

Understanding Satisfied and Dissatisfied Hotel Customers: Text Mining of Online Hotel Reviews

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This article aims to examine the underpinnings of satisfied and unsatisfied hotel customers. A text-mining approach was followed and online reviews by satisfied and dissatisfied customers were compared. Online reviews of 2,510 hotel guests were collected from TripAdvisor.com for Sarasota, Florida. The research findings revealed some common categories that are used in both positive and negative reviews, including place of business (e.g., hotel, restaurant, and club), room, furnishing, members, and sports. Study results further indicate that satisfied customers who are willing to recommend a hotel to others refer to intangible aspects of their hotel stay, such as staff members, more often than unsatisfied customers. On the other hand, dissatisfied customers mention more frequently the tangible aspects of the hotel stay, such as furnishing and finances. The study offers clear theoretical and managerial implications pertaining to understanding of satisfied

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and dissatisfied customers through the use of text mining and hotel ratings via review websites, social media, blogs, and other online platforms.

KEYWORDS *hotel reviews, text mining, user generated content, customer satisfaction, dissatisfaction*

INTRODUCTION

Hotels operate in a competitive and dynamic environment (Verma, Victorino, Karniouchina, & Feickert, 2007; Wilkins, 2010). The challenges of running a hotel business are identified by the fragmentation and complexity of the lodging industry (Okumus, Altinay, & Chathoth, 2010). Aside from this, increasing commoditization of hotel products makes it more difficult for hotel companies to compete for their customers. Starkov and Price (2007) suggested that customers select hotels based on the following criteria: familiarity, brand image, implementation of customer retention programs, and core offering or value of the hotel. Given this, it is important to understand what makes customers return or not return to a hotel, what makes them recommend a hotel to their friends and relatives or not recommend it, what image a property/brand has, and what features create value for customers.

Hotels employ different tools to assess and address customer satisfaction and behavioral intentions. These tools may include placing comment cards in the guest rooms, employing service recovery techniques to address in-house service failures, distributing postdeparture guest satisfaction surveys, and introducing follow-up measures for those problems that could not be resolved in-house. Even though hotels dedicate efforts to assess and recover (if necessary) customer satisfaction, the problem presents itself in guests' unwillingness to share their experiences and provide feedback to hotels. Previous research suggests that the majority of customers do not act on the dissatisfactory service that they receive and are reluctant to complain to the service provider (Ekiz & Au, 2011; Ekiz, Khoo-Lattimore, & Memarzadeh, 2012). Such reluctance to complain and provide feedback to hotels may take away an opportunity to perform service recovery and improve the service level in hotels. At the same time, it is important to note that the Internet makes it easier for customers to share their experience via review websites, social media, blogs, and other online platforms. The abundance of customer reviews posted on the Internet is available not only to hotel managers, but also to other consumers who may base their purchasing decisions on the information provided online (Dickinger & Mazanec, 2008).

An emerging dependence on the Internet as the source of information for decision-making regarding tourism products strengthens the need for more research in the electronic reviews area (Sparks & Browning, 2011). It is

important for hotel managers to utilize customer review information that is available for them online in order to better understand their customers and improve hotel performance. However, the online medium generates such a large volume of information that it may be difficult for the managers to review and evaluate all of it. For this reason, this article undertakes the text-mining approach that allows for the extraction of meaningful patterns from large volumes of textual information (Lau, Lee, & Ho, 2005; Turban, Sharda, & Delen, 2010). Most of the previous studies rely on the overall ratings of hotels (e.g., Ramanathan & Ramanathan, 2011). This current research deploys customer recommendation, which is a stronger measure of customer experience. Detailed ratings carry more information about user preferences than single overall ratings alone (Jannach, Zanker, & Fuchs, 2014). Opinion mining captures the subjectivity in terms of the semantic orientation associated with the constituents of a text (Gräbner, Zanker, Fliedl, & Fuchs, 2012; Taboada, Brooke, Tofiloski, Voll, & Stede, 2011).

In summary, this article aims to examine the underpinnings of satisfied and dissatisfied customers by applying the text-mining approach to the online hotel reviews. This will be achieved by comparing the online hotel reviews of satisfied customers who are willing to recommend the property to others and those of dissatisfied ones who do not recommend others to come to the property where they stayed. Study results should allow us to understand what aspects of amenities and services offered by hotels generate positive comments and what aspects generate negative ones.

REVIEW OF LITERATURE

Hotel Guest Satisfaction and Behavioral Intentions

Identifying satisfied and dissatisfied customers has been an important research theme among scholars from various disciplines including engineering, management, marketing, and hospitality (Chow & Zhang, 2008; Pizam & Ellis, 1999). The concept of guest satisfaction and dissatisfaction has been comprehensively examined by marketing and consumer behavior researchers. These postpurchase behaviors are acknowledged as of great importance to the firms due to their influence on repeat purchases and word-of-mouth (WOM) recommendations. In a nutshell, satisfaction reinforces positive attitudes toward the brand and leads to a greater likelihood that the same brand will be purchased again. On the other hand, dissatisfaction may lead to negative brand attitudes and weaken the likelihood of buying the same brand again.

One of the key approaches to answer the questions of customer satisfaction and potential future behavior is measuring service quality (Bharwani & Jauhari, 2013; Buttle, 1996; Crick & Spencer, 2011; Cronin & Taylor, 1992; Dortyol, Varinli, & Kitapci, 2014; Gummeson, 2014; Ladhari, 2012;

Parasuraman, Zeithaml, & Berry, 1985; Prentice, 2013; Qu & Sit, 2007; Torres & Kline, 2013; Yee, Yeung, & Cheng, 2010). Service quality is a level of service delivery based on the customer perception (Zeithaml, Bitner, & Gremler, 2006). Perceived service quality is a part of a broader concept of customer satisfaction and behavioral intentions incorporating customer loyalty and WOM communications (Prasad, Wirtz, & Yu, 2014; Prentice, 2013).

Hotel guests use a variety of elements to evaluate the quality of service that they receive during their stay (Pizam & Ellis, 1999; Wilkins, Merrilees, & Herington, 2007). Research indicates that customer satisfaction is affected by both tangible and intangible aspects of service quality (Ekinci, Dawes, & Massey, 2008; Prentice, 2013; Torres & Kline, 2013). The intangible elements are service related such as assurance, customer service and empathy whereas tangible elements are related to the physical facilities of the hotel such as appearance of hotel personnel and cleanliness of the room (Ramanathan & Ramanathan, 2011). It is claimed that service failure may have an impact on the perception of service quality, satisfaction and future behavioral intentions (Berezina, Cobanoglu, Miller, & Kwansa, 2012; Han & Back, 2007; Prentice, 2013; Tarn, 1999). Therefore, the recognition of attributes that enhance customer satisfaction and ensure customer loyalty is important for hotels.

Hoteliers aim to make customers satisfied and keep them coming back to their properties. It is cheaper to keep an existing hotel guest than to invest in finding new customers (Tyrrell & Woods, 2005). Furthermore, research indicates that increasing customer retention rates by 5% may result in profit increase by 25% to 95% (Reichheld & Schefter, 2000). Gefen (2002) points out that acquiring new customers is more expensive than keeping loyal ones, while serving loyal customers is cheaper than serving new customers. Besides, loyal customers spend more and frequently refer new customers to a supplier, providing another rich source of profits (Bowen & Shoemaker, 1998; Shoemaker & Lewis, 1999).

The growth and penetration of the Internet expand the effect of referrals from loyal customers. However, dissatisfied customers may also be valuable for hotels. First, they may assist hotels by pointing out the problematic areas of hotel operations that may require careful attention and improvement (Harrison-Walker, 2001). Another reason for appreciating dissatisfied customers is the effects of the service recovery paradox. The service recovery paradox states that the customer satisfaction rate is even higher for those customers who have experienced service failure followed by service recovery than for those customers who received their service properly on the first time (Harrison-Walker, 2001; Hoffman & Bateson, 2010; Zeithaml et al., 2006). Literature supports the fact that service recovery strategies increase customer loyalty (Cranage & Mattila, 2005). However, if complaints are not addressed, it may result in dissatisfaction, low repeat-purchase levels, and negative WOM (Mattila & Mount, 2003). In order to avoid such

negative consequences, Harrison-Walker (2001) suggested that companies should embrace customer complaints for their own benefit. Harrison-Walker recommended that companies develop necessary outlets for customers to complain, including website resources, call centers, and chatting options.

At the same time, negative WOM could be harmful to companies (Bambauer-Sachse & Mangold, 2011). Customers are inclined to specifically seek negative reviews because negative information is considered as being more diagnostic and informative than positive or neutral information. Negativity is weighted more heavily in the decision making process than positive information (Herr, Kardes, & Kim, 1991). Negative WOM could deter potential customers from considering a particular product or brand, therefore, damaging the company's reputation and financial strength (Sundaram, Mitra, & Webster, 1998). It could also go viral very quickly in today's connected world and possibly diminish brand equity and image, reduce sales, and, in extreme cases, close businesses completely.

Evaluating Customer Satisfaction on Web 2.0

Traditionally hoteliers and academics assess service quality quantitatively by using guest comment cards and questionnaires. However, the development of the Internet and consumer-generated content provides a strong opportunity for a qualitative approach to service quality. The development of the Internet has led to the shaping of the second generation of the Internet, which is referred to as Web 2.0. It is an expression that was used for the first time by O'Reilly in 2004. O'Reilly (2005) defined Web 2.0 as "a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet—a more mature, distinctive medium characterized by user participation, openness, and network effects" (p.1). The technology that is referred to as the second-generation Internet (Web 2.0) is one that usually includes tools that allow people to collaborate and share information online. Examples of these include, but are not limited to, social networking, instant messaging, social bookmarking, mash-ups, blogs, virtual worlds, podcasts, web videos, and wikis (Kasavana, Nusair, & Teodosic, 2010).

The most developed area of Web 2.0 within travel is consumer reviews (O'Connor, 2008; Litvin, Goldsmith, & Pan, 2008; Nusair, Bilgihan, & Okumus, 2013). The examples of travel review websites include websites such as Expedia and TripAdvisor. Pew Internet & American Life Project study (2006) reports that searching for travel related information is one of the most popular online activities. Research indicates that people utilize online travel referrals for travel planning (Cox, Burgess, Sellitto, & Buultjens, 2009; Mackay, McVetty, & Vogt, 2005; Litvin et al., 2008; Nusair, Bilgihan, Okumus, & Cobanoglu, 2013; Stringam & Gerdes, 2010). Furthermore, over

5 million travelers a month visit VirtualTourist.com in order to seek travel reviews and tips (Lee & Gretzel, 2006); approximately 20 million people visit TripAdvisor to read other travelers' reviews every month (Yoo, Lee, & Gretzel, 2007). Recommendations provided by other consumers based on their tourism experiences are suggested to be not only the most preferred sources of travel information, but also the most influential sources for travel decision-making (Pan, MacLaurin, & Crotts, 2007). Online consumer reviews empower guests by allowing them to access "more accurate, up-to-date information about products" (Kucuk & Krishnamurthy, 2007). Aside from customers, management could also potentially benefit from online comments to report service strengths and weaknesses, making them of considerable utility when studying customer relationship management (Cho, Im, & Hiltz, 2003). User-generated content create opportunities for hotels to gain a better understanding of their guests (Barreda & Bilgihan, 2013).

Literature suggests that hotel guest reviews are characterized by a growing importance and impact on the consumer decision-making process and hotel selection (Bulchand-Gidumal, Melián-González, & López-Valcárcel, 2011; O'Connor, 2008; Gretzel, & Yoo, 2008; Xie, Miao, Kuo, & Lee, 2011). Results of previous studies suggest that approximately 90% of travelers find hotel reviews to be helpful (Gretzel & Yoo, 2008; Stringam, Gerdes, & Vanleeuwen, 2010). According to the 2010 Portrait of American Travelers (YPartnership/ Harrison Group, 2010) the top preferred choices for finding travel information and prices include online travel agencies and review web sites such as Expedia (56%), Travelocity (52%), and Orbitz (46%).

Product and service reviews are an increasingly important type of user-generated content as they provide a valuable source of information to help customers make good purchasing decisions. Previous research reveals that the influence of user-generated online reviews on online sales is significant, with a 10% increase in traveler review ratings boosting online bookings by more than five percent (Ye, Law, Gu, & Chen, 2011). Predictions suggest that online reviews influence more than US\$10 billion in online travel purchases annually (Compete, 2007).

The sphere of consumer-generated content was studied by surveying Internet users and investigating their opinions about hotel reviews (Gretzel & Yoo, 2008). Stringam et al. (2010) conducted a study on hotel ratings that demonstrated the dominance of positive reviews in the online media (about 74% of the reviewers would recommend the property where they stayed to others). This study revealed a high positive correlation between service subcategory ratings, overall satisfaction, and intentions to recommend the hotel to others. Ekiz et al. (2012) investigated the online complaints in the luxury hotel context. They identified two main categories in online consumer complaints: room for improvement (physical attributes of the hotel room and the quality of the amenities provided in the room) and hotel staff attitudes (misbehaviors, bad attitude, lack of knowledge, skill, and passion of the staff).

In the area of travel reviews, text mining has been utilized in order to classify pleasant reviews by satisfied customers and unpleasant reviews by dissatisfied customers (García-Barriocanal, Sicilia, & Korfiatis, 2010). These researchers utilize shallow natural language processing (NLP) in order to identify emotion-based review categories for reviews in Spanish. They suggest that hotel guest reviews can serve as a complementary source for hotel quality evaluation. Qualitative analysis of London hotels' online reviews by O'Connor (2010) revealed the top 10 most common topics mentioned in the reviews to be the following: hotel location, room size, staff (good service), cleanliness, breakfast, in-room facilities, comfortable, temperature, dirty, and maintenance. Pekar and Ou (2008) deployed opinion mining and investigated the relationship between subjective expressions and references to hotel room features. However, they did not offer managerial implications from a services marketing aspect. Barreda and Bilgihan (2013) investigated the main themes that motivate guests to evaluate hotels on Web 2.0. Their findings indicate hotel cleanliness as a common concern in guests' expectations. Guests were found to be more likely to write positive reviews for hotels that are conveniently located to attractions, shopping, airports, and restaurants. Guests were also positively influenced by the quality of service received.

RESEARCH METHOD

The purpose of this research is to identify the patterns in hotels reviews regarding the aspects that make hotel guests satisfy with the hotel and inspire them to recommend the property to others, and, on the other hand, to find out about the negative patterns that cause guest dissatisfaction. Text mining was chosen as a research method for the purpose of this research based on the premise that this approach is capable of finding out meaningful patterns in the vast amount of information generated by hotel guests' reviews (Lau et al., 2005; Turban et al., 2010). Text mining "explores data in text files to establish valuable patterns and rules that indicate trends and significant features about specific topics" (Lau et al., 2005, p. 345).

Sample and Data

Sarasota, Florida, in the United States was selected as a location of primary focus for this article. Sarasota is a popular, vibrant, and fast-growing destination. It has been recognized with awards such as Orbitz.com's "Top 10 Fastest Growing Domestic Beach Destinations" in 2008 and TripAdvisor Traveler's Choice Award of 2011. Its popularity keeps growing with the number of visitors each year. Visit Sarasota County has recorded 759,800 visitors staying in paid accommodations in 2010; 827,000 visitors in 2011; followed

by 894,100 and 941,400 in 2012 and 2013, respectively, the majority of which come for leisure purposes.

This location was selected as a destination that offers a variety of travel experiences, including beach vacations, business and meetings, art and heritage tourism, leisure and sport activities, medical tourism, and eco-tourism (Sarasota Convention and Visitors Bureau, 2009). Due to the variety of tourism types developed in Sarasota, the city also offers a wide selection of different hotel properties, such as leisure/beach hotels, resorts, business/conference hotels, limited service, select service, and full-service properties. The types of accommodations offered include 47% condos, 31% hotels/motels, 7% apartments, 7% houses, 4% mobile homes, 2% campsites. At the same time, Sarasota is a relatively small destination compared to other popular travel destinations in the United States. This allowed researchers to collect all available reviews for Sarasota hotels while conducting the study.

All available online reviews for Sarasota hotels were collected from TripAdvisor.com. The TripAdvisor website enables travelers to access information about hotels, flights, restaurants, vacation rental, cruises, and other travel products. Users can post comments, share trip ideas/pictures, and express their reviews on hotels, restaurants, and destinations. TripAdvisor contains more than 100 million travel-related reviews from travelers from all over the world. These reviews cover more than 2.5 million businesses, 116,000 destinations, and 1.1 million accommodations (TripAdvisor, 2013). TripAdvisor was selected for this study, as it is one of the largest repositories of travel-related reviews.

The data for this study was collected using an online robot developed for the purposes of this research. A total of 2,510 reviews were recorded in the excel file. The data file contains the following categories that present usual attributes of consumer reviews on TripAdvisor (see Table 1). A list of all hotels that were included in this study with corresponding star ratings, type of the property, and the number of reviews is presented in Table 2 below.

The reviews that were included in the study were mainly (84.87%) provided by hotel guests traveling for leisure or leisure-related purposes (e.g., quality time with family, romantic getaway, personal event, etc.). Business travelers accounted for 11.70% of all reviewers. Table 3 provides information about travelers' purpose of the trip. These statistics are in line with Sarasota's leisure-dominated market composition (Sarasota Convention and Visitors Bureau, 2009).

Internal Validity

In relation to internal validity, it is crucial for this research to divide the reviews correctly into positive and negative categories. The researchers assumed consistency in customer opinion about the hotel (expressed via

TABLE 1 Hotel review categories

Field	Explanation
Quote	It contains a title of the guest review and in most cases the overall feeling about the hotel
Hotel name	Name of the observed hotel
User name	Username of the reviewer
Contributions	Contributions contains the number of review posted by a particular user on the TripAdvisor.com
Location	Location refers to the reviewer's residence
Trip type	Trip type includes different categories: business; couples; family; couples, family getaway; friends getaway; solo travel
Comment	Contains the review body in it
Value, rooms, location, cleanliness, service, and sleep quality	These fields contain numerical values that guests gave as rating scores to each of the categories named above. The values range from 1 (<i>terrible</i>) to 5 (<i>excellent</i>).
Date of stay	The date that reviewer stayed in the hotel
Visit type	Visit type contains the following categories: business; hobbies/interest/culture; honeymoon; leisure; personal event; quality time with family; romantic getaway; and other.
Travelers	
Age group	
Member since	Refers to membership on TripAdvisor.com
Recommendation	Recommendation contains categories "Yes" or "No" and represents likelihood of recommending this hotel to others.

hotel ratings and comments) and their recommendations for other travelers (Yes/No). For the purpose of checking an internal validity of the reviews, correlations of rating scores and recommendation scores were obtained. The results are presented in Table 4. The analysis revealed strong significant positive correlations for all variables except location where the correlation was medium. After this, 20 reviews were randomly picked for the content analysis. The first two authors of this study read these reviews in order to double check if the content of those reviews really reflects the intention of the reviewer to recommend or not to recommend this hotel. The results of the internal validity check came out positive and the reviews were divided into two categories based on customer recommendations.

Modeling and Word Categorization

The text-mining approach using PASW Modeler was applied to the comment section of the document in order to identify patterns in guest comments about the hotel. The Text Analytics Module of PASW Modeler allows for conversion of unstructured data into a more structured one by means of extracting concepts and relationships found in textual information. Current research did not rely on the stance-shift analysis that considers syntax and

TABLE 2 Hotel reviews included in the study

Hotel name	Star rating	Property type	Number of reviews
Lido Beach Resort	3.5	Resort	250
The Ritz-Carlton, Sarasota	5	Resort	219
Helmsley Sandcastle Hotel	3	Hotel	154
Hyatt Regency Sarasota	3	Hotel	123
Holiday Inn Sarasota–Lido Beach	3	Hotel	113
Southland Inn	3	Hotel	71
Hotel Ranola	1	Hotel	62
Hotel Indigo Sarasota	3	Hotel	60
Holiday Inn Express Sarasota–Siesta Key Area	3	Hotel	59
Best Western Midtown	2.5	Hotel	56
La Quinta Inn & Suites Sarasota	2.5	Hotel	50
Country Inn & Suites I-75	3	Hotel	46
Hibiscus Suites Inn	3	Hotel	46
Tropical Breeze Resort & Spa	2.5	Hotel	38
Hyatt Place Sarasota/Bradenton Airport	3	Hotel	32
AmericInn Hotel & Suites of Sarasota	2.5	Hotel	30
Homewood Suites by Hilton Sarasota	3	Hotel	29
Coquina On The Beach	2.5	Hotel	27
Hilton Garden Inn Sarasota–Bradenton Airport	3	Hotel	24
SpringHill Suites Sarasota Bradenton	3	Hotel	23
Comfort Inn Sarasota	2.5	Hotel	23
Sleep Inn	2.5	Hotel	22
Golden Host Resort	2	Hotel	22
Holiday Inn Sarasota–Airport	3	Hotel	21
Residence Inn Sarasota Bradenton	3	Hotel	18
Comfort Inn	2	Hotel	17
Hampton Inn Sarasota–I-75 Bee Ridge	2.5	Hotel	16
Suntide Island Beach Club		Hotel	15
Holiday Inn Sarasota–Lakewood Ranch	3	Hotel	15
Quality Inn & Suites Airport	2	Hotel	15
Days Inn Sarasota	2	Hotel	14
Days Inn Sarasota Airport	2	Hotel	14
Courtyard by Marriott Sarasota Bradenton	3	Hotel	13
Suburban Extended Stay Sarasota	2	Hotel	13
Beau Lido Suites	—	Hotel	11
Sarasota Cay Club	3	Hotel	11
Howard Johnson Express Inn–Sarasota	2	Hotel	9
Super 8 Sarasota	1.5	Motel	8
Tropical Beach Resorts	3.5	Hotel	4
Knights Inn Sarasota	1.5	Motel	4
Hampton Inn & Suites Sarasota–Bradenton Airport	2.5	Hotel	3
The Tides Inn	—	Motel	3
Sarasota Hotel & Marina	—	Hotel	3
Ramada Inn Airport	3	Hotel	1
			1,807

lexicon use (e.g., Crotts, Mason, & Davis, 2009), because positive and negative reviews were identified based on the explicit recommendation provided by reviewers. Also, the text-mining approach adds to the word frequencies method used by CATPAC (e.g., Stepchenkova & Morrison, 2008) by adding

TABLE 3 Travelers' purpose of the trip

Purpose of the trip	Number of travelers
Leisure	967
Quality time with family	267
Romantic getaway	119
Personal event (e.g., wedding)	55
Quality time with friends	48
Hobbies/interest/culture	31
Business	205
Other	60
Total	1752

TABLE 4 Correlation table

Variable	r
Value	.745**
Rooms	.713**
Location	.436**
Cleanliness	.686**
Service	.695**
Sleep quality	.712**
Average rating	.790**

**Correlation is significant at the .01 level (two-tailed).

a higher layer of word categorization. This ensures that the words are not simply counted for frequency analysis but also grouped together to form larger categories. For example, the built-in dictionary would group words, such as “beds” and “chairs,” under the “furniture” category. Text Analytics uses the NLP linguistic extraction process to assign the extracted words to the categories defined in a rich built-in vocabulary.

First, both files containing positive and negative reviews were imported to the software and the text-mining process was applied. Categorization and text-link analysis were applied to the comments sections of the reviews. The results of word categorization for both positive and negative reviews are presented in Table 5. The top five most frequently mentioned categories for the positive reviews were place of business, room, members, sports, and furnishing. In the negative review category, the top most frequently used word categories were place of business, room, furnishing, member, and finance. It should be noted that the first two categories were the same for both positive and negative reviews. However, some differences emerged as the authors moved down the list.

In both cases, the main word in the first category (place of business) was “hotel.” It is quite logical that it would be the most frequently occurring word in hotel reviews. Other words classified under this category included “restaurant,” “club,” “outlet,” “spa.” The next most frequently used category

is “room.” This finding was also expected, as room is the core offering of hotels. These results are in line with findings of O’Connor’s (2010) study, which also identified room and hotel as the two most frequently used words (after the pronouns “I” and “we”). However, differences were noticed related to the third category. Satisfied customers who were willing to recommend the hotel to others talked about “staff (members)” in 63.5% of the reviews. This demonstrated their focus on the service component of the hotel business. The third most frequently used category in negative reviews was furnishing. Under this category there were words such as “bed,” “towels,” “chairs,” “table,” and “sofa.”

For the positive review recommendations, the next categories identified are sports, furnishing, beach, food, and architecture. While for the negative ones, those categories are staff, finance, sports, architecture, and human resources. The categories that are not present in the positive reviews are finance and human resources. Finance category comprised of the words such as “charge,” “cost,” “money,” “discount,” and “credit card.” This tells us that dissatisfied customers are more likely to refer to cost and pricing issues. The human resources category involves hotel employees, including their careers, training, and development. Comparing the results of positive and negative reviews, one can suggest that tangible aspects of hotels are discussed more frequently in the negative reviews than in positive ones (e.g., furnishing has a higher frequency, finance is found only in negative reviews). In summary, word categorization showed several categories that are common for positive and negative reviews; however, some differences were found in categories and also in frequencies of their occurrence in the reviews.

Text-Link Analysis

In the next phase, text-link analysis was applied to the reviews. The text-link analysis identifies text-link pattern results or relationships between the concepts (IBM, 2012). In application to this research, text-link analysis was used to identify pairs of words that are frequently used together in the reviews. In this particular analysis, a keyword was “no.” This means that the software looked for all combinations that included “no + any other word.” Essentially, a word combination like this would mean a lack or absence of something. Such combinations were selected for the analysis as the reviews were classified into positive and negative, where a lack or absence of an attribute would be a relevant factor to consider.

Again, the comparison for the positive and negative categories was performed. Given the number of reviews used for analysis, the number of potential word combinations was very high. In order to enhance the understanding of the outcome, the least frequently occurring combinations were eliminated from the analysis. The results are presented in the [Figure 1](#) for the positive reviews and in the [Figure 2](#) for the negative ones. The results of the comparison are shown in the [Table 6](#).

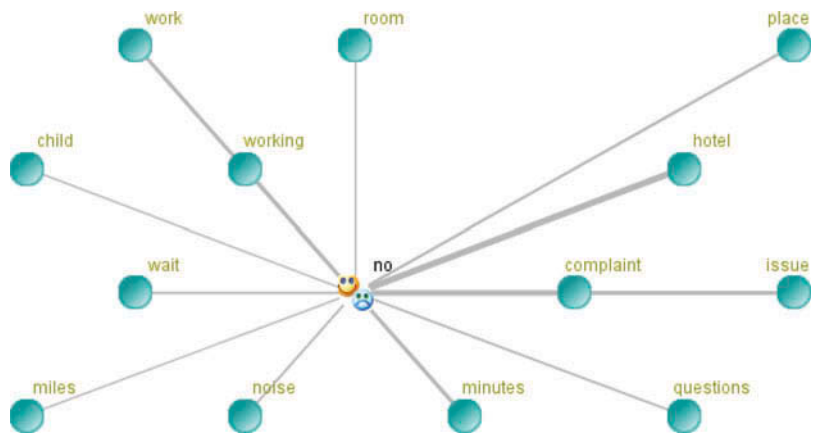


FIGURE 1 Text link analysis for positive reviews.

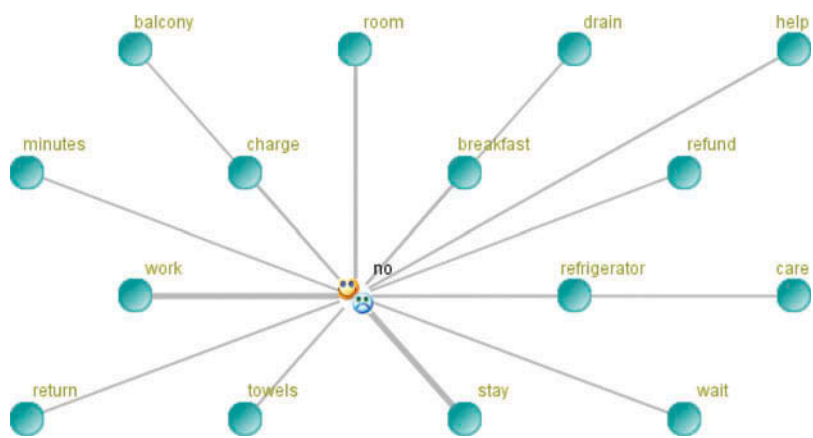


FIGURE 2 Text link analysis for negative reviews.

TABLE 6 Comparison of text link analysis results

Recommendation			
Yes		No	
No:	Child Wait Miles Noise Minutes Questions Complaint Issue	No:	Room, balcony, towels, fridge Drain Breakfast Refund Help Care Minutes Return Stay

Looking at the links identified in positive reviews, one can connect links of “no-child” and “no-noise,” “no-wait,” and “no-minutes.” Although, the link no-minutes is repeated in both categories, positive and negative, and it can be difficult to explain this one without seeing the context where it was used. To contextualize, a positive comment including the no-minutes link stated: “On several days I just went for breakfast at a local cafe and found my room already re-done after no more than 30 minutes’ absence.” On the other hand, a negative comment included the following complaint: “I said: There is no one available to bring them [towels] up? The response was no, and there will not be for at least 30 minutes!”

“No-question,” “no-complaint,” and “no-issue” demonstrate guest satisfaction and positive attitude towards the hotel. On the other hand, in negative reviews, comments were found about “no-room,” “no-balcony,” “no-towels,” “no-fridge,” “no-drain,” and “no-breakfast.” Again, all these words represent tangible aspects of hotel service that was mentioned earlier in the word category analysis. “No-refund” corresponds with the finance category in word categorization that was unique for the negative reviews. “No-help,” “no-care,” “no-return,” and “no-stay” clearly indicate guest disappointment and negative attitude towards hotels.

DISCUSSION AND CONCLUSIONS

This study aimed to examine the underpinnings of satisfied versus dissatisfied hotel customers as expressed in the online reviews. The text-mining technique was employed to understand what factors may satisfy or dissatisfy hotels customers, and what forms their intentions to recommend or not to recommend the hotel to others. The results suggest some common and unique categories for positive and negative reviews. Given this, it can be suggested that those service components that make customers satisfied, may also make them dissatisfied if they are not provided or there are problems with their delivery. At the same time, tangibles and financial issues seem to have more importance for dissatisfied customers.

The findings of this current study are partly in line with the findings of Ekiz et al. (2012), who identified two major categories in the consumer complaints: room for improvement and hotel staff attitudes. The room for improvement category refers to the physical attributes of the hotel room and the quality of the amenities provided in the room. However, the current study findings further suggest that room and furnishing categories are among the top three most frequently mentioned dimensions in the reviews of the guests who would not recommend a hotel where they have stayed. Moreover, when compared to the dimensions identified in the customer reviews with positive recommendations, negative reviews refer to room and furnishing categories more frequently. These are interesting findings from

this current study that offer new insights about the underpinnings of satisfied and dissatisfied customers as expressed in the online reviews.

The second category that was identified by Ekiz et al. (2012) pertains to the “bad attitude, misbehavior and lack of knowledge, skill and passion of hotels staff” (p. 102). Similarly, the analysis presented in this current study has also identified staff category among the most frequently reported ones in both positive and negative reviews. However, the analysis presented in this article demonstrates additional insights. For example, when comparing frequencies of describing tangible (room, furnishing) and staff categories, the reviewers with positive recommendations focus first on the staff performance and then talk about furnishing. On the other hand, the reviewers with negative recommendations refer to tangible aspects of the hotel service more frequently compared to the staff category.

Results of the current also study suggest that in order to drive positive electronic WOM, hotel employees should provide good service to customers. The hotel frontline employees play a key role in customer satisfaction and trigger customers to write positive online reviews. It can be claimed that customer satisfaction may greatly depend on the performance of hotel employees’ performance. On the other hand, furnishing plays a significant role for negative electronic WOM. The tangible aspects of hotels are discussed more frequently in the negative reviews than in positive ones. This might be due to the fact that guests perceive the tangibles as the core product of the hotel and take them for granted. Therefore, if something is wrong with the tangibles (e.g., bed, carpet, towels, chairs, tables, etc.), it may lead to dissatisfied customers and trigger negative electronic WOM. Furthermore, financial issues (e.g., money, charge, credit, and cost) appeared only in negative recommendations. Hotels are therefore advised to fix those problems related to the extra charges and credit card problems in order to minimize negative recommendations and avoid potential negative impacts on guest satisfaction and repurchase intentions (Berezina et al., 2012).

Mohsin and Lockyer (2010) conducted an importance–performance analysis of luxury hotel attributes. Our study findings are not only in line with these authors’ study results but also offer additional insights about the most important hotel attributes. Among the top most important hotel attributes found by Mohsin and Lockyer were the value for money; first contact with the hotel staff, and helpful and friendly staff; and furnishings in the room. These attributes may be matched with the categories from the online hotel reviews identified in the current study:

1. Value for money may represent the finance category identified in the negative reviews;
2. First contact with the hotel staff, and helpful and friendly staff may be matched to the members category that was identified in both positive and negative online reviews; and

3. Furnishing in the room matches the furnishing category that was found in both positive and negative online reviews.

Depicting such categories in the hotel guest online reviews suggests that value, staff, and furnishings are indeed important elements of hotel services as they frequently appear in the online hotel reviews. Similarly, the content analysis of hotel online reviews conducted by Barreda and Bilgihan (2013) found the highest number of comments to be relevant to the bedroom and bathroom interiors. Bedroom accounted for 42% of comments in this category and was the most frequently described item. These findings by Barreda and Bilgihan may be matched to the room category identified in the current study, where guestroom comments were the second most frequently reported category. Some other elements of the bedroom and bathroom interiors from Barreda and Bilgihan fall into the furnishings category in the current study (e.g., bed, towels). The next most frequently reported category in the results of Barreda and Bilgihan was the service experience category, where 25% of the guest comments were accounted for by the friendly staff category. Again, the current study has also identified a similar category (members) where guests discussed hotel employees.

Based on a critical review of these two recent studies, it is evident that there is still more research needed to understand the underpinnings of satisfied and dissatisfied hotel customers. This current study contributes to the hospitality field by providing empirical findings and critical discussions about the underpinnings of satisfied and dissatisfied hotel customers. This study particularly suggests that comparison of the positive and negative categories should be interpreted under the Hertzberg's two-factor theory, stating that "hygiene factors" are the sources of dissatisfaction. Having hygiene factors in place will prevent dissatisfaction, but will not necessarily lead to satisfaction, whereas "motivator factors" do not cause dissatisfaction when absent, however, when provided, they create a positive disposition and may lead to customer delight (Chowdhary & Prakash, 2005). Providing hygiene factors such as a clean room and basic amenities can prevent dissatisfaction. On the other hand motivator factors such as "beach" can lead to customer delight.

From a managerial perspective, it is important to consider the e-review categories that have emerged from the study findings. Further, the lack of feedback about customer experience is very costly for the firms. Thus, gaining feedback via text mining is of great value to the firm, and customer reviews of products and services on electronic media and social networks provide valuable managerial information. They constitute immediate responses expressed from the customer perspective.

The text-mining evaluation of online hotel reviews demonstrated in the current study supports the framework proposed by Crick and Spencer

(2011). In that framework the researchers positioned customer expectations as an overarching element to the entire service delivery process. Crick and Spencer (2011) suggested that customer expectations should be constantly monitored and fed into the service development and delivery process to make sure that “the voice of the guest is not lost” (p. 473). The text-mining approach implemented in this current study allows hotel managers and researchers not only to account for the voice of every guest, but also to see a larger picture that all of these voices would form collectively.

The contribution of this study is two-fold. First, the current study contributes to the long-lasting debate of assessing hotel service quality and guest satisfaction. Over the years different scales were proposed to measure hotel service quality. Such scales include, but are not limited to SERVQUAL (Cronin & Taylor, 1992), modified SERVQUAL (e.g., Ekinci, Prokopaki, & Cobanoglu, 2003), LODGSERV (Knutson, Stevens, Wullaert, Patton, & Yokoyama, 1990), and lodging quality index (LQI; Ladhari, 2012). These scales have proposed a multidimensional structure of hotel service quality, including tangibles and one or more intangible dimensions. The current analysis presented in the text mining of hotel online reviews supports the dual structure of the service quality separating tangible aspects from intangible ones, and, therefore, providing support for existing theory of the service quality structure. The categories that are identified in the text-mining process present the service aspects that are important to the hotel guests and that are frequently discussed in online reviews. The findings of the current study reveal that both tangible (e.g., room, furnishings) and intangible (e.g., staff members, human resources) dimensions are being evaluated in online reviews.

Second, this study presents a method of analyzing hotel online reviews—text mining. The text-mining approach allows hotel managers and researchers to work with an extensive amount of textual information and extract meaningful patterns from it. This approach allows the voices of all consumers to be heard and included in the service design and evaluation process. Crick and Spencer (2011) claimed that high quality service is “not a fixed goal but rather a moving target” (p. 467). It appears that text mining is one of those tools that may help to hit the moving target. Given the growing amount and the constant influx of new online reviews, text mining may help hotel managers and hospitality researchers to navigate in this vast amount of information. Even though the details of the reviews may be lost in the text-mining process, this approach would assist hotel managers and researchers to see bigger picture trends and service elements that hotel guests are satisfied or dissatisfied with. For example, if a particular problem repeats itself persistently in a hotel at the beginning of the summer season every year, the text-mining approach may help spot that pattern. However, a human brain may forget a problem that it read about one year ago. Therefore, regular text

mining of online reviews would be recommended for hotel properties for service design and evaluation purposes.

Hotels should analyze online reviews on a regular basis in order to identify the strengths and weaknesses of their property and competing ones. The approach that was applied to all hotels in one area in this study can also be utilized by the management of one property in order to track and understand the reputation of that establishment on the web. This knowledge would allow hotel managers to realize their strengths and weaknesses, their successes and service failures, and respond to them accordingly. Aside from this, such a technique can assist hotels in monitoring the reputation and activity of their competitors. Text mining online reviews can help find out innovations implemented by competing properties, new approaches, products, services, strengths, and weaknesses. In addition to this, text-link analysis may be utilized to discover what customers are saying about specific competitors and their services. Such relationships may be found by building links around the name of the competitor, or their product/service. Moreover, the text-mining approach may be undertaken at the group level if management would like to make a comparison on hotel performance across a portfolio of hotels within the company. Similarly, this technique may be applied at the destination level in order to assist destination management organizations in their evaluation of the destination's strengths and weaknesses, and development of marketing campaigns.

As any other study, this research is also subject to limitations. Current research has employed a sampling frame that is inclusive of online reviews for only one travel destination. Given this, some of the categories that were identified during the analysis are location-specific, for example, sports and beach, and may not be generalized to the entire hotel market in the United States. However, the value of the study is seen in demonstrating how the hotel industry can utilize rich information generated by guests on the Internet to develop and improve their business. In addition, TripAdvisor.com provides limited characteristics about the reviewers, as it is confidential platform in which the identity of the reviewer is not shown to the public.

It is hoped that the research findings and discussions offered in this current study stimulate further research in this area. Future studies can look at online hotel reviews in other destinations. Future studies may also evaluate online reviews for certain destinations such as Orlando, Las Vegas, London, Paris, or Istanbul to understand factors that play a key role in travelers' satisfaction and dissatisfaction when visiting these specific destinations. It is evident that despite increasing number of research studies in hospitality and tourism marketing (Morosan, Bowen, & Atwood, 2014) and also in information technology in hospitality and tourism (Law, Buhalis, & Cobanoglu, 2014), there is still much need for more research studies to better understand the underpinnings of satisfied and dissatisfied customers.

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