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## PLAYING FOR FIRST PLACE: AN ANALYSIS OF ONLINE REVIEWS AND THEIR IMPACT ON LOCAL MARKET RANKINGS

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### ABSTRACT

Whereas past research studied the impact of online reviews on a hotel's image, the present study analyzes the impact of various measures of customer engagement on the local market ranking of a hotel. For these purposes, the researchers collected data on a sample of hotels including the number of reviews, absolute rating (i.e. 1-5 stars), and market ranking (i.e. 1st, 2nd, 3rd place) on TripAdvisor. The authors tested the relationships between number of reviews, market ranking, overall rating and number of booking transactions. Results revealed that the absolute rating of the hotel was a significant factor in determining its market ranking, whereas other elements such as the number of reviews were not. Since the logarithm used by TripAdvisor and other review sites is of a proprietary nature, research that illuminates the relationships between overall rating, market ranking, and number of reviews, helps illuminate scholar's and practitioner's understanding of how to improve hotel performance and online image.

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## INTRODUCTION

There once was a time when the only way to obtain word-of-mouth information was through a family, friend, or acquaintance. Today, information regarding a wide array of products and services is available online through review sites such as TripAdvisor, Yelp, and many others. Particularly in the hotel industry, online sites allow customers to share their expertise and feelings concerning their last visit. Whereas many hoteliers have been alarmed regarding the amount and type of information available to prospective customers, others have embraced the opportunity to engage customers in yet another platform. Similarly, scholars have turned their attention to this subject, as they seek to measure the impact, explore behaviors, or devise strategies related to online feedback. Some examples include O'Connor's (2010) study of managing a hotel's image on TripAdvisor; Ye, Law, Gu, and Chen's (2011) development of a mathematical model for the impact of online feedback; and Torres, Adler, and Behnke's (2014) comparison of online consumer feedback with that of experts and internal stakeholders.

After examining the literature concerning online consumer feedback, the researchers identified three key areas of research focus. The first key area concentrates on making purchase decisions based on online reviews. Some examples of the scholars that have examined this topic include Pavlou and Dimoka (2006) and Cox, Burgess, Sellitto, and Buultjens (2009). Such stream of research illuminates the understanding of how consumers use such feedback. However, it does not provide any information concerning its impact. The second stream of research emphasizes the credibility of online reviews (Mackiewicz, 2009; Xie, Miao, Kuo, & Lee, 2011). Although these authors present some of the potential challenges associated with online reviews, they do not agree on the incidence of deceitful postings. A third group of researchers focused on the financial impact of consumer-generated feedback. This stream of research includes Ye et al.'s (2011) development of a mathematical model for online consumer feedback and sales and Ögüt and Taş's (2012) investigation of room rates in two European cities and their relationships to consumer feedback. The stream of research analyzing the impact of online feedback in hotel sales and profitability is especially helpful. However, due to limited information many studies have used proxy measures such as the number of reviews in lieu of actual hotel room revenues. One example of this was the study of Ye et al. (2011) where an increased number of online reviews was interpreted as an increased

number of hotel room revenue. While an increased number of reviews could result in increased revenue, such relationship is yet to be proven.

In light of the past research, the present study examines several variables of interest concerning online feedback including a lodging property's market ranking, rating, and amount of customer reviews. A hotel's rating in TripAdvisor corresponds to the number of stars received considering the totality of consumer comments posted about the hotel. Hotels can be rated anywhere from one to five stars. The market ranking on the other hand, represents the relative position that a hotel occupies in its marketplace, assigned by consumers. The present study suggests that the closer a hotel is to the top of the list (closer to number one), the more favorable outcomes. It is noteworthy that although TripAdvisor utilizes consumer comments to determine rating and market ranking, other factors such as the recency of such comments are taken into account and ultimately the formula they use for calculation is of a proprietary nature (TripAdvisor, 2014). Finally, the number of reviews simply represents the amount of people who have posted comments in the site.

One way to measure the popularity of a hotel is by examining its online bookings. A larger number of online bookings can (*ceteris paribus*) result in greater room revenues for a hotel during a certain time period. Since a stream of literature exist to suggest that consumer generated feedback is persuasive in the decision to make a hotel reservation, measuring the exact impact should be an area of research priority. Monitoring, responding, and taking actions concerning consumer feedback takes time, effort, and money. Consequently, studies that explore whether a hotel can benefit from higher ratings and rankings on TripAdvisor can be beneficial to hoteliers, as they can attest as to the effectiveness or lack thereof of their efforts and investments. In light of this, the present research sought to understand the impact of the number of reviews, ratings, and number of transactions on a hotel's market ranking within its competitive set. Given the present stream of literature and seeking to expand on the scholarly work, the following research objectives were proposed: (1) to study the impact of a hotel's absolute rating on its market ranking, (2) to examine the effect of the number of reviews on a hotel's market ranking, and (3) to explore the impact of the number of online transactions on a hotel's market ranking.

## LITERATURE REVIEW

Online reviews present a useful tool for customers to express their opinions and examine the opinions of others. Scholars have taken interest in the subject and performed academic research. At the present time most research has focused on a hotel's reputation and the subsequent purchase decisions made by customers. A smaller stream of research examined the financial impact of online reviews, and their use for operational purposes. Throughout the course of the literature review, the authors present the literature on making choices based on consumer-generated feedback. Furthermore, they then explore the operational implications of feedback. Finally, the literature review concludes with the existing literature on finance and online reviews as well as the development of hypotheses.

### **The usage of consumer-generated feedback**

Consumer decision-making has been one of the various uses given to online reviews. The usage of such reviews has been documented in several industries. For example, Zhu and Zhang (2010) examined the impact of online reviews on video game sales. In a similar fashion, Chevalier and Mayzlin (2006) explored the impact of online feedback on book sales. Others investigated the effect of consumer feedback on box office sales (Chintagunta, Gopinath, & Venkataraman, 2010; Duan, Gu, & Whinston, 2008) as well as the purchase of products through sites like "Amazon" (Mudambi & Schuff, 2010).

The present study focused on the tourism and hospitality industry and more specifically, the hotel industry. Consequently, an examination of research concerning consumer-generated feedback in hotels was particularly pertinent. To further illustrate this point, Senecal and Nantel (2004) posited that online reviews are more critical to those seeking to purchase experiential products, as oppose to tangible ones. As such, the hotel industry can be especially critical for study given the service and experience component associated with a hotel stay. Several scholars studied the importance of online reviews in the lodging sector (O'Connor, 2010; Ögüt & Taş, 2012; Torres, Adler, Lehto, Behnke, & Miao, 2013; Ye et al., 2011). The aforementioned studies are discussed in further detail in the remainder of the literature review.

Consumers can engage in different levels of purchase involvement depending on the product or service. In some cases, given the time and

economic commitment, consumers can spend a significant amount of time and effort in searching and ultimately making a decision. Research by Cox et al. (2009) examined the impact of online reviews at various stages of the purchase decision process and concluded that such information is most critical at the information gathering phase. Studies have also demonstrated that prospective customers will typically read only the first two pages of content in review sites (Pavlou & Dimoka, 2006). Sparks and Browning (2011) posited that numerical ratings in consumer reviews matter only when they have the corresponding verbal feedback. Furthermore, Zhu and Zhang (2010) suggested that both the product and consumer characteristics can play a role in the consumer's reliance on online reviews. Lee, Law, and Murphy (2011) studied feedback that was rated as "helpful reviews" on TripAdvisor. The results of their research revealed that helpful reviewers tend to have more travel experience, greater number of reviews posted in the site, and generally give lower ratings as compared to other reviewers. In examining the motivation to post online reviews in 'Yelp', Parikh, Behnke, Vorvoreanu, Almanza, and Nelson (2014) posited that consumers are driven to express their feedback because of altruism, as well as trust in the website and the information it provides. Furthermore, Parikh et al. (2014) discovered that customers tend to act on the information they read through Yelp.

Gretzel, Yoo and Purifoy (2007) did an extensive study researching TripAdvisor users attributes and perceptions. They found that users who read other travelers reviews were most likely the more frequent travelers, and hence an important demographic for travel marketers. Furthermore, these users saw very clear advantages in reviews generated by other consumers and as a result were influenced by these reviews. Additionally, other aspects such as the disclosure of personal information also been studied in the context of consumer generated reviews for hotels by Xie et al. (2011). Their study demonstrated that whenever personal information about the reviewer was present, the credibility of the review was enhanced and in turn the reader was more likely to make a hotel reservation.

Vermeulen and Seegers (2009) conducted a study concerning purchase decisions and social media. Results demonstrated that online reviews assist prospective customers to narrow a universal set of choices into a consideration set. The researchers also studied the relative impact of such reviews to independent versus chain hotels Findings demonstrated that online reviews had a greater impact on independent hotels (Vermeulen & Seegers, 2009). In support of this, Papathanassis and Knolle

(2011) proposed that online reviews are considered by customers as additional content to aid in their search for alternatives and purchase decision. Additionally, the authors argued that online review adoption will depend on various factors including the richness of the content and its accessibility (Papathanassis & Knolle, 2011). Melián-González, Bulchand-Gidumal, and López-Valcárcel (2013) posited that a larger number of reviews could lead to a more favorable evaluation of a hotel.

The aforementioned studies highlighted the importance of online reviews for purchase decision-making. In summary, research indicates that consumer reviews can be of critical importance in the decision-making processes of prospective customers. Nevertheless the existing literature falls short in explaining how online reviews (either by quantity or quality) can transform into bookings. Furthermore, given the proprietary nature of the TripAdvisor popularity index, the exact impact of the amount of reviews on a lodging property's market ranking remains a mystery. Although TripAdvisor utilizes information from consumer rating and review to generate an aggregate rating and market ranking for each hotel, the exact formula to determine this is kept secret by the organization. In their website, TripAdvisor explains:

"The TripAdvisor Popularity Index incorporates traveler ratings to determine overall traveler satisfaction. Unlike sites that simply rank a hotel by price or hotel class, we use a proprietary algorithm to take into account what real travelers like you think - quantity, quality and recency of TripAdvisor reviews." (TripAdvisor, 2014)

Consequently, understanding the relationships among the various statistics shown in TripAdvisor can be of interest to both scholars and managers. In light of this, the first hypothesis was proposed:

**Hypothesis 1:** There is a significant negative relationship between the number of reviews received through an online feedback site and the hotel's local market ranking (1st, 2nd, and 3rd) received in the same web site.

Despite their widespread usage, online consumer reviews are not without their challenges. Some of the challenges identified in the scholarly literature include bias, vague statements, and the possibility that consumers might experience information overload (O'Mahony & Smyth, 2010). Despite some of the criticisms concerning the reliability of online reviews, research by O'Connor (2010) suggested that only a minute amount of comments on such sites meet the criteria to be considered

suspect. In contrast, Hu, Bose, Koh, and Liu (2012) proposed a statistical model to detect online review manipulation. Accordingly, around 10.3% of reviews are subject to manipulation. Some argue that consumer reviews might not be perceived as impartial by customers as previously assumed. For example, Cox et al. (2009) argued that consumer-generated feedback may not receive the same amount of credibility, as compared to other sources. In contrast, Goh, Heng, and Lin (2013) studied the relative impact of content generated by users versus that generated by competitors and concluded that despite the importance of both; user-generated content had a stronger impact on purchase decisions. Given the previous studies which debates the credibility of online feedback, and considering the opposing viewpoints presented by the authors, it is likely that debate will continue among scholars concerning the credibility of such sources.

Xie et al. (2011) proposed that personal identifying information within online reviews was an influential factor in the ultimate purchase decision. Furthermore, the researchers discovered that reviews with such information were deemed more credible by prospective consumers (Xie et al., 2011). Researchers Kusumasondjaja, Shanka, and Marchegiani (2012) conducted experimental research to ascertain the effect of review valence and on the identity of the reviewer on perceptions of credibility. Respondents viewed negative reviews as more credible. In contrast, when the reviewer's identity was revealed, positive reviews had a stronger influence on trust. Mackiewicz (2009) suggested that customers make themselves more credible in review websites by making statements regarding their expertise. In his research, the author revealed several categories of expertise including: statements concerning experience with a specific product or service; claims regarding familiarity with similar or relevant products; and affirmations of keeping a related role such as having training or education or perhaps being in a profession related to the product or service (Mackiewicz, 2009). In analyzing the content of online reviews for hotels Barreda and Bilgihan (2013) posited that cleanliness (or lack thereof) was a major point of discussion in user-generated content. Furthermore, a good location and well-trained staff were also important to consumers who posted hotel reviews. In spite of the literature that examines purchase behaviors, little is known about how numerical ratings affect local market rankings on online review websites. Furthermore, the proprietary nature of such information (TripAdvisor, 2014) makes it more challenging to uncover the actual impact that consumers are having on the overall reputation of the hotel. Although logic suggests that the valence of the reviews can lead to a better market

ranking, the exact impact is yet to be quantified. Consequently, the second hypothesis was proposed:

**Hypothesis 2:** There is a significant negative relationship between the hotel's overall rating (i.e. 1, 2, 3 stars) on an online feedback site and the hotel's market ranking on online feedback sites.

As demonstrated, the literature on consumer-generated feedback has explored various aspects of decision making. Additionally, researchers have begun exploring its impact for operational purposes and its likely financial outcomes. The following section explores the operational implications of online feedback.

### **Online reviews and hotel operations**

Although the main focus behind consumer-generated feedback has been the usage for prospective consumer decision-making, online reviews can serve other purposes. For example, online feedback can assist a hotel's management in devising strategies and engaging in various activities such as responding to consumer reviews, directing capital expenditures in the amenities most desired by customers, and preserving positive initiatives that will likely result in customer delight. Consequently, blogs and other forms of user-generated content will likely provide hoteliers key information that will improve service quality (Schmallegger & Carson, 2008). For example, Stringam and Gerdes (2010) performed extensive analysis on user-generated comments from the site "Expedia.com". The authors separated the positive, neutral, and negative comments and counted the frequency of occurrence of certain words. It was revealed that negative feedback (those reviews which rated a hotel 1 or 2 out of 5) typically included information concerning problems with housekeeping such as 'dirt', 'stain', and 'mold'. Positive feedback (those reviews which threatened the hotel 4 or 5 out of 5) were more likely to contain language regarding service quality and personnel descriptions such as 'courteous', 'attentive', and 'accommodating'.

Torres, Adler, Behnke, Miao, and Lehto (2015) examined the operational and quality implications of user-generated content. The researchers revealed that 90% of all hotel general managers reviewed such information daily. TripAdvisor was the most examined and most valued source of consumer feedback. Furthermore, their investigation ranked the most important activities for hoteliers following the receipt of consumer

feedback. As an example, the authors indicated that identifying patterns of complaints was extremely important to hoteliers, whereas making changes in operating procedures based on online reviews was done infrequently. Additionally, the hoteliers that placed greater value on online reviews were more likely to experience an improvement in their perceived quality (Torres et al., 2015).

Responding to online feedback can prove critical to hoteliers. In a study, Park and Allen (2013) studied responses by management to consumer reviews and were able to identify three groups of companies: frequent responders, infrequent responders, and non-responders. Those that responded frequently generally believed that consumer-generated feedback was a fair representation of customer affect. In contrast, those who responded infrequently were more prone to consider such feedback as extreme or biased. The researchers proposed that lodging properties should go beyond simply reacting to consumer feedback, and develop strategies to foster positive online relationships (Park & Allen, 2013).

According to Yu (2010), less than 4% of the unfavorable feedback posted online received a response by the hotel. Considering the large quantity of online feedback, managers have turned to firms which creates specialized software such as Revinat, which can assist them in managing large amounts of information and produce more concise reports. Following an interview with Professor Bjorn Hanson, Yu (2010) discovered that some managers are using online content to improve training, adjust staffing levels, make key decisions concerning amenities. Despite the various studies on purchase decisions and operations based on online consumer feedback, little is known about their financial impact. The following section discusses some of the emerging literature concerning this subject.

### **The financial outcomes of online feedback**

Whereas most research on consumer-generated feedback focuses on decision-making, a smaller stream of research exists regarding financial performance. In an attempt to measure the effect of online reviews, Ye, Law, and Gu (2009) created a mathematical model. Such a model was meant to predict the effect of online feedback on the sales and profitability of a lodging property. Ye et al.'s (2009) model demonstrated that a 10% improvement in reviews resulted in a 4.4% increase in sales. Practitioners have also paid attention to the impact that such reviews have on industry.

For example, in an interview, Brian Ferguson (Executive Vice-President of Expedia) revealed that according to the statistics generated by his firm “A one-point increase in a review score equates to a 9% increase in ADR [Average Daily Rate]” (Lynch, 2012). Therefore, hoteliers desire to attract more traffic to their proprietary websites. Research by Zhang, Ye, Law, and Li (2010) focused on restaurants and attempted to measure the effects of consumer-generated feedback and traffic to a businesses’ website. The researchers revealed a positive relationship among positive reviews and to the amount of visitors to a restaurant’s website.

Other industries have also noticed the impact of consumer-generated reviews. Chintagunta et al. (2010) explored the effect of movie reviews in box office sales using “Yahoo! Movies”. The authors discovered that given a specific market, the valence (i.e. positive or negative) of the comments affected box office sales performance. However, when it came to the national aggregate of box office sales, the number of reviews drove sales. Though many are concerned about the negative impacts, user-generated content can be utilized for marketing purposes. In the past, hotels have established photo contests, and promoted the sharing of stories and videos concerning their stay. Additionally, hoteliers have utilized social networking to assist their customers in making connections and interacting with one another before a stay and throughout their visit (Kasavana, Nusair, & Teodosic, 2010). Noone, McGuire, and Rohlfs (2011) studied the opportunities that exist for Revenue Managers to engage with guests through social media. Accordingly, user-generated content can aid them in making promotions and pricing decisions, create packages, and execute of push strategies. In another study, Ye et al. (2011) studied the effect of positive reviews on hotel sales. Accordingly, a higher valence (i.e. more positive) in the average review led to more consumer reviews. In addition, the authors revealed that the variability in such feedback was not as important as the overall rating given by consumers (Ye et al., 2011). A drawback of this research was the lack financial data. In light of this, the quantity of online reviews was used as substitute for hotel sales.

There are numerous stakeholders that provide feedback to a hotel including experts, consumers, and internal sources. Torres et al. (2013) revealed that consumer and expert ratings were positively correlated with the perceptions of improvement in quality among hoteliers. Ögüt and Taş (2012) explored the effects of both expert ratings (in this case online ratings), and consumer ratings. The study investigated the effects of experts and consumer’s opinions on hotel sales in two destinations: Paris and London. Their findings suggested that consumer feedback affect the

number of reviews more than that of experts. Additionally, the authors revealed a positive relationship between consumer ratings and the hotel's average price of a standard double room (Öğüt & Taş, 2012). Despite the literature that suggests that positive comments could result in positive financial outcomes, little is known about the impact of the number of reviews. Consequently, hypothesis three is proposed:

**Hypothesis 3:** There is a significant negative relationship between the number of hotel booking transactions and the hotel's market ranking on online feedback sites.

## METHODOLOGY

Researchers from both the University of Central Florida and Travel Click, a revenue solutions hospitality consulting company, made a collaboration. Information in the consulting company's databases revealed the number of bookings and the total revenue obtained. Data were included two months of booking revenue (July and August 2013), as recorded in the company's database. Additionally, information concerning the number of booking transactions generated was also obtained. The sample size was comprised of 178 from various parts of the United States. Among these hotels there were corporate, managed, and independent hotels. The hotels catered to different guests (i.e. business, leisure, convention) and were located in various cities around the U.S.A. A total of 64 hotels were located in the North East, 36 in the SouthEast, 22 in the MidWest, 21 in the West Coast, 21 in the SouthWest, 5 in the Central Region, and 6 in the non-continental U.S. (Hawaii, Alaska, U.S. Virgin Islands). The states with the greatest representation were Florida (25 hotels), California (18 hotels), New York (14 hotels), and Texas (10 hotels). These correspond to the four most populous states in the U.S.A. Having such a sample across brands, and service levels can help prove or disprove the relationships across the board, as the hotels rated in TripAdvisor also represent different locations, service levels, and brand names. The data was released to the academic researchers in an Excel sheet, which was later transferred to SPSS for analysis.

In addition to the revenue data, the researchers also collected information about each one of the studied hotels through TripAdvisor. In order to execute the data collection, the researchers visited the TripAdvisor page for each of the 178 hotels. Data collected included the hotel's rating, local market ranking and number of reviews. The rating of

the hotel is the score given by TripAdvisor to each hotel (i.e. 1, 2, 3, 4, 5 stars) following consumer comments. The local market ranking is the position of each hotel within its competitive set (i.e. a hotel is 1st, 2nd, or 3rd in a given city). A hotel's local market ranking was selected since it impacts the visibility of a hotel in TripAdvisor. TripAdvisor was selected since it is one of the most visited online review sites. In a research study Torres et al. (2015) revealed that general managers regard TripAdvisor as the most important consumer feedback and most monitor it on a frequent basis. After the data was collected for all hotels, multiple regression analysis was performed utilizing SPSS 21.0. The researchers tested for the regression assumptions and no assumptions were violated during the process.

## RESULTS

A total of 178 hotels were represented in the sample. These hotels can be described by their TripAdvisor rating, formal rating agency rating (i.e. Forbes and the American Automobile Association-AAA- in the United States), and number of rooms. Only one hotel was rated 2.5 stars in TripAdvisor. Nine hotels had a rating of 3.0 and another 34 hotels were rated by TripAdvisor as 3.5. A total of 66 hotels were rated in TripAdvisor as four stars and another 48 hotels were rated 4.5 stars. Only seven hotels reached the maximum TripAdvisor rating of five stars. The average hotel had a rating of 4.02 stars in TripAdvisor. For thirteen hotels, the researchers were unable to obtain the rating. There are multiple reasons for this including a change of name, renovation, closing, or simply the lack of TripAdvisor rating for that particular hotel. In terms of their formalized rating system, as assigned by either the American Automobile Association (AAA) or Forbes, 22 hotels were rated two stars or diamonds, 75 hotels were rated three stars or diamonds, 63 hotels were rated four stars or diamonds, and one hotel was rated five stars or diamonds. The mean star/diamond rating was 3.27. For the remaining 18 hotels, the researchers were unable to obtain a star or diamond rating from the rating agency. It is noteworthy, that in the United States, the formal rating system for hotels is not mandatory. The average hotel under study had 198 rooms and had received an average of 550 reviews on TripAdvisor.

The present research aimed to better understand the relationships between several variables of relevance concerning consumer-generated feedback. Such research can help scholars and practitioners understand whether a hotel can benefit from a better market ranking on online review

sites such as TripAdvisor. Prior to regression analysis, the authors drew a correlation matrix of the relevant variables (Table 1). Results demonstrate a moderate negative correlation between a hotel's rating and its local market ranking (-.48). Therefore, as the number of stars in TripAdvisor increases, the local market ranking of the hotel becomes smaller (in other words, it approaches first place in its competitive set). A moderate negative correlation was also found between the number of online purchase transaction and the market ranking of a hotel (-.38). In other words, as the hotel had a smaller market ranking number (i.e. closer to first place), the number of online purchase transactions increased.

Table 1. *Pearson's Bivariate Correlations*

Variables	Overall Ranking	No. of Reviews	Hotel Rating	No. of Transactions
No. of Reviews	0.03			
Hotel Rating	-0.47	0.20		
No. of Transactions	-0.38	0.03	-0.48	
Means	38.69	630.85	4.01	357.67
Std. Deviations	51.51	853.99	0.50	916.67

A standard multiple regression analysis was conducted between the hotel's market ranking as the dependent variable with the three independent variables namely; overall number of online reviews posted, hotel's overall rating, and number of online purchase transactions. The results of the regression analysis are presented in Table 2. R for regression was found to be significantly different from zero,  $F(3, 134) = 48.48$ ,  $p < .001$ , with  $R^2$  at 0.25. The adjusted  $R^2$  value of 0.23 indicates that almost a fourth of the variability in hotel's market rankings is predicted by the quantity of reviews, hotel rating, and number of online transactions. Also, considering the small standard error values the sample can be said to have a fair representative power of population parameters. This further elucidates that the actual observations were very close to the fitted regression line, and hence the precision in prediction.

Results from the multiple regressions demonstrate a p-value of 0.000 for the coefficient of differentiation. In light of this the proposed model can be considered to have acceptable levels of statistical significance. The residual plot displays that the data followed linearity and normality conditions and was absent of any homoscedasticity. The tolerance values of the independent variables did not show any indication of multicollinearity, with the highest tolerance value being less than 1.05.

Of the regression coefficients, only 'hotel ratings' had a statistically significant effect on the 'overall online rankings' of the hotels ( $p < .001$ ). Given that variables were mostly scaled differently; their relative significance can be compared only on the basis of the standardized beta coefficient.

Table 2. *Multiple Regression Results*

Variables	<i>B</i>	$\beta$	t-value	Standard error
Constant	-241.84		7.69	31.451
No. of Reviews	0.008	0.13	1.71	0.005
Hotel Rating	-51.71*	-0.50	-6.56	7.89
No. of Transactions	-0.002	-0.36	-0.48	0.004

$R^2$  :0.25; \*  $p < 0.01$

The first hypothesis under study stated that there was a significant negative relationship between the number of reviews and a hotel's local market ranking. Based on the regression analysis, this hypothesis was not supported. The second hypothesis stated that there was a significant negative relationship between the absolute rating and the ranking of a hotel. Based on the research results, this hypothesis was supported ( $p < .01$ ). Consequently, as the total number of stars increases, the greater likelihood a hotel has to be in the top of its competitive set. Finally, this paper proposed that a significant negative relationship existed between the number of online purchase transactions and the hotel's market ranking on TripAdvisor. The regression analysis revealed a moderate correlation (-.38). However, the regression results did not show a p-Value of less than .05. Consequently, the relationship was not statistically significant.

## DISCUSSION

The present study sought to analyze the impact of the volume of online consumer generated reviews and ratings awarded by these consumers on the overall hotel market ranking on such websites. Additionally, this study sought to examine at the impact of the volume of online transactions on the market ranking of hotels. As is evident from the results, only one of the three hypotheses tested was supported. Results indicate that online ratings awarded by consumers to hotels exhibit a statistically significant impact on the market rankings of the properties.

The results clearly indicate a significant inverse relationship between hotel ratings and their overall market ranking on travel websites. Consequently, the higher the rating awarded to a hotel, the lower the numeric ranking (i.e. close to 1). This is clearly exhibited in the actual market rankings of the hotels on the website. The high inverse correlation explains and justifies the lower numeric market ranking of hotels with higher ratings awarded by the online reviewers. The hotels that were able to meet or excel the expectation of consumers were reviewed favorably, and awarded higher rating which in turn pushed these properties into higher market ranking (lower numeric value).

However, the volume of these online reviews did not impact the market rankings of the hotels. The researchers analyzed the proposed hypothesis based on the findings by Ye et al. (2011), in which the authors demonstrated that variability in comments was not as critical. Hence, the focus was on the volume or number of reviews posted. The statistical insignificance clearly shows that variability in the reviews actually works towards neutralizing the any effect on the quantity of reviews on the market rankings of the hotels. The reviews posted are not only by the happy customers but also by the unhappy customers, in almost similar proportions. Although TripAdvisor's formula for estimating the market ranking of hotels takes into consideration the number of reviews, the weight given to this factor is unknown. In light of the results of the study, it is possible that the weight given to this factor is smaller than others (i.e. the quality of the reviews). Additionally, a larger number of reviews for a given hotel might bring about both positive and negative reviews. From a practical perspective, this highlights a priority for hotel managers: to first ensure quality (i.e. more positively valenced) reviews rather than quantity (i.e. greater number of reviews).

Lastly, the researchers attempted to assess impact of number of transactions on the hotels local market ranking, assuming higher the volume of transactions higher the ranking. More consumers are purchasing from a particular property is indicative of their satisfaction and will translate into higher market ranking for these properties. Contrary to the postulated hypothesis, the results did not exhibit any impact of number of transactions on the hotel's market ranking. One possible reason could be that not all the online purchasers are writing reviews and rating these properties which further might impact the market ranking of these properties. The number of transactions may also be related to the size of each hotel, with larger hotels having larger number of online transactions. Consequently, the greater number of

bookings for a hotel might be a function of supply factors (i.e. availability of rooms in a given market) and not so much their TripAdvisor rating. Nevertheless, it is also possible that hotels can generate a premium owing to their online reputation. In this regard, future research can study the impact that TripAdvisor ranking has on Revenue per Available Room (RevPar) and occupancy measures. Given this logic, the size of the hotel is not as critical in determining the market ranking of that hotel in a market. Hotel price might be another factor that impacts the expectations levels for each of the properties under study.

### THEORETICAL CONTRIBUTIONS

The results of this study highlight the importance of generating positive comments (of higher number value) in order to obtain a favorable position in the marketplace. Whereas research by Melián-González et al. (2013) stressed the importance of obtaining a high number of reviews in order to obtain a more positive evaluation, the present research highlights the role of the quality of reviews. The better the quality of the reviews (i.e. higher rating), the better positioned a hotel will be in its marketplace (i.e. better market ranking, closer to number one). Since guests will typically read the first two pages (and not more) in TripAdvisor (Pavlou & Dimoka, 2006) and considering that prospective customers use online reviews in the information gathering phase of the purchase decision process (Cox et al., 2009), it becomes especially critical to obtain a favorable position in the market place. This can become especially critical in a large hotel market with multiple competitors and brands.

TripAdvisor uses a proprietary logarithm to determine a hotel's popularity index (TripAdvisor, 2014). Considering that the public does not know the information, it was pertinent to determine whether the quality of the comments influenced the market ranking for each listed hotel. Although the totality of the data points considered by TripAdvisor in assigning ratings and market rankings is unknown, the present research demonstrates that better consumer ratings do in fact exert a significant influence in pushing a hotel to the top of the market list on TripAdvisor. The number of online transactions did not seem to be influenced by the hotel's local market ranking. A possible explanation for this may have to do with the size of the hotel. Large hotels are likely to have a large number of transactions. Since hotel's listed on the top of TripAdvisor's list are sometimes small, yet other times large, it is possible that this made the

relationship between the two variables murky, and thus statistical significance was not obtained.

### **PRACTICAL IMPLICATIONS**

The results of the study shed light into the relationship between the ratings given by the online review providing consumers and the hotels market ranking amongst other properties. As there is a strong relationship between these two variables, the property level decision makers or the general managers must pay attention to these online reviews and address any concerns exhibited by the consumers in order to enhance the consumer rating of their properties. This constant practice of monitoring the online reviews will help them identify the areas of challenges and opportunities. Consequently, they will be able to integrate this information for future strategy building in order to stay ahead of the competition. Wei, Miao, and Huang (2013) studied the responses given to user-generated content by hotel management and concluded that specific (as opposed to generic) responses were more valued by former hotel guests. Torres et al. (2014) examined the practices of hotel general managers concerning user-generated content. The researchers concluded that consumer feedback could be combined with that of experts and internal sources to gain a deeper understanding of the customer experience and how to perpetuate patterns of praise and minimize patterns of complaints. In light of the present research and that of Wei et al. (2013) and that of Torres et al. (2014) it can be stated that the actions of hoteliers concerning the monitoring and responding to comments can impact their overall rating in the future, which would ultimately impact the revenues they can generate from online transactions.

Noone et al. (2011) suggested that revenue managers can use this information to make pricing decisions, develop micro-sites to target specific guests, and decide on distribution channels. The present study argues that improvement in TripAdvisor rankings can further present opportunities to charge a premium and maximize the revenues, enhancing the revenue management strategies of the properties. Hotels which accrue higher customer ratings and more favorable ratings command higher rates, as compared to those with lower scores. Consequently, revenue managers may do well to incorporate their hotel ratings as one more piece of information when devising a pricing strategy.

## LIMITATIONS AND FUTURE RESEARCH

The present study utilized data with the time frame of two months and hence did not explore the effect of independent variables on the dependent variable in context of larger time frame. Future research can utilize time series analysis. The present study utilized online booking from multiple distribution channels. Consequently, it was not possible to isolate specific distribution channels. Additionally, revenue data was obtained in collaboration with a consulting company. Due to the archival nature of this data, it was not possible for the researchers to obtain customized information or to select specific hotels or a specific market. Furthermore, there could be some reverse causality between number of online transactions and a hotel's market ranking. The effect could be on both ways but for the purpose of this study we have focused on the unidirectional impact of number of transactions on the local market ranking of a hotel. This could be a possible limitation of this study and must be addresses in future studies. in play here and we will put it in our future studies and limitations section. For this study we are limiting the analysis to the proposed hypothesis only to keep it more relevant and meaningful based on our literature review and the theoretical groundings. Future research can dissect the information by distribution channel, loyalty affiliation, hotel category and other statuses. Furthermore, studies can expand data used by approaching exploring other review sites such as Yelp.

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