due to limited research, however, scale developers have not included the dimension of customer service (Parasuraman et al., 2005).

Barnes and Vidgen (2001) proposed a WebQual scale with five key dimensions: tangibles, reliability, responsiveness, assurance and empathy to analyze the online book business. Empirical data were obtained from the sample of university students and staff who had visited one of three bookstore websites. However, Barnes and Vidgen (2001) focused more on the transaction-specific measurement of the bookstore sites than a comprehensive evaluation of bookstore websites' e-service quality.

The SERVQUAL scale has been employed by Barnes and Vidgen (2001), Kuo (2003), and Negash et al. (2003). In order to examine the online book trade, Barnes and Vidgen (2001) provided five major dimensions with each of two sub-dimensions: reliability (reliability, competence), tangibles (aesthetics, navigation), responsiveness (responsiveness, access), assurance (credibility, security) and empathy (communication, understanding the individual). Without hedonic dimensions, the author (2001) primarily considered the technical aspects in terms of e-service quality.

To assess service quality of online shopping providers, Zeithaml et al. (2002) and Parasuraman et al. (2005) empirically examined E-S-QUAL, a multiple item scale with core service quality aspects and four dimensions: efficiency, privacy, fulfillment and availability. According to Bauer et al. (2006), this explorative study offers the most comprehensive work on e-service quality without the important concern: lack of hedonic dimensions.

The eTailQ scale developed by Wolfinbarger and Gilly (2003), in order to measure customer perceptions of e-tailing quality. Based on their study, the authors (2003) provided four quality dimensions: fulfillment/reliability, customer service, web design and security/privacy. By using online and offline focus groups, a sorting task, and an online survey of a customer panel, Wolfinbarger and Gilly (2003) found that website design factors and fulfillment/reliability are strongly connected with the customers' judgments of websites quality.

However, most of the scales above are not enough to adequately explain e-service quality as they lack a dimension referring to hedonic quality items, (Bauer et al., 2006). Bauer et al. (2006) thus suggested a Transaction Process-based Framework (eTransQual), which includes intangible and emotional elements as well as utilitarian benefits, so as to comprehensively assess the E-service quality, and provides five quality dimensions: functionality/design, reliability, process, responsiveness and enjoyment (Bauer et al., 2006).

## METHODS

### Sample and Data Collection

Data was collected from college students enrolled in two US Eastern- and Midwestern universities. A total of 271 respondents responded to the web-based survey. Of those, ten incomplete or duplicate responses were identified and deleted. Thus, 261 responses were kept in the valid sample, including not only college students, the targeted study population, who booked hotel rooms through an OTA or brand.com website, but also those who did not. The sample screening procedure resulted in a final sample of 164 college students, representing 63% of the 261 survey respondents, who booked hotel(s) through one of those booking channels at least once while enrolled in college prior to the survey being conducted. Most respondents were 22 years old or younger. Approximately, two-thirds of respondents were female (65.6 percent). The majority of the total respondents were White/Caucasian (72.6%).

### Measurements

Constructs in the proposed model were evaluated using multiple item measures. All measures were modified to reflect the context of online hotel booking. Five dimensions of e-service quality were measured by 25 items developed by Bauer et al. (2006). Perceived value was measured as the level of agreement with three cost/benefit statements adopted from Bauer et al. (2006). An illustration of this measure is: “this website is a convenient way to make an online hotel reservation.” Customer’s satisfaction was measured by four items, as proposed by Henning-Thurau et al. (2002). An illustration of this measure is: “my choice to book a hotel from this website was a wise one.” Reuse intention was measured by three items in line with Homburg and Griering (2000). An example of an item measuring reuse intentions was: I will do more hotel booking with the website in the next few years. All items were evaluated using a five-point Likert scale ranging from very strongly disagree (1) to very strongly agree (5).

### Data Analysis

Exploratory Factor Analysis (EFA) was undertaken to evaluate applicability of e-service quality in a hotel context by identifying underlying dimensions of e-service quality and, if necessary, to reduce a number of variables- in other words, scale refinement. Next, multiple regression analysis was employed to test the relationship of e-service quality scales, which are derived from EFA, on overall quality. Since the eTransQual framework was not originally based on a hotel context, EFA was undertaken to examine applicability of those scales in the online hotel booking setting. With the results from EFA, multiple regression analysis was employed to decide which relationships are significant between e-service quality dimensions and customer’s perceived overall quality.

## RESULTS

### Exploratory Factor Analysis

In order to measure the appropriateness of factor analysis, the Kaiser-Meyer-Olkin (KMO) measure and the Bartlett's test of sphericity were examined. Our finding indicated that the value of this measure of sampling adequacy was 0.92 which is quite a strong value (see Table 1). The chi-square value of Bartlett's test showed 2657.2. According to these two results, it was clear that our sample (n=164) can identify the underlying patterns of the e-Service quality dimensions by using factor analysis.

**Table 1**  
**Results of exploratory factor analysis: e-service quality**

Items (23)	Factor loadings			
	1	2	3	4
<i>Factor 1. Process/reliability (8 items)</i>				
Transactions are accurately processed at this website.	.85			
Order processing at this website is handled efficiently.	.80			
Transaction processing time at this website is impressive.	.78			
Website response time is reasonable.	.77			
Personal information entered at this website is secure.	.75			
Data exchange with this website is secure.	.70			
Overnight accommodations are always available at this website.	.70			
There are a variety of hotel room types available at this website.	.69			
<i>Factor 2. Functionality/design (7 items)</i>				
The information presented at this website is clearly presented.		.75		
The content at this website is well designed.		.74		
The content at this website is visually appealing.		.74		
I can easily navigate the content at this website.		.71		
This website provides access to relevant information.		.71		
The information presented at this website is relevant.		.70		
The information presented at this site is current.		.68		
<i>Factor 3. Responsiveness (4 items)</i>				
This website offers visitors the opportunity to connect to				.86



an online representative for a live chat session.				
This website responds promptly to inquiries.				.73
This website provides alternate channels of communication.				.71
This website provides simplistic procedures for returning visitors.				.60
<i>Factor 4. Enjoyment (4 items)</i>				
The content at this website is entertaining.				.81
The content at this website is fun.				.71
I get excited when I successfully make an online hotel reservation.				.71
The content at this website can be personalized.				.62
Eigen value	10.79	2.44	1.45	1.27
Variance explained	46.92	10.61	6.32	5.52
Reliability (alpha)	0.93	0.93	0.82	0.78

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Notes: KMO = 0.919 ( $\chi^2=2,657.2$ ,  $p<0.05$ ); total variance explained = 69.4 percent; n=164

The 25 items were initially analyzed and rotated over the 164 responses with the extraction method of principal component analysis and rotation method of Varimax with Kaiser normalization. Eigenvalues greater than 1.0 was used a criterion. Two items were deleted due to the statistical criteria of similar cross-loading value which is greater than 0.4. As shown in Table 1 above, the factor extraction process indicated the results of remaining 23 items with four factor loadings. Those four factors explained 69.4 percent of the variances. In addition, each alpha levels ranged from 0.78 (Enjoyment) to 0.93 (Process/Reliability, and Functionality/design) which are consistently high.

As noted in Table 2, the mean score of the total index is 3.65 on the four factors: process/reliability (3.86), functionality/design (3.89), responsiveness (3.49), and enjoyment (3.34).

The factor, functionality/design is top ranked with a mean score of 3.89 as the most critical dimension of e-Service quality on hotel online booking websites. This dimension incorporates efficiency of navigation, accessibility of relevant content, clarity of the website, relevance of information, timeliness of information, visual appeal, professional design of online hotel booking web sites (Bauer et al., 2006).

With a mean score of 3.86, process/reliability is placed on the second most critical aspect of e-Service quality dimensions. This mean score is very close to the top ranked factor, functionality/design. This dimension includes stability of data transmission, efficiency of online order processing, waiting time,

timeliness of order delivery, accuracy of order delivery, product availability, breadth and depth of product range, and encoding of personal information (Bauer et al., 2006). When it is compared to the dimensions from eTransQual by Bauer et al. (2006), two items (availability of the web site, and confidentiality) were deleted in our findings.

Responsiveness, with a mean of 3.49, is ranked third. This dimension incorporates availability of alternative communication channels, return policy, availability of service personnel, and promptness of reactions to requests (Bauer et al., 2006). This dimension was evaluated by the study participants based on an online booking portal's ability to react quickly to queries.

The final factor is enjoyment with a mean of 3.34. This dimension incorporates personalization of information and offerings, fun of using the web site, excitement when shopping online, and entertainment provided by the web site (Bauer et al., 2006). Our finding revealed that enjoyment is a relatively less important factor compared to other factors when customers are using online booking portals for their room reservation. By evaluating e-service quality of online hotel bookings, results of this research reveals that utilitarian benefits are more important than hedonic aspects when making a hotel room reservation.

**Table 2**  
**Distribution scores for the e-Service quality**  
**index: means, standard deviation, skewness, kurtosis,**  
**and percentage indicating level of perceived quality (N = 164)**

Factors and Items	Mean <sup>a</sup>	SD	Skewness	Kurtosis	Perceived Quality <sup>b</sup> (%)
<b>Functionality/design (7 items)</b>	3.89	0.55	0.27	0.71	78.6
The information presented at this website is relevant.	3.98	0.60	-0.51	1.53	84.9
This website provides access to relevant information.	3.95	0.61	-0.78	2.12	84.8
The information presented at this site is current.	3.95	0.67	-0.44	0.67	80.0
The information presented at this website is clearly presented.	3.93	0.63	-0.56	1.29	81.8
I can easily navigate the	3.85	0.67	-0.59	0.91	76.9

content at this website.					
The content at this website is well designed.	3.80	0.68	-0.44	0.45	72.6
The content at this website is visually appealing.	3.75	0.73	-0.45	0.22	69.4
<b>Process/reliability (8 items)</b>	3.86	0.55	0.05	1.01	76.2
There are a variety of hotel room types available at this website.	3.96	0.71	-0.97	2.33	83.1
Website response time is reasonable.	3.93	0.64	-0.81	1.91	82.7
Personal information entered at this website is secure.	3.89	0.66	-0.41	0.62	77.4
Transactions are accurately processed at this website.	3.88	0.66	-0.64	1.10	78.8
Order processing at this website is handled efficiently.	3.87	0.63	-0.35	0.63	76.9
Data exchange with this website is secure.	3.85	0.66	-0.22	0.13	73.3
Overnight accommodations are always available at this website.	3.77	0.71	-0.38	0.21	69.5
Transaction processing time at this website is impressive.	3.74	0.75	-0.42	0.08	67.9
<b>Responsiveness (4 items)</b>	3.49	0.62	-0.50	0.24	53.4
This website provides simplistic	3.62	0.76	-0.42	-0.99	62.2

procedures for returning visitors.					
This website responds promptly to inquiries.	3.57	0.73	-0.15	-0.22	55.8
This website provides alternate channels of communication.	3.54	0.77	-0.30	-0.29	56.4
This website offers visitors the opportunity to connect to an online representative for a live chat session.	3.22	0.84	-0.31	-0.88	39.1
<b>Enjoyment (4 items)</b>	3.34	0.65	-0.47	0.54	44.8
I get excited when I successfully make an online hotel reservation.	3.53	0.89	-0.77	0.37	61.2
The content at this website can be personalized.	3.31	0.89	-0.07	-0.43	42.7
The content at this website is fun.	3.27	0.78	0.25	-0.27	35.8
The content at this website is entertaining.	3.27	0.81	-0.13	-0.12	39.3
Total Index	3.65	0.59	-0.16	0.63	63.2

a. Mean scores are based on a scale of 5 = strongly agree to 1 = strongly disagree.

b. Percentages shown combine 4 and 5 on the scale of 5 = strongly agree to 1 = strongly disagree.

Based on an analysis of factor loadings, this study indicates that four factors are important in evaluating e-service quality of online hotel booking websites: process/reliability (8 items), functionality/design (7 items), responsiveness (4 items), and enjoyment (4 items). Each factor contains four to eight variables with loadings equal or greater than 0.599 (see Table 2), and mean scores which ranging from 3.34 to 3.89. Based on the results of factor analysis, those relatively strong loadings supported that all factors are quite robust, and easily interpreted.

Table 3 calculates the discriminant validity of four factors. Based on Kline (1998), the correlation between each factor should not exceed 0.85. Although the calculated value of scale measurements between the constructs: Process/reliability and Functionality/design is relatively higher than others, it has not exceeded 0.85. Correlation between Process/reliability and Enjoyment had the least value (0.41%). We can therefore conclude that the four constructs for this study are not highly correlated.

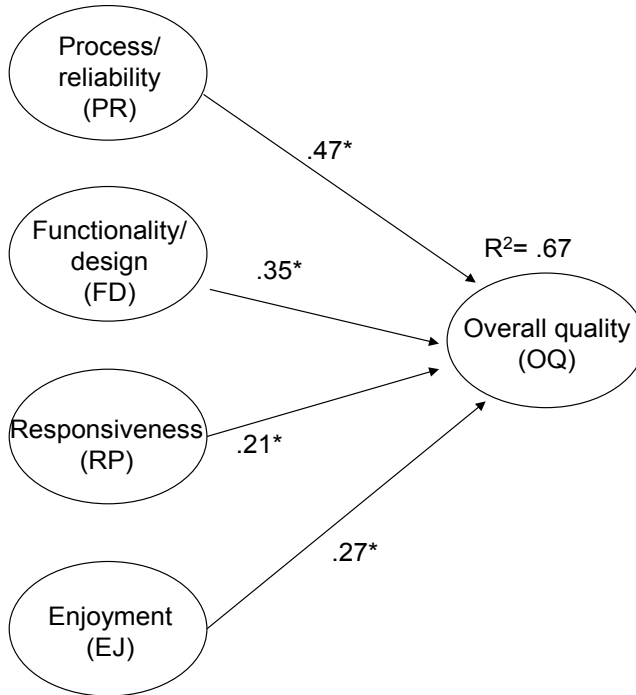
**Table 3**  
**Correlations between factors in four-factor model of the e-service quality index (N = 164)**

	Process/ reliability	Functionality/ design	Responsiveness	Enjoyment
Process/reliability	1			
Functionality/design	0.72	1		
Responsiveness	0.49	0.53	1	
Enjoyment	0.41	0.50	0.52	1

### Multiple Regression Analysis

Figure 1 presents the results of multiple regression analysis. The four factors (i.e. process/reliability, functionality/design, responsiveness, and enjoyment) revealed in the EFA were regressed across overall quality. Estimated regression coefficients are presented in Figure 1. The coefficients from process/reliability to e-satisfaction (PR → ES:  $\beta=.47$ ,  $t=2.591$ ,  $p<.05$ ), from functionality/design to e-satisfaction (FD → ES:  $\beta=.35$ ,  $t=2.48$ ,  $p<.05$ ), and from responsiveness (RP) to E-satisfaction (RP → ES:  $\beta=.21$ ,  $t=2.48$ ,  $p<.05$ ) were significant at .05 with positive relationships. Interestingly, enjoyment which is an item referring to psychological benefits, was significant (EJ → ES:  $\beta=.27$ ,  $t=2.67$ ,  $p<.05$ ). Based on the relative values of coefficients that were shown, process/reliability ( $\beta=.47$ ) has the highest level of explanatory power for overall quality when compared to other dimensions of e-service quality. The R square value for the equation is .67 implying that only 33 percent of the variance in overall quality (E-Satisfaction) is not explained by the four factors.

**Figure 1**  
**Results of Multiple Regression Analysis**



**Discussion and Implications**

Current research clearly indicates the ascendancy and proliferation of online hotel booking sites and its consequence: A battle for customers between the online direct booking hotel sites and the Online Travel Agent (OTA) sites such as Expedia, Travelocity and Priceline. This competition for the customer’s “eye balls” also includes Global Distribution System (GDS) sites powered by Amadeus, Sabre, Galileo and Worldspan. To further complicate the online search process, emerging online mediums such as Bing, Trip Advisor, Kayak and Google, known as Meta search sites and social sites such as Facebook are placing more pressure on hotels to make their sites attractive to the customer. In order to compete effectively in this crowded distribution market place hotel companies need to develop a closer relationship with their customers by focusing on factors that impact e-service quality when they interact with hotel websites.

The current study examined applicability of existing framework which was developed from other industry settings, and relationship between four e-service quality dimensions revealed in the EFA and user’s perceived overall

quality in the setting of online hotel reservation. The findings of this study are helpful to marketers of online hotel booking websites. A primary difference between this research and previous studies was that we examined a hedonic (enjoyment) aspects as well as utilitarian benefits in online hotel bookings. Moreover, a key result from this research was that user's perceived overall quality was significantly affected by enjoyment. Implications for hotel web site designers include the need to focus on the personalization, entertainment, and fun aspects of the website experience. Hotels that successfully establish this experience interface with the customer can differentiate themselves from their competitors.

The results of the research also revealed that customers value process and reliability highly when making a hotel booking online and it was the highest contributor to their overall satisfaction. Therefore it is important for hotels to ensure that their websites provide a secure and accurate transactions environment, each transaction is processed efficiently, feedback provided instantaneously and the site allows customers to choose between wide selection of hotels and room types. Given the large volume of transactions that online customers conduct on the internet for personal consumer products and travel shopping it is not surprising that this factor has such a prominent impact on their assessment of e-service quality.

While customers like the choices available to them provided by various travel and other consumer product sites, these can also be a source of stress and information overload. Hence, effective websites have to "cut through the clutter," to reach the customer. A well designed site where information is clearly presented, easy to navigate, and has current and relevant information will be competitively better positioned to gain customer loyalty. This factor along with responsiveness, which establishes a personal relationship with the customer were also significant in their explanation of e-satisfaction.

### **Limitations**

This research attempted to measure a college student group's attitudinal beliefs about online hotel bookings. As the restricted sampling frame was from a demographically younger and educated population, the results of this study might not generalize to the general online consumer population. Also, this study has geographical limitation since the data was collected from only two Mid-western universities in the U.S. Thus, it is believed that further research with a broader and demographically heterogeneous sample is a worthwhile extension of this study.

In terms of the methods, this research analyzed the data by using exploratory factor analysis to examine the applicability of eTransQual (Bauer et al., 2006) model in the context of online hotel bookings. In addition to EFA, we did multiple regression analysis to test the relationship between e-service quality scales and overall quality. Although the present study offers a preliminary contribution to the literature concerning e-service quality in a hotel booking

context, further research is needed to examine the validity of scale relationships by using appropriate analyzing method (i.e. confirmatory factor analysis).

The current study focused on examining the applicability of an existing framework and the relationship of dimensions without differentiating the different online hotel booking channels. As the hotel's own websites do not have same characteristics of online travel agent's websites, an extension of this study may be to examine whether significant differences exist between different online distribution channels.



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