Do customers share the same perspective? A study on online OTAs ratings versus user ratings of Hong Kong hotels

Rosanna Leung

I-Shou University, Taiwan

Norman Au, Jianwei Liu and Rob Law

The Hong Kong Polytechnic University, Hong Kong

Abstract

Hotel service levels and pricing range are often denoted by the "star" rating system predominant in that country. This rating system depends considerably on travel agencies to disseminate information to consumers to assist them in their hotel selection. Given the popularity of online travel agencies (OTAs) and review websites, consumers can now compare published star and user ratings of hotels online to obtain a complete idea of the hotel service standards from the perspective of other users. This study attempted to analyze the difference among the star and user ratings published in eight popular OTAs. Findings showed that Priceline and Ctrip had the lowest website star ratings, whereas Bookings.com and Agoda had the highest for both local chain and independent hotels. A comparison of the star and user ratings indicated that Priceline, TripAdvisor, and Hotels.com had no statistical difference, but the other five OTAs exhibited statistical differences. The findings also indicated that Ctrip had higher user rating scores among the OTAs, possibly indicating that Chinese users rate hotels higher than other nationalities do.

Keywords

Expectation disconfirmation, Hong Kong hotels, OTA star rating, rating discrepancy, user rating

Introduction

The constant and rapid evolution of information and communications technology (ICT) as well as the increase in the number of technology-literate consumers has resulted in the considerable increase in the purchase of online tourism services and in the use of online travel agencies (OTAs) (Roger-Monzó et al., 2015). For decades, airlines, cruise lines, the lodging sector, and the rental car industry have been heavily dependent on travel intermediaries (e.g. travel agents) to disseminate information and sell their products and services (Amaro and Duarte, 2015). In recent years, however, an increasing number of consumers have tended to search through multiple booking websites to identify hotel services and pricing levels, thereby transforming website star and user ratings of individual hotel into a major determining factor for hotel selection (Boni, 2015; Browning et al., 2013). These hotel star ratings do not represent official hotel classification scheme imposed by local government bodies, professional organizations (American Automobile Association (AAA) diamond award system in the United States and Australia), nor popular travel guides (Forbes, Michelin, etc.) but

Corresponding author:
Norman Au, School of Hotel and Tourism Management, The Hong Kong Polytechnic University, 7 Science Museum Road, TST East, Kowloon, 852, Hong Kong.
Email: norman.au@polyu.edu.hk

rather are self-determined by individual OTAs. Hewitt and Schlichter (2008: 1) indicated that hotel star ratings found on websites occasionally vary among different OTAs. In the long term, having different stars on different online distribution channels may confuse potential consumers and could even damage a hotel's image (Denizci Guillet and Law, 2010).

Numerous users also evaluate hotels based on their actual experiences (usually expressed in scores), thereby providing another type of rating system for hotels on OTA platforms. Both website star ratings by OTAs and user ratings are important for travelers' hotel selections because of the professional and experiential attributes of these rating systems (Liu et al., 2015). However, both website star and user ratings across different platforms exhibit discrepancies that result in possible confusion among consumers. Prior studies have also indicated that even OTAs adopt different rating methodologies (Blomberg-Hygard and Anderson, 2016; Dickinger and Mazanec, 2008), and their rating scores for hotels did not exhibit statistical differences 5 years ago (Denizci Guillet and Law, 2010). The extent of the discrepancies between website star and user ratings of different hotels among different OTAs remains unknown. Moreover, different websites have different levels of user rating scales. Accordingly, whether scale-based rating scores can affect overall user rating performance in different OTAs also remains unknown. The present research uses expectation disconfirmation theory (EDT) (Barsky and Labagh, 1992), which is a consumer satisfaction research framework, to analyze the discrepancies in the ratings of hotels in OTA sites and other sources. Consumers hold different views and expectations on the service standards of different types of hotels. Thus, if their service quality performance fell short of their expectations, then according to EDT, the consumers may become dissatisfied and give the hotel a low performance rating.

Prior studies in hospitality literature have rarely analyzed the discrepancy between hotel ratings in OTA websites and user ratings; instead, such ratings are explained in accordance with EDT. Thus, this study attempts to investigate this issue by analyzing both website and user ratings and using Hong Kong hotels as samples. The study utilizes ratings from eight major OTA websites including Agoda, Booking, Ctrip, Expedia, Hotels, Kayak, Priceline, and TripAdvisor. The findings of this study may be valuable to hotel managers in formulating differentiation

strategies and to guests to ensure improved hotel standards in Hong Kong.

This study aimed to analyze the discrepancies between website star and user ratings on different major OTAs with the following objectives:

1. analyze the differences between the website star ratings in OTAs and various hotel types,
2. assess the differences between the user ratings in OTAs and various hotel types,
3. compare the differences between website star and user ratings, and
4. investigate the effects of scale formats on the overall user rating score.

Literature review

OTA as distribution channel for hotels

In the last two decades, the development of ICT and the World Wide Web has promoted the growth of OTAs. This phenomenon has rapidly transformed the channel of product and service distribution in the tourism and hospitality industry. Consequently, OTAs have become key promotion tools for hotel operators (Buhalis and Law, 2008; O'Connor and Frew, 2002). IBISWorld (2015) stated that the annual revenue of Travel Agencies (TAs) in the United States is approximately 35 billion dollars and that the annual growth from 2010 to 2015 is 3.8%. However, OTAs are not a distinct category registered by European statistics because these companies are considered to be in the same category as TAs (Ginanneschi, 2014).

Emerging markets, such as China and Malaysia, are rapidly adopting online travel practices (Vinod, 2011). Although numerous hotel managers recognize the increasing importance of online sales channels in tourism (Li et al., 2009) in providing additional business value at the market and sales levels (Werthner and Klein, 1999), many small- and medium-sized hotels are challenged by the complexity of the distribution systems (Scott et al., 2010; Toh et al., 2011). Therefore, many hotels outsource this process and rely on third-party websites or intermediaries, such as OTAs (Scaglione and Schegg, 2015). Travelers use multiple online channels to ensure superior product choice (Runfola et al., 2013), whereas hotel managers use these channels to maximize the exposure and market share of their respective hotels (Toh et al., 2011). Given the numerous sources of information,

many travelers currently rely on different types of hotel ratings endorsed by the industry or generated by consumers on various social media sites to guide their decision-making on hotel selection.

Effects of hotel ratings on traveler hotel selection

Some European countries, such as the United Kingdom, Germany, and Switzerland, have established a coherent hotel classification system by appointing government agencies or private organizations to create standards and oversee regulations (Cser and Ohuchi, 2008). Asian countries led by China and Japan are following in the steps of their European counterparts. China's classification is strictly enforced by the National Tourism Administration, whereas Japan's efforts are implemented as a formality, considering that TAs merely differentiate lodging types without providing serious evaluation (Rhee and Yang, 2015). The United States does not maintain a homogenous hotel stratification code. Instead, they refer to assessments from two private rating agencies highly respected in the hotel industry. These two rating systems are the Forbes Travel Guide hotel ratings and the AAA diamond ratings. The Forbes Travel Guide is unique and supports only the top three levels (five and four stars and recommended) and two additional designations for potential quality (McCarthy et al., 2010). AAA's rating system relies on the five-diamond-tier system with the most number of diamonds indicating the highest classification level (Su and Sun, 2007).

Although Hong Kong is considered a major tourist destination in Asia and has numerous world-class hotels, the city lacks a formal star rating system for hotels. The Hong Kong Tourism Board (HKTB, 2015a) explained that hotels in Hong Kong are classified into four categories: high tariff A, high tariff B, medium tariff hotels, and hostels/guest houses. Rather than the "star rating" normally associated with service quality standards, this classification system is based purely on hotel rack rate and staff-to-room ratio (Choi and Chu, 1999). However, the quality standard ratings for individual hotel are, for some reasons, kept confidential between the hotel and HKTB; hence, ordinary consumers and even travel agencies are unable to obtain such information. Therefore, TAs classify hotels using a star-based rating system based on the common industry practices to provide consumers with guidelines in selecting hotels.

Considering the intangible nature of hotel product, online reviews and hotel ratings in OTA sites are often considered by potential travelers as important and valuable reference sources for making their hotel choice decision (Liu et al., 2015). These consumers also rely on these sources of information to make decisions (Baek et al., 2012; Litvin et al., 2008; Yoo and Gretzel, 2011). Hence, OTAs that offer reviews from experienced users are rapidly becoming hubs for potential trip planners (Cox et al., 2009; Liu et al., 2016; Schuckert et al., 2015). In addition, only consumers with actual bookings are permitted to place a review on OTA platforms (Vermeulen and Seegers, 2009). Consumers are asked to write comments and rate their accommodations after their stay (Bronner and De Hoog, 2011). Numerical user ratings for hotels typically range from negative to positive in the scale from 1 to 5, although a few range from 1 to 10 (Zhang et al., 2013).

On the other hand, industry-endorsed ratings are often managed and administered through commercial organizations, government agencies, or industry associations (Ingram, 1996; Su and Sun, 2007). The hospitality industry has traditionally relied on these rating systems to establish and share hotel quality or service standards to consumers (Ingram, 1996; Yu, 1998). Apart from industry-endorsed ratings, many travel-related websites, such as TripAdvisor, enable consumers to provide an evaluative numerical rating that corresponds to their travel experiences (Stringam and Gerdes, 2010).

Hotels often have relatively limited control over these consumer-generated ratings (Xie et al., 2014). Yet, such ratings together with the industry-endorsed star ratings are important clues to consumers in perceiving the quality standard of hotel especially in the initial stage of information search (Xie and Lee, 2015). In terms of clicking behavior of consumers during the sequential process of website search, a study on a data set of 39,547 search queries for over 80,000 hotels on Expedia indicated that customers are highly likely to click through hotels with considerably high industry-endorsed and consumer-generated ratings. Specifically, customers tend to rely more on consumer-generated rather than industry-endorsed ratings when making monetary commitments to finalize their booking online (Xie and Lee, 2015).

Responses to the Likert-type measurement scale

Prior research shows that with the possible effects of user ratings on consumer decision, the design of the rating scale, apart from the product quality itself, could affect response behavior (Likert, 1932). In a meta-analysis of 131 studies in the marketing research literature, Churchill and Peter (1984) determined a positive relationship between internal reliability and number of scale choice points, that is, the higher the number of scale points used, the greater the variance, thereby increasing internal reliability. The aforementioned researchers' regression analysis also revealed that the number of choice points explained 5% of the reliability variance. Cultural differences also have an effect on responses to a Likert-type scale. Lee et al. (2002) analyzed this relationship and determined that a scale's construct validity tends to improve for Chinese and Americans when four response choices are available and for the Japanese when seven options are present.

Dawes (2008) collected data on the same construct using three different scale formats (i.e. 5-, 7-, and 10-point numerical scales) and determined that indicators of consumer sentiment, such as satisfaction surveys, may depend in part on the selection of scale format. Hence, a 5- or 7-point scale is more likely to produce slightly higher mean scores relative to the highest possible attainable score compared with that produced from a 10-point scale.

However, the best method to structure Likert-type scales is still being debated (e.g. Chang, 1994; Leung, 2011). A commonly encountered issue during Likert-type scale administration is acquiescence (Bentler et al., 1971; Ray 1983). Acquiescence refers to the tendency of an individual to slightly but consistently "agree" or "disagree" regardless of the item. Another issue is the left-side response option selection bias, in which people are highly likely to select response options located on the left side (Barnette, 2000; McCourt and Jewell, 1999; Nicholls et al., 2006). Recently, Maeda (2015) indicated that vertically unidirectional response options should be used when absolute judgments are being made using online-administered Likert-type scales, whereas horizontally unidirectional response options should be used when relative judgments are being made.

EDT and hotel rating discrepancy

The disconfirmation of expectations theory originated from consumer behavioral research and suggests that consumer satisfaction is determined by the size and direction of the discrepancy between expectations and perceived product performance (Oliver, 1989). Based on this theory, if the obtained performance is less than expected (negatively disconfirmed), then consumers will be dissatisfied, whereas if the expectations are met (zero disconfirmed) or performance exceeds expectations (positively disconfirmed), then consumers will be satisfied.

Barsky and Labagh (1992) were among the first few to apply this research framework in the hotel and restaurant industries. Their findings suggested that customer expectations that were met would be a critical measure of their satisfaction and therefore should be incorporated as a critical component in the marketing strategy formulation of hotels. Similarly, Oh and Jeong (1996) and Oh and Parks (1997) studied the behavior of fast-food restaurant consumers based on EDT and provided an extensive, critical review of the service quality and consumer satisfaction literature to develop recommendations for future applications.

Oliver (1997) described an expectation as being generally predicted to have a negative influence on disconfirmation because considerably high expectations are likely to be negatively disconfirmed (i.e. performance is worse than expected). Given that hotel ratings are likely to provide a reference on what standard to expect and are among the important criteria that most travelers use in selecting hotels, any discrepancy in such ratings for specific hotels among different OTA sites or among different sources could be critical in the eventual satisfaction of travelers.

Methodology

This study attempts to collect the online organizational and user ratings of Hong Kong hotels to examine the rating differences. According to Ali and Skift (2014), the top 10 online travel-related websites were Agoda, Booking, Cheapoair, Expedia, Hotels.com, Hotellurbano, Kayak, Priceline, TripAdvisor, and Yahoo!Travel. The HKTB (2015b) indicated that the total number of tourist arrivals in Hong Kong in March 2015 was 4.4 million; of this number, approximately 3.2 million came from mainland China (hereafter referred to as "China"). Considering that over 70% of tourists were from China, the present

Table 1. Top online travel-related websites in 2014.

Rank	Site	Estimated visits in January 2014	Page views per visit	Leading countries
1	Booking.com	166.0 million	5.85	United States (15.36%)
2	TripAdvisor Family	159.5 million	n/a	United States, United Kingdom, France, Italy, Canada, Spain, Brazil, India, Germany
3	Expedia Family	59.3 million	n/a	United States, Canada, United Kingdom, Germany
4	Hotels.com	34.5 million	4.72	United States (46.88%)
5	Priceline.com	31.3 million	7.24	United States (93.52%)
6	Agoda.com	30.7 million	6.08	United States (12.54%)
7	Hotelurbano.com	25.5 million	2.18	Brazil (93.13%)
8	Kayak.com	24.4 million	4.90	United States (89.04%)
9	Travel.yahoo.com	24.1 million	1.96	United States (70.27%)
10	Cheapoair	20.2 million	3.49	United States (87.12%)
20	Ctrip.com	8.6 million	10.18	China (73.52%)

OTAs: online travel agencies; n/a: not available.
Source: Top Trafficked Sites in Travel (Ali and Skift, 2014).

study included Ctrip, the most popular Chinese booking and review website in the country, which ranked 20th in Ali and Skift (2014). Table 1 illustrates the statistical information on these 11 online travel-related sites in 2014.

The data were collected in April 2015. However, Yahoo! Travel, which ranked ninth, has changed its business partnership to Hipmunk. com since October 2014 (Schaal and Skift, 2014). Based on this strategy, user reviews and ratings both comprise data from two different companies. Moreover, Cheapoair's user reviews are directly linked to TripAdvisor (Cheapoair, 2015), thereby making the review ratings precisely the same as those on TripAdvisor. To maintain data uniqueness, we removed these two OTAs (Yahoo! and Cheapoair) from the data list, such that a total of nine online websites were included in this study.

As all OTA websites have a certain level of relationship with hospitality and tourism entities, the official rating might have a bias because of marketing strategies and/or corporate decisions. To enhance the fairness of the result, this study includes official hotel pages on Facebook. Facebook is the dominant social media platform in the world today and over two-thirds of travelers who use the Internet are connected to Facebook (McCarthy et al., 2010). Facebook pages did not have any formal business relationship with any hospitality and tourism organizations, and the rating on the fan page was solely given by customers. To obtain additional comprehensive user viewpoints, Facebook pages were also included. However, only included official Facebook pages because a Facebook fan page can be easily created and administered by any person.

This study included all 126 member hotels of the Hong Kong Hotels Association (HKHA, 2015). These hotels were further categorized into four types, namely, international chain, Asian chain, local chain, and independent hotel. An international chain is a hotel chain that has sister hotels in multiple continents. An Asian chain is a hotel chain that manages hotels within Asia only. A local chain refers to hotel management exclusively based in Hong Kong. Finally, independent hotels pertain to hotels that are not affiliated with any hotel network. Among those, 34 hotels belonged to international chains, 13 belonged to Asian chains, 51 belonged to local chains, and 28 were independent hotels. After data were collected from nine OTA websites and Facebook pages, the researchers realized that limited data could be obtained from Hotelurbano.com and that only 49 hotels (38%) had star ratings. Moreover, this website did not provide a platform for users to write reviews and rate hotels. Consequently, Hotelurbano.com was excluded, thereby leaving only eight OTAs and Facebook pages.

Among these nine websites, two different user-rating scale formats were determined. The user rating format used by TripAdvisor, Hotels.com, Expedia, Ctrip, and Facebook was a 5-point scale. By contrast, Booking.com, Agoda, Priceline, and Kayak used a 10-point scale. To standardize the base point for comparison, all 10-point scales were recalculated into 5-point scale scores.

Findings and discussion

Website star ratings

Of the nine selected websites that provided a user-based rating system, Facebook was the only

Table 2. Comparison of website star ratings among the eight OTAs.

Website	N	Star rating score grouped by Tukey result		Standard deviation	F	Significance
Priceline	118	3.801[a,c]		0.824	4.466	0.000**
Ctrip	125	3.896[b,d]		0.731		
Expedia	115	3.991	3.991	0.610		
Hotels.com	111	4.014	4.014	0.604		
TripAdvisor	104	4.043	4.043	0.603		
Kayak	125	4.056	4.056	0.613		
Agoda	121		4.165[c,d]	0.613		
Booking.com	121		4.182[a,b]	0.632		

OTAs: online travel agencies.
**$p < 0.01$.
[a]$p = 0.00$ is significant at the 0.05 level.
[b]$p = 0.016$ is significant at the 0.05 level.
[c]$p = 0.001$ is significant at the 0.05 level.
[d]$p = 0.031$ is significant at the 0.05 level.

one that did not provide any organizationally defined star rating system; thus, only eight websites were available for comparison with website star ratings. The analysis of variance (ANOVA) result in Table 2 indicated that Expedia (3.991), Hotels.com (4.014), TripAdvisor (4.043), and Kayak (4.056) provided similar star ratings. The average scores for Priceline (3.801) and Ctrip (3.896) were the lowest among all eight OTAs; the average scores for Agoda (4.165) and Booking.com (4.182) were statistically higher than those of the aforementioned two OTAs ($F = 4.466$, $p = 0.000$).

Further analysis was conducted to analyze the differences among the different hotel types. Table 3 shows that the website star ratings indicated no statistical difference between international and Asian chain hotels among the eight websites. However, statistical differences were determined in the local chain and independent hotels ($F = 3.088$, $p = 0.004$; $F = 2.443$, $p = 0.02$). For the local chain, Priceline's rating (3.735) was statistically lower than those of Booking.com (4.163, $p = 0.009$) and Agoda (4.137, $p = 0.017$). For independent hotels, Priceline provided the lowest rating (3.380), which was statistically lower than that of Booking.com (3.889, $p = 0.049$). Given that Priceline is popular in the US market, Hong Kong local chain and independent hotel managers may not promote Priceline exclusively because these hotels focus mainly on Asian markets. Accordingly, Priceline's website star rating fared differently. This case could also be attributed to the lack of an official star rating system in Hong Kong. Although HKTB categorizes Hong Kong hotels into four, namely, high tariff A, high tariff B, medium tariff, and unclassified (HKTB,

2015a), this classification system is exclusively based on published rack rate and staff-to-room ratio. Other items related to service level are not considered. Moreover, only the hotels know their respective classification levels, thereby depriving local TAs, OTAs, and consumers of such information. For chain hotels, most brand names are popular and well known among customers and industry practitioners. Their reputation and brand standard were well documented both online and offline; thus, OTA staff members could easily associate an organizational rating with these hotels. However, local chain and independent hotels are unfamiliar to agents, particularly the overseas OTAs. Therefore, raters could just base the ratings of these hotels on their own experiences or through user reviews. Accordingly, the ANOVA test result showed a statistical difference in both local chain and independent hotels. This statistical difference may have been the result of the different rating systems of OTAs.

Hotel ratings could provide beneficial recommendations to improve product quality, image, and value, particularly to new consumers. Large variations in the ratings for the same hotel in different OTA websites may confuse consumers if they are browsing through numerous OTAs for hotel selection. Therefore, management needs to consider this factor when formulating their pricing strategies and negotiating deals with various OTAs.

User ratings

Table 4 presents the ANOVA results of the average user rating scores among the eight OTAs and Facebook pages. The results indicated that user scores exhibited statistical differences in all nine

Table 3. Comparison of website scores among eight OTAs by hotel type.

Hotel type	Website	N	Mean	Standard deviation	F	Significance
International	Booking.com	32	4.438	0.669	0.551	0.795
	TripAdvisor	32	4.250	0.718		
	Hotels.com	34	4.265	0.698		
	Expedia	34	4.265	0.698		
	Agoda	32	4.438	0.605		
	Priceline	31	4.177	0.791		
	Kayak	34	4.324	0.638		
	Ctrip	34	4.294	0.708		
Asian chain	Booking.com	13	4.231	0.599	0.253	0.970
	TripAdvisor	12	4.208	0.498		
	Hotels.com	13	4.154	0.591		
	Expedia	13	4.154	0.591		
	Agoda	13	4.192	0.560		
	Priceline	13	3.962	0.776		
	Kayak	13	4.154	0.688		
	Ctrip	13	4.077	0.571		
Local chain	Booking.com	49	4.163[a]	0.589	3.088	0.004**
	TripAdvisor	43	3.953	0.509		
	Hotels.com	44	3.920	0.527		
	Expedia	46	3.913	0.519		
	Agoda	51	4.137[b]	0.566		
	Priceline	49	3.735[ab]	0.784		
	Kayak	51	4.059	0.506		
	Ctrip	51	3.833	0.660		
Independent	Booking.com	27	3.889[c]	0.577	2.443	0.020*
	TripAdvisor	17	3.765	0.533		
	Hotels.com	20	3.700	0.410		
	Expedia	22	3.636	0.441		
	Agoda	25	3.860	0.621		
	Priceline	25	3.380[c]	0.781		
	Kayak	27	3.667	0.554		
	Ctrip	27	3.426	0.689		

OTAs: online travel agencies.
[a]$p = 0.009$ is significant at the 0.05 level.
[b]$p = 0.017$ is significant at the 0.05 level.
[c]$p = 0.049$ is significant at the 0.05 level.
*Significant at $p < 0.05$; **significant at $p < 0.01$.

Table 4. One-way ANOVA analysis of user rating of OTAs.

Websites	N	User rating score grouped by Tukey result					Standard deviation	F	Significance
Priceline	100	3.818					0.655	27.860	0.000**
Booking.com	122	3.937	3.937				0.328		
Agoda	121	3.953	3.953				0.272		
TripAdvisor	126		4.028	4.028			0.466		
Hotels.com	111		4.075	4.075	4.075		0.394		
Expedia	112		4.083	4.083	4.083		0.388		
Facebook	97			4.148	4.148		0.463		
Kayak	125				4.227		0.327		
Ctrip	125					4.493	0.186		

ANOVA: analysis of variance; OTAs: online travel agencies.
**Significant at $p < 0.01$.

websites ($F = 27.86$, $p = 0.000$). The first group with Priceline (3.818), Booking.com (3.937), and Agoda (3.953) presented the lowest user scores.

The average scores for the second to the fourth groups ranged from 3.937 to 4.227, and that for Ctrip were statistically higher than those for all

the other websites (4.493). Table 1 shows that Ctrip has the most proportional visitors from China (73.5%) compared with the other OTAs; thus, understanding the typical online purchasing behavior of the mainland Chinese would help to interpret the findings more effectively. Ctrip dominates the China market and is the only website that targets this market. Thus, the user rating on Ctrip could reflect the overall mainland Chinese (referred to as "Chinese" hereafter) residents' opinion on Hong Kong hotels. A study by Kim et al. (2006) indicated that experienced online Chinese hotel consumers were relatively less dependent on hotel branding and price benefits in their hotel selection. Instead, this group of consumers imposes considerably more importance on the website's ability to meet their information needs and its level of online security. Being the largest OTA in China with the best resources available, Ctrip can easily achieve a technically robust system compared with other OTAs in the country. This insight may provide a partial explanation for the higher-than-average user ratings of the largest OTA compared with the others.

Table 4 shows that user rating scores among the aforementioned three websites were statistically different (4.028, 4.148, and 4.493, respectively).

In analyzing the differences among the four hotel types, the results showed statistical differences among all OTAs (Table 5). Except for the Asian hotels that merely split the user ratings into two groups ($F = 3.065$; $p = 0.004$), the remaining hotel types split the user ratings into three groups ($F = 7.741, 12.091, 9.453$; $p = 0.000$). The results among all OTAs were reasonably consistent, that is, Priceline, Agoda, and Bookings.com published the lowest rates, whereas Kayak and Ctrip consumers gained the highest scores.

Consumers would probably have several preferences in using a specific OTA for their hotel search. Thus, posting ratings/comments for the same hotel in different OTA sites may not be a common practice, which implies that such a discrepancy would have a relatively weak effect on potential guests regarding hotel service quality perception of different hotels. The variation of user ratings for hotels found in different OTAs suggested that different consumer groups have their own rating norms based on their background and possibly other users' rating behavior on the site. Therefore, hotel management should be cautious in interpreting these ratings when formulating response strategies.

Website star rating versus user rating

In the comparison of overall website star and user ratings, the pair-sample t-test results indicated that the website star rating (4.016) was statistically lower ($t = 4.207$, $p = 0.000$) than the user rating (4.095). Booking.com and Agoda had statistically higher website star ratings than user ratings ($t = 5.457, 5.075$; $p = 0.000$). Both OTA website star ratings were approximately 4.2, but user ratings were below 4. However, the remaining OTAs had opposite outcomes because their website star ratings were lower than the user ratings. The user ratings of Expedia, Kayak, and Ctrip were all statistically higher than the website star ratings ($t = -2.320, -3.974, -11.473$; $p < 0.05$).

The t-test results in Table 6 indicated that the Asian chain and independent hotel user rating scores were significantly higher than the website star ratings. For Asian chains, the user rating (4.232) was slightly higher ($t = 2.238$, $p = 0.027$) than the star rating (4.129), whereas the independent hotel user rating (3.951) was statistically higher ($t = 6.347$, $p = 0.000$) than the star rating (3.669) when compared to the Asian chain. Except for the user rating for the international chain, the ratings for the other three hotel types exhibited a higher score than the website star rating. This result indicates that most consumers believe their stay experience was at par or even better than what the star rating would have implied. Accordingly, hotels could use these opportunities to highlight and communicate such information to the general public on various social media platforms. Although the scores of international chains did not show any statistical difference, the t-test result ($t = -1.103$) indicated that the user rating was lower than the star rating. The possible reasons for this result could be attributed to that fact that many of the international chain hotels are categorized as four- or five-star hotels. When users rate a hotel, many of them do not give full marks (5) in their reviews. Consequently, five-star hotels could hardly obtain the highest scores when calculating the mean scores. Thus, user ratings were relatively lower than website ratings in this study. Managers have to be aware of this condition based on EDT because new consumers may have high expectations regarding hotel standards and could be easily dissatisfied if the actual delivery does not match after consumption.

According to the data collected, approximately 40% of the user ratings were lower than

Table 5. One-way ANOVA analysis of user ratings of OTAs by hotel type.

Hotel type	OTAs	N	User rating score grouped by Tukey result			Standard deviation	F	Significance
International	Priceline	25	3.964			0.836	7.741	0.000**
	Agoda	32	4.092			0.289		
	Booking.com	32	4.098			0.310		
	Facebook	33	4.170	4.170		0.224		
	TripAdvisor	34	4.235	4.235		0.480		
	Hotels.com	34	4.265	4.265		0.379		
	Expedia	32	4.272	4.272		0.378		
	Kayak	34		4.446	4.446	0.250		
	Ctrip	34			4.615	0.171		
Asian chain	Priceline	11	4.050			0.475	3.065	0.004**
	Agoda	13	4.062			0.270		
	Booking.com	13	4.115			0.300		
	TripAdvisor	13	4.192	4.192		0.384		
	Hotels.com	13	4.215	4.215		0.339		
	Facebook	12	4.233	4.233		0.137		
	Expedia	13	4.254	4.254		0.336		
	Kayak	13	4.319	4.319		0.332		
	Ctrip	13		4.562		0.150		
Local chain	Priceline	45	3.794			0.580	12.091	0.000**
	Booking.com	50	3.849			0.290		
	Agoda	51	3.891			0.230		
	Hotels.com	44	3.955	3.955		0.337		
	Expedia	46	3.978	3.978		0.329		
	TripAdvisor	51	3.980	3.980		0.424		
	Facebook	46	4.002	4.002		0.641		
	Kayak	51		4.143		0.284		
	Ctrip	51			4.437	0.159		
Independent	Priceline	19	3.547			0.586	9.453	0.000**
	TripAdvisor	28	3.786	3.786		0.439		
	Booking.com	27	3.824	3.824		0.333		
	Agoda	25	3.846	3.846		0.254		
	Expedia	21		3.919		0.418		
	Hotels.com	20		3.925		0.433		
	Facebook	23		4.052		0.379		
	Kayak	27		4.067	4.067	0.343		
	Ctrip	27			4.411	0.187		

ANOVA: analysis of variance; OTAs: online travel agencies.
**significant at $p < 0.01$.

Table 6. Pair-sample t-test on website star rating and user rating by hotel type.

Hotel type		N	Mean	Standard deviation	t	Significance
International	Website star rating	255	4.302	0.694	−1.103	0.271
	User rating	255	4.262	0.449		
Asian chain	Website star rating	101	4.129	0.598	2.238	0.027*
	User rating	101	4.232	0.349		
Local chain	Website star rating	380	3.961	0.603	1.922	0.055
	User rating	380	4.016	0.390		
Independent	Website star rating	183	3.669	0.614	6.347	0.000**
	User rating	183	3.951	0.439		

*Significant at $p < 0.05$; **significant at $p < 0.01$.

the star ratings. This finding may indicate that consumers have benchmarked the hotel service in mind based on the star ratings. Thus, if the service standard does not match user expectations, then the users would rate the hotel with a low score. Many consumers are substantially

Table 7. Comparison of user rating measurement scale levels.

Hotel type	Level of measurement	N	Mean	Standard deviation	t	Significance
International	5-Point	167	4.312	0.375	2.918	0.004**
	10-Point	123	4.165	0.482		
Asian chain	5-Point	64	4.292	0.313	2.431	0.017*
	10-Point	50	4.140	0.353		
Local chain	5-Point	238	4.077	0.445	3.807	0.000**
	10-Point	197	3.923	0.385		
Independent	5-Point	119	4.026	0.435	3.149	0.002**
	10-Point	98	3.842	0.414		
Overall	5-Point	588	4.157	0.428	6.130	0.000**
	10-Point	468	3.993	0.434		

*Significant at $p < 0.05$; **significant at $p < 0.01$.

aware of the international chain hotel service standard; thus, their expectations on international chains are considerably high. This expectation may explain the difference in performance of the international chains from the three other hotel types in this study.

User rating measurement scale

Different scale formats affect user evaluation behavior and the corresponding scores (Dawes, 2008). Among the nine booking and review websites, five adopted the 5-point scale and four implemented the 10-point scale. To standardize the baseline scores for comparison in this study, the 10-point scores were divided by two to achieve a 5-point scale score. An assessment of the user ratings for the individual hotel types showed that the user ratings for those using the 5-point scale were higher than for those using the 10-point scale. Table 7 shows that a user rating system with a 10-point measurement scale posted a score of 3.993 and was statistically lower than ($t = 6.130$, $p = 0.000$) the 5-point scale (4.157). The largest difference between the 5- and 10-point systems was determined in the local chain hotels ($t = 3.807$, $p = 0.000$). This finding is consistent with the prior study by Dawes (2008), which showed that a 5-point scale is likely to produce slightly higher mean scores relative to the highest possible attainable score compared with the scores produced from a 10-point scale.

Table 8 shows that the ANOVA result indicated that the user rating of Ctrip was the highest among the ratings of all the websites. By comparing the difference between Ctrip and the other OTA websites, we can examine the viewpoint of Chinese and non-Chinese users. Table 9 shows the t-test result, which excludes the Ctrip results.

Evidently, the results differed from those in Table 7. Except for the overall comparison showing the statistical difference ($t = 2.580$, $p = 0.01$), all four hotel types did not illustrate any statistical difference. Consequently, this evidence showed that Ctrip users (mainly Chinese) rated the hotels differently compared with users from other countries. Given that reviews are written in Chinese, evidence suggests that the rating behavior of the Chinese tends to differ from that of other nationalities, and that the former is highly "generous" in rating hotel performance. Prior findings suggested that cultural background affects product satisfaction and complaining behavior (Au et al., 2014).

Conclusion

The hotel star ratings given by the OTAs and the customer rating scores found on these websites can no doubt assist consumers in identifying hotel services and pricing levels, thereby making the star rating one of the main factors that facilitate the consumers' selection of a hotel (Boni, 2015). When consumers search through multiple booking websites to obtain hotel information, a star rating that shows discrepancies across different platforms may confuse consumers, thereby affecting their quality expectations and satisfaction. Prior studies have indicated that even OTAs have adopted different rating methodologies; thus, their rating scores for hotels show no statistical differences 5 years ago (Denizci Guillet and Law, 2010). However, the current study determined that the star ratings among the eight booking websites show statistical differences. Ctrip and Priceline published the lowest star ratings, whereas Agoda and Booking.com published the highest. However, the difference only

Table 8. Pair-sample *t*-test on website star rating and user rating by OTA.

OTAs		N	Mean	Standard	*t*	Significance
Booking.com	Website star rating	121	4.182	0.632	5.457	0.000**
	User rating	121	3.938	0.329		
Agoda	Website star rating	121	4.165	0.614	5.075	0.000**
	User rating	121	3.953	0.272		
Priceline	Website star rating	100	3.730	0.830	−1.104	0.272
	User rating	100	3.818	0.655		
TripAdvisor	Website star rating	104	4.043	0.604	−1.490	0.139
	User rating	104	4.106	0.450		
Hotels.com	Website star rating	111	4.014	0.605	−1.678	0.096
	User rating	111	4.075	0.395		
Expedia	Website star rating	112	3.996	0.610	−2.320	0.022*
	User rating	112	4.083	0.388		
Kayak	Website star rating	125	4.056	0.613	−3.974	0.000**
	User rating	125	4.227	0.327		
Ctrip	Website star rating	125	3.896	0.733	−11.473	0.000**
	User rating	125	4.493	0.186		
Overall	Website star rating	919	4.016	0.668	4.207	0.000**
	User rating	919	4.095	0.434		

OTAs: online travel agencies.
*Significant at $p < 0.05$; **significant at $p < 0.01$.

Table 9. Comparison of user rating measurement scale without Ctrip.

Hotel type	Level of measurement	N	Mean	Standard deviation	*t*	Significance
International	5-Point	133	4.235	0.375	1.299	0.195
	10-Point	123	4.165	0.482		
Asian chain	5-Point	51	4.223	0.307	1.267	0.208
	10-Point	50	4.140	0.353		
Local chain	5-Point	187	3.979	0.447	1.305	0.193
	10-Point	197	3.923	0.385		
Independent	5-Point	92	3.913	0.423	1.154	0.250
	10-Point	98	3.842	0.414		
Overall	5-Point	463	4.066	0.430	2.580	0.010*
	10-Point	468	3.993	0.434		

*Significant at $p < 0.05$; **significant at $p < 0.01$.

appeared in ratings for local chains and independent hotels.

Given the increasing number of consumers who check user review comments before making hotel bookings, the user rating of a hotel affects the booking intention of consumers (Browning et al., 2013). Thus, the present study analyzed both website star and user ratings. The results indicated that user ratings among the eight booking websites were statistically different. The mean rating scores ranged from the lowest score of 3.818 (Priceline) to the highest score of 4.493 (Ctrip). The user rating scores of Ctrip were significantly higher than those in the other OTAs. This result suggests that online consumers may have different rating behaviors. Chinese users rated Hong Kong hotels with higher scores,

which indicated that they were more satisfied with the hotel product and services than users from other countries. However, this finding does not mean that these users are satisfied with what they receive now (Arlt, 2006). With the increase of their travel experience and education level, their expectation and standard would increase in the near future. The current service standard will no longer satisfy their needs (Sun et al., 2015). To cater to the China market, hotel management should exert effort on Ctrip to identify the specific needs and wants of Chinese consumers from user reviews, and consequently to enhance the service and product standard provided to this group of tourists.

The discrepancy between the website and user ratings in this study revealed the significance of

ensuring that what is delivered matches the expectations of the consumers projected through various marketing activities; otherwise, dissatisfaction is likely to occur. To narrow down this gap, the hotel management must have a clear knowledge on what expectations their potential customers are having on their product quality. Travelers' expectations on specific hotel standard undoubtedly are affected by many factors, yet the management can still manipulate the customers' expectations through effective communication with them on various channels especially on the increasing popular social media platform. Large international hotel chains could stand more advantages in this regard due to their strength in terms of financial and human resources as well as their extensive prior experiences. Nevertheless, the hotel should ensure their product performance is up to, or even beyond, the required set standard so that positive word of mouth can be generated as a result. After all, it is the absolute actual product performance that attracts repeat businesses from many experienced travelers nowadays. To achieve this end, an unbiased and constant evaluation of the level of standard the hotel is currently providing in comparison with the market benchmark would be necessary.

In the comparison of website and user ratings, the results indicated that the latter was statistically higher than the former. These differences appeared in the ratings for Asian chain and independent hotels only. Even international chain hotels did not exhibit any statistical difference, and user ratings were relatively lower than website ratings. This result may reflect the awareness of consumers on the service standards of international hotel chains, thereby creating realistic expectations from these international chains. International hotel chains have a strong brand image and well-documented standards, and customers could easily obtain these through websites or word of mouth. International chain hotels cannot easily surprise or "wow" the customers (Riley and Szivas, 2015) because the latter normally have certain impressions before they check in. Therefore, in case the service quality fails to meet their expectation, the consumers may be upset and may rate the hotel with a low score.

Finally, the design of the rating scale format could also have an effect on the resulting ratings. Different websites have different levels of user rating scales. The selected nine websites in this study employed two different user rating scales;

five of them used the 5-point scale, whereas the other four adopted the 10-point scale. The results indicated that the 5-point scale mean scores were statistically higher than those of the 10-point scale. A prior study confirmed that the 10-point scale could lead to a considerably low score. However, when Ctrip was excluded from the *t*-test, only the overall comparison showed a statistical difference. All four hotel types showed no statistical difference, thereby indicating that the measurement scale level did not affect user ratings. Nevertheless, the Chinese rating criteria and behaviors of consumers from other countries were different. For hotels targeting the China market, caution should be taken when interpreting consumer ratings because such ratings tend to be inflated as a result of cultural influences.

Limitation and future studies

This study has a major limitation. The user rating measuring criteria for each website were different. The results shown in Tables 4 and 5 indicated the average user rating scores among OTAs, and the hotel types showed statistical differences. Priceline, Agoda, and Bookings.com consistently indicated the lowest scores, whereas Kayak and Ctrip constantly exhibited higher scores. Table 10 shows a summary of each website's measuring criteria. The summary indicated that the baseline for users to evaluate hotels among OTAs was different. Consequently, the hotels' final user rating scores in each website may vary because of the inconsistency of measuring criteria. Moreover, this study determined that Chinese consumers rated hotels with high scores. A possible reason could be the rating behavior of Chinese consumers, which is different from that of Westerners. Accordingly, Chinese consumers tend to give high scores. Another reason is that the rating criteria in Ctrip favored hotels and enabled consumers to give considerably high scores. In addition, this study only included nine OTA websites and Facebook, which cannot generalize the overall comparison of Hong Kong hotels' star ratings.

In relation to the aforementioned limitations, future studies could focus on three different areas. First, such studies could investigate the review behaviors of Chinese tourists to understand how they perceive reviews from other foreign websites. Second, future studies can also focus on how different rating criteria affect final user rating scores. Finally, future studies could

Table 10. User rating measuring criteria of nine popular online websites.

Websites	Measuring criteria
Priceline	Hotel cleanliness, hotel staff, location of hotel
Booking.com	Cleanliness, comfort, location, facilities, staff members, value for money, free Wi-Fi
Agoda	Value for money, location, staff member performance, hotel condition/cleanliness, room comfort/standard, food/dining
Hotels.com	Cleanliness, service, comfort, condition, neighborhood
TripAdvisor	Location, sleep quality, rooms, service, value, cleanliness
Expedia	Room cleanliness, service and staff members, room comfort, hotel condition
Kayak	Location, service, food, room, Wi-Fi
Ctrip	Location, cleanliness, service, facilities
Facebook	User-nominated stars (based on users' own perceptions)

examine the service gap from individual measuring criteria from OTAs.

Declaration of conflicting interests

Funding

References

Ali R and Skift (2014) *The Top Online Travel Booking Sites for January 2014*. Available at: http://skift.com/2014/02/24/the-top-online-travel-booking-sites-for-january-2014/ (accessed 21 June 2015).

Amaro S and Duarte P (2015) An integrative model of consumers' intentions to purchase travel online. *Tourism Management* 46: 64–79.

Arlt WG (2006) Chinese tourists behaviour in 'Elsewhereland'. In: *Conference Proceedings: Tourism in Asia Conference, Leeds Metropolitan University*, Leeds, England, 10–12 June 2006.

Au N, Buhalis D and Law R (2014) Online complaining behavior in Mainland China hotels: the perception of Chinese and non-Chinese customers. *International Journal of Hospitality and Tourism Administration* 15(3): 248–274.

Baek H, Ahn J and Choi Y (2012) Helpfulness of online consumer reviews: Readers' objectives and review cues. *International Journal of Electronic Commerce* 17(2): 99–126.

Barnette JJ (2000) Effects of stem and Likert response option reversals on survey internal consistency: if you feel the need, there is a better alternative to using those negatively worded stems. *Educational and Psychological Measurement* 60(3): 361–370.

Barsky JD and Labagh R (1992) A strategy for customer satisfaction. *Cornell Hotel and Restaurant Administration Quarterly* 33: 32–40.

Bentler PM, Jackson DN and Messick S (1971) Identification of content and style: a two-dimensional interpretation of acquiescence. *Psychological Bulletin* 76(3): 186–204.

Blomberg-Hygard A and Anderson CK (2016) United Nations world tourism organization study on online guest reviews and hotel classification systems: an integrated approach. *Service Science* 8(2): 139–151.

Boni P (2005) The Distance Between a Hotel's Keywords and Bookings: How to close the deal after Search Engine Optimization. Retrieved from http://www.wiredhotelier.com/news//4025726.html (accessed 10 June 2015).

Bronner F and De Hoog R (2011) Vacationers and e-WOM: who posts, and why, where, and what? *Journal of Travel Research* 50: 15–26.

Browning V, So KKF and Sparks B (2013) The Influence of online reviews on consumers' attributions of service quality and control for service standards in hotels. *Journal of Travel and Tourism Marketing* 30(1–2): 23–40.

Buhalis D and Law R (2008) Progress in information technology and tourism management: 20 years on and 10 years after the Internet—The state of eTourism research. *Tourism Management* 29(4): 609–623.

Chang L (1994) A psychometric evaluation of 4-point and 6-point Likert-type scales in relation to reliability and validity. *Applied Psychological Measurement* 18(3): 205–216.

Cheapoair (2015) *Cheap Tickets: Flights, Hotels and Car Rentals − CheapOair*. Available at: http://www.cheapoair.com/ (accessed 21 June 2015).

Choi TY and Chu RKS (1999) Consumer perceptions of the quality of services in three hotel categories in

Hong Kong. *Journal of Vacation Marketing* 5(2): 176–189.

Churchill GA Jr, and Peter JP (1984) Research design effects on the reliability of rating scales: a meta-analysis. *Journal of Marketing Research* 21(4): 360–375.

Cox C, Burgess S, Sellitto C, et al. (2009) The role of user-generated content in tourists' travel planning behavior. *Journal of Hospitality Marketing and Management* 18(8): 743–764.

Cser K and Ohuchi A (2008) World practices of hotel classification systems. *Asia Pacific Journal of Tourism Research* 13(4): 379–398.

Dawes JG (2008) Do data characteristics change according to the number of scale points used? An experiment using 5 point, 7 point and 10 point scales. *International Journal of Market Research* 51(1). Available at: http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2013613 (accessed 18 May 2015).

Denizci Guillet B and Law R (2010) Analyzing hotel star ratings on third-party distribution websites. *International Journal of Contemporary Hospitality Management* 22(6): 797–813.

Dickinger A and Mazanec J (2008) Consumers' Preferred criteria for hotel online booking. In: 'Connor PO, Höpken W and Gretzel U (eds) *Information and Communication Technologies in Tourism*. Vienna: Springer International Publishing, 2008, pp. 244–254.

Ginanneschi M (2014) Research note: the growth of Internet purchases and the travel trade. *Tourism Economics* 20(5): 1105–1115.

Hewitt E and Schlichter S (2008) *Star Quality: What's in a Star Rating?* Available at: http://www.independenttraveler.com/travel-tips/travelers-ed/star-quality-whats-in-a-hotel-rating (accessed 18 May 2015).

HKHA (2015) *Hotel Information (By Alphabetical)*. Available at: http://www.hkha.org/en/hotel-information (accessed 25 February 2014).

HKTB (2015a) *Hotel Room Occupancy Report*. Available at: https://securepartnernet.hktb.com/en/research_statistics/research_publications/index.html?id=3634 (accessed 1 July 2015).

HKTB (2015b) *Visitor Arrival Statistics March 2015*. Available at: https://securepartnernet.hktb.com/ResearchPublicationVisitLog.jsf?site=1andcateID=3631andtype=pdfandpubID=156697andlink=/filemanager/intranet/dept_info/private_20/paper/VAS2002/VAS2015/VAS_03_2015_1.pdf (accessed 1 July 2015).

IBISWorld (2015) *Travel Agencies in the US: Market Research Report*. Available at: http://www.ibisworld.com/industry/default.aspx?indid=1481 (accessed 18 December 2015).

Ingram H (1996) Classification and grading of smaller hotels, guesthouses and bed and breakfast accommodation. *International Journal of Contemporary Hospitality Management* 8(5): 30–34.

Kim WG, Ma X, and Kim DJ (2006) Determinants of Chinese hotel customers' e-satisfaction and purchase intentions. *Tourism Management* 27(5): 890–900.

Lee JW, Jones PS, Mineyama Y, et al. (2002) Cultural differences in responses to a Likert scale. *Research in Nursing and Health* 25(4): 295–306.

Leung SO (2011) A comparison of psychometric properties and normality in 4-, 5-, 6-, and 11-point Likert scales. *Journal of Social Service Research* 37(4): 412–421.

Li X, Pan B, Zhang L, et al. (2009) The effect of online information search on image development. *Journal of Travel Research* 48(1): 45–57.

Likert R (1932) A technique for the measurement of attitudes. *Archives of Psychology* 140: 5–53.

Litvin SW, Goldsmith RE and Pan B (2008) Electronic word-of-mouth in hospitality and tourism management. *Tourism Management* 29(3): 458–468.

Liu X, Schuckert M and Law R (2015) Can response management benefit hotels? Evidence from Hong Kong hotels. *Journal of Travel & Tourism Marketing* 32(8): 1069–1080.

Liu X, Schuckert M, and Law R (2016) Online incentive hierarchies, review extremity, and review quality: empirical evidence from the hotel sector. *Journal of Travel & Tourism Marketing* 33(3): 279–292.

Maeda H (2015) Response option configuration of online administered Likert scales. *International Journal of Social Research Methodology* 18(1): 15–26.

McCarthy L, Stock D and Verma R (2010) How travelers use online and social media channels to make hotel-choice decisions. *Cornell Hospitality Report* 10(18): 4–18.

McCourt ME and Jewell G (1999) Visuospatial attention in line bisection: Stimulus modulation of pseudoneglect. *Neuropsychologia* 37(7): 843–855.

Nicholls MER, Orr CA, Okubo M, et al. (2006) Satisfaction guaranteed: the effect of spatial biases on responses to Likert scales. *Psychological Science* 17(12): 1027–1028.

O'Connor P and Frew AJ (2002) The future of hotel electronic distribution: expert and industry perspectives. *Cornell Hotel and Restaurant Administration Quarterly* 43(3): 33–45.

Oh H and Jeong M (1996) Improving marketers' predictive power of customer satisfaction on expectation-based target market levels. *Hospitality Research Journal* 19(4): 65–85.

Oh H and Parks SC (1997) Customer satisfaction and service quality: a critical review of the literature and research implications for the hospitality industry. *Hospitality Research Journal* 20(3): 35–64.

Oliver RL (1989) Processing of the satisfaction response in consumption: a suggested framework and research propositions. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behaviour* 2: 1–16.

Oliver RL (1997) *Satisfaction: A Behavioral Perspective on the Consumer*. New York: McGraw-Hill.

Ray JJ (1983) Reviving the problem of acquiescent response bias. *Journal of Social Psychology* 121(1): 81–96.

Riley M and Szivas E (2015) Luxury and innovation: towards an evaluative framework. *Research in Hospitality Management* 5(2): 147–152.

Rhee HT and Yang SB (2015) Does hotel attribute importance differ by hotel? Focusing on hotel star-classifications and customers' overall ratings. *Computers in Human Behavior* 50(9): 576–587.

Roger-Monzó V, Martí-Sánchez M, and Guijarro-García M (2015) Using online consumer loyalty to gain competitive advantage in travel agencies. *Journal of Business Research* 68(7): 1638–1640.

Runfola A, Rosati M and Guercini S (2013) New business models in online hotel distribution: emerging private sales versus leading IDS. *Service Business* 7(2): 183–205.

Scaglione M and Schegg R (2015) The impact of attribute preferences on adoption timing of hotel distribution channels: are OTAs winning the customer race? In: Tussyadiah I and Inversini A (eds) *Information and Communication Technologies in Tourism 2015*. London: Springer International Publishing, pp. 681–693.

Schaal D and Skift (2014) *Hipmunk Displaces Orbitz as Yahoo Travel Provider*. Available at: http://skift.com/2014/10/28/hipmunk-displaces-orbitz-as-yahoo-travel-provider/ (accessed 21 June 2015).

Schuckert M, Liu X and Law R (2015) Hospitality and tourism online reviews: recent trends and future directions. *Journal of Travel & Tourism Marketing* 32(5): 608–621.

Scott N, Burgess S, Monday A, O'Brien P, et al. (2010) *Helping Tourism SMEs Plan and Implement Information and Communication Technology.* Queensland: CRC for Sustainable Tourism Pty Ltd.

Stringam BB and Gerdes J (2010) An analysis of word-of-mouse ratings and guest comments of online hotel distribution sites. *Journal of Hospitality Marketing and Management* 19(7): 773–796.

Su CS and Sun LH (2007) Taiwan's hotel rating system: a service quality perspective. *Cornell Hotel and Restaurant Administration Quarterly* 48(4): 392–401.

Sun S, Tong KT and Law R (2015) Chinese hotel guest perception of international chain hotels under the same hotel brand in different travel destinations: the cases of intercontinental and Sheraton. *Journal of Vacation Marketing* Available at: http://doi.org/10.1177/1356766715614344 (accessed 18 July 2015).

Toh RS, Raven P and DeKay F (2011) Selling rooms: hotels vs. third-party websites. *Cornell Hospitality Quarterly* 52(2): 181–189.

Vermeulen IE and Seegers D (2009) Tried and tested: the impact of online hotel reviews on consumer consideration. *Tourism Management* 30(1): 123–127.

Vinod B (2011) The future of online travel. *Journal of Revenue and Pricing Management* 10(1): 56–61.

Werthner H and Klein S (1999) ICT and the changing landscape of global tourism distribution. *Electronic Markets* 9(4): 256–262.

Xie K, Zhang Z and Zhang Z (2014) The business value of online consumer reviews and management response to hotel performance. *International Journal of Hospitality Management* 43: 1–12.

Xie L and Lee YJ (2015) Hotels at our fingertips: understanding consumer conversion from search, click-though, to book. *Click-Though, to Book* (May 22, 2015). Available at: SSRN: http://ssrn.com/abstract=2609514 (accessed 18 June 2015).

Yoo KH and Gretzel U (2011) Influence of personality on travel-related consumer-generated media creation. *Computers in Human Behavior*, 27(2), 609–621.

Yu L (1998) China's hotel industry: assessment and prospects. *Journal of Vacation Marketing* 4(4): 368–380.

Zhang Z, Zhang Z, Wang F, et al. (2013) Factors influencing the effectiveness of online group buying in the restaurant industry. *International Journal of Hospitality Management* 35: 237–245.