

Article

Digital Marketing Platforms and Customer Satisfaction: Identifying eWOM Using Big Data and Text Mining

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Abstract: Big data analytics provides many opportunities to develop new avenues for understanding hospitality management and to support decision making in this field. User-generated content (UGC) provides benefits for hotel managers to gain feedback from customers and enhance specific product attributes or service characteristics in order to increase business value and support marketing activities. Many scholars have provided significant findings about the determinants of customers' satisfaction in hospitality. However, most researchers primarily used research methodologies such as customer surveys, interviews, or focus groups to examine the determinants of customers' satisfaction. Thus, more studies must explore how to use UGC to bridge the gap between guest satisfaction and online reviews. This paper examines and compares the aspects of satisfaction and dissatisfaction of Greek hotels' guests. Text analytics was implemented to deconstruct hotel guest reviews and then examine their relationship with hotel satisfaction. This paper helps hotel managers determine specific product attributes or service characteristics that impact guest satisfaction and dissatisfaction and how hotel guests' attitudes to those characteristics are affected by hotels' market positioning and strategies.

Keywords: customer satisfaction; innovation management; hospitality; big data; text mining; online reviews



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1. Introduction

It is recognized that social media and user-generated content (UGC) contribute to the hospitality sector [1–3]. Online hotel booking and guest reviews are growing with the rapid development of the Internet. Consumers usually post reviews, suggestions, or judgements on hotel booking websites regarding their accommodation [4,5]. These online reviews called UGC provide benefits for hotels to gain customer feedback and enhance product or service characteristics, creating business value [6–10].

Customer experience and satisfaction are becoming more popular for hotel managers because these aspects affect consumer loyalty and repeat purchases, increase word of mouth, and enhance hotel performance [11]. Specifically, there are many competitors in the tourism sector, and hotel managers provide mainly similar products and services, which encourages managers to discriminate their hotels among their competitors. Therefore, hoteliers make use of a significant measure of a hotel firm's effectiveness, named customer satisfaction. This measure helps hotel firms compare their performance among others [3,12–15]. During the last decades, many researchers have tried to examine customer satisfaction factors [16–25]. These factors represent customers' experience regarding their accommodation and describe their perceptions regarding the hotel and their whole experience. Furthermore, hoteliers use other measures such as customer ratings to evaluate customer satisfaction. These measures are assessed by hotel guests with scores ranging

from 1 to 10 regarding certain attributes of services or the overall accommodation experience. On the other hand, hotel managers can use online guest reviews that are more explanatory and thus represent guest satisfaction or dissatisfaction more comprehensively than consumer ratings. Defining the type and significance of determinants that affect guest satisfaction and dissatisfaction in hotel guest recommendations is a significant action for hotel managers using online communication channels to increase the demand for hotel services and enhance their firms' performance [11,26].

While this field of survey provides many points of view on customer satisfaction, the current studies are mainly conducted using traditional research methodologies such as customer surveys, interviews, or focus groups to determine the factors of customer satisfaction [16–25]. Therefore, big data in the hospitality field are an interesting research field that may provide significant insights [3]. Although guest satisfaction or dissatisfaction has been thoroughly explored in existing studies, few researchers have examined guest satisfaction or dissatisfaction utilizing UGC. Facing with unstructured data is one of the most significant challenges of big data. Thus, more research is required to examine how to better use hotel guest reviews to understand consumers' expectations and fill the gap between guest satisfaction or dissatisfaction and online reviews [10].

In hospitality management, the use of UGC is growing to provide significant insights into research fields that conventional research techniques have not well examined. Big data offer many avenues to create new information to increase our knowledge of the area and to improve decision making in the tourism sector [3,27–29]. The use of big data helps hotel managers understand consumers' expectations and therefore reduce their marketing costs by formulating market segmentation strategies [10,30,31]. Nevertheless, researchers have used new data sources to understand significant research topics better. They have employed them on an ad hoc basis, and the implementation of big data in the tourism sector has not been widely carried out yet [3]. The significance of UGC is insufficiently known and understood, and the development of marketing approaches about the characteristics of products or services that would increase consumers' satisfaction or dissatisfaction is a significant challenge for them [10,32,33].

This paper explores and analyzes the factors of consumer satisfaction and dissatisfaction regarding Greek hotels. The research question of this article is the following: which factors affect consumer satisfaction or dissatisfaction in the hotel industry? Latent Semantic Analysis (LSA) was implemented to deconstruct hotel guest reviews collected from www.booking.com, a third-party hotel booking website, and then examine their relationship with hotel satisfaction.

In this paper, one of the most significant types of UGC (hotel guest reviews) is used to examine customers' experience and its contribution to consumer satisfaction. First, text analytics was implemented in order to deconstruct a significant number of online reviews collected from booking.com. Second, text analytics was applied to explore the relationship between customers' experience and guest satisfaction. Therefore, the use of text analytics aimed to increase the knowledge of evaluating customer satisfaction in hospitality management when customer ratings are provided by guests who have stayed in a specific hotel. Therefore, hoteliers can determine the characteristics of hotel products and services that affect hotel guest satisfaction and dissatisfaction and how market positioning and strategies impact consumers' expectations for those products and services. Thus, these outcomes can provide hotels with a roadmap for increasing service quality and hotel profitability. Furthermore, these results help hotel managers to better target customers by formulating specific market positioning and strategies.

The following is the structure of the paper. Section 2 includes a theoretical background on customer satisfaction in hospitality. The methodology is described in Section 3, and Section 4 presents the outcomes. Section 5 presents highlights and avenues for future researchers.

2. Theoretical Background

The evaluation of customer satisfaction is a fundamental challenge for hotel managers due to the complexity of customers' experience. In the tourism sector, researchers have highlighted a gap between hotel managers' perceptions regarding the attributes of customer satisfaction and what exactly guests believe is essential when they book and evaluate their accommodation in a hotel [34]. Traditional survey methods cannot help better understand this research field. Thus, it is crucial to develop new measures and research frameworks to examine the factors that affect customer satisfaction. An interesting avenue for further research is to use new data sources and innovative research methodologies to increase knowledge about customers' experience and satisfaction [3].

As social media have become a key tool in the hotel industry for marketing, advertising, and customer service, more and more studies have been done on this subject [35–37]. Prospective customers use online rating sites to search for information and read both negative and positive reviews before deciding where to book [38,39]. Consumers will focus on reviews and ratings to choose a hotel. Online reviews describe guest satisfaction and dissatisfaction more coherently and comprehensively because the text is unstructured. They provide a significant amount of data for analysis, and the identity of respondents is anonymous [10,33,40].

The usage of online reviews to evaluate hotel guest satisfaction is becoming a popular research field [3]. Hotel customer reviews describe customer experiences and customer satisfaction levels [41]. The quality of the provided hotel products and services affects consumers' expectations of their experience. Service and product quality are elaborated by the specific characteristics of products and services [42]. The elements of the hotel, incorporating room quality, Internet availability, the facilities and the buildings themselves, have the highest impact on hotels' performance [43]. Price is not the only concern when customers choose a hotel [44]. Service quality and room experience are recognized as the most significant attributes influencing customer reviews [45]. This statement confirms the conclusions of previous surveys that have suggested service quality and room experience as two critical dimensions affecting guest satisfaction [12,46].

Zhou et al. (2014) [42] identified key features from reviews that support customer satisfaction. The main features are room facilities, food quality, general hotel facilities, staff, price, services, and location. These characteristics are consistent with those identified in previous studies [47,48]. Furthermore, Dong et al. (2014) [49] argued that the dimensions of location, room, services are the most important regarding the evaluation of hotel guest satisfaction, to a greater degree than facilities, food, and price. In another study conducted by Barreda and Bilgihan (2013) [50], hotel cleanliness is a common concern in customers' expectations of hospitality. Texts in negative hotel guest reviews usually include words regarding the lack of cleanliness. Guests have shown that they are more likely to post positive reviews for conveniently located hotels (close to attractions, shops, airports, restaurants, etc.) [50].

However, apart from the factors of satisfaction, there are also those of customer dissatisfaction in hotels. Several studies have addressed the issue of customer dissatisfaction [12,14,51]. It seems that most of the time, these factors differ from the factors of satisfaction. Xu and Li (2016) [11] indicated that consumer satisfaction and dissatisfaction factors are not the same and depend on the hotel type. In their study, customer satisfaction factors were broadly widespread (e.g., basic services), while the attributes of customer dissatisfaction were much more precise (e.g., issues related to behavior). Specifically, the dissatisfaction factors are the following: Wi-Fi, hostile and useless staff, facilities, parking, bathroom, noise, smoking, polluted air, Wi-Fi, old installation, food, and drink [11].

Also, Berezina et al. (2016) [33] further indicate that the type of rooms is one of the most frequently noticed attributes about which guests are not satisfied. The staff service category is one of the items that most often that reveal customer satisfaction and dissatisfaction. In addition, financial issues such as money, debit, credit, and costs appear only in negative reviews [33]. Therefore, hotel managers are suggested to correct these

issues regarding surcharges and credit card problems to reduce negative reviews and avoid any adverse effects on visitors regarding satisfaction and repurchase intentions [33].

Kim et al. (2016) [52] used UGC to determine the aspects of consumer satisfaction and dissatisfaction in the tourism sector in both full and limited services. Their outcomes identified many important dimensions that determine visitor satisfaction, including hotel location, rooms, and staffs. In another research on hotels in Istanbul, Alrawadieh and Law (2019) [41] highlighted that the hotel staff as well as their perspectives and the size and quality of the rooms were very important among the factors influencing customer satisfaction and dissatisfaction in hotels that provide both full and limited services. The results of the analysis which was conducted by Mariani and Borghi (2018) [53] show that most of the variation in a hotel rating depends on the relevance of the critical characteristics of the hotel, i.e., the condition of the hotel, the comfort of the room, the service, the staff, and cleanliness.

The quality of services that hotel guests receive from a friendly and well-trained staff can positively affect their attitudes. When consumers are satisfied with the service quality of a well-trained staff, they are willing to be satisfied with the whole image of the hotel, which translates into a positive review [50]. Finally, Chaves et al. (2012) [54] agreed with the above findings, arguing that staff, room, and location are the attributes most often seen in customer recommendations.

Customers satisfied with their accommodation in a hotel are more likely to recommend it to other customers and usually focus on intangible attributes of their accommodation, such as staff and service, than not dissatisfied them. However, dissatisfied consumers more often focus on the tangible dimensions of the hotel (e.g., furniture, price, etc.) [42]. Specifically, for four- and five-star hotels, they concluded that the hotel's public areas and facilities (cafe lounge, swimming pool, lobby, and gym) can contribute to customer satisfaction. It is noted that these characteristics work exclusively to increase satisfaction and are not judged as critical factors of satisfaction [42].

3. Methodology

The research framework used in this paper involves specific steps based on previous studies [10,11]. The first step refers to data collection, consisting in the collection of online reviews through the Internet. The second step is the data referring process, which includes converting unstructured texts to structured data. The last step includes data analysis using semantic methods.

3.1. Data Collection

Hotel guest reviews were collected from www.booking.com, which is a third-party hotel booking website [10,11]. This third-party hotel booking website includes travel-related services, such as hotel room reservations, and consumers have the opportunity to rate their accommodation and post reviews. During the previous years, this website collected a significant number of online reviews that were used as a suitable data source for this survey. Furthermore, this website was selected as the data source for this paper because it verifies consumers' input. Consumers who have booked hotels through booking.com are the only ones who may provide customer ratings and post online recommendations, which guarantees the validity of the reviews. Additionally, this website collects data on consumers' travel purpose (e.g., business trips vs. leisure trips), the hotel's star level, and the type of hotel.

Another area of interest where research is limited refers to the examination of particular hotel types. This could be concerned as a significant policy which affects a hotel's operations, production, and facilities and helps the formulation of customer segmentation. Different hotel types provide a variety of products and services. Hotel guests provide consumer rankings about the attributes of services. Thus, the significance of each attribute is different because it depends on different consumers' expectations, perceptions, and preferences for each hotel type. Nevertheless, studies that explore the effect of hotel types

on consumers' perceptions are limited [11]. Thus, we collected hotel guest reviews from 89 five-star hotels in the second largest city in Greece (Thessaloniki). Web crawling was implemented to collect data, and the web crawler was developed using Python 2.7. There was no restriction regarding the period data were input. For each hotel in the sample, all available reviews were collected. The methodology regarding the sample selection process was based on Zhou et al.'s (2014) [42] research.

3.2. Research Method

In this article, Latent Semantic Analysis (LSA) was implemented because it is a well-established text mining method. This method is an algebraic–statistical technique which can extract the hidden semantic patterns of words and phrases from a document corpus by underlying their thematic structure [55,56]. Based on previous studies that used LSA [10,11,57,58], three steps that are included in text mining procedures were implemented.

First, 1515 positive reviews and 1080 negative reviews were identified, excluding reviews that were not published in English. Negative reviews were integrated in one spreadsheet, while positive reviews were combined into another. RapidMiner Studio, a data mining program, was used to import these spreadsheets. “Stop words” such as “and”, “the”, “is”, “are”, “a”, and “an”, as well as all tokens that included no more than two letters (e.g., “s”, “x”) were excluded because they did not include any significant data. The next activity was to remove all terms or tokens that were only included in one document and did not refer to a specific topic. Afterwards, on a word list, term-stemming methods were implemented. This process determined the word's root, and all words with the same root were treated as one token. An n-gram algorithm was implemented to determine repeated phrases in the documents.

To assist with factor explanation, we identified each factor with its high-loading terms and documents [11,55]. For each solution, a table including all high-loading terms and documents classified by absolute loadings was developed. The factors were then labeled by looking at the terms and documents regarding a specific factor, explaining the corresponding field, and identifying a suitable label. Therefore, all of these terms and documents were explained, and the factors were labeled in connection with their underlying high-loading terms. For further details on the main functions of LSA, please refer to previous studies [10,11,57,58].

4. Results

Table 1 presents the most frequently used words in online reviews that express customer experience and satisfaction. These words can be classified in categories related to the core product, food, facilities, hotel attributes, staff, and assessment of experience. Words such as “room”, “bed”, “balcony”, and “shower” are included in the first category. Words that are related to food are “breakfast” and “food”. Words such as “pool”, “beach”, “facilities”, “stairs”, and “restaurant” describe facilities. The words that are related to hotel attributes are “location”, “area”, “place”, “view”, “design”, “spacious”, “modern”, “luxury”, and “hotel”. Words such as “staff”, “kind”, “helpful”, and “friendly” describe the staff. The words that are related to the assessment of the experience are “services”, “price”, “expensive”, and “hot/cold water”. The top words are “hotel”, “location”, “room”, “services”, “clean”, and “staff”.

Table 1. Most frequently used words in online reviews.

Word	Frequency	Word	Frequency
Hotel	1024	Price	98
Location	784	View	87
Room	636	Balcony	85
Services	609	Hot/Cold water	81
Clean	501	Design	78
Staff	449	Spacious	71
Breakfast	353	Luxury	71
Pool	307	Modern	71
Area	216	Friendly	70
Place	179	Helpful	70
Food	173	Kind	70
Beach	158	Stairs	70
Facilities	135	Expensive	52
Bed	101	Restaurant	31
Shower	99	Towel	30

An LSA was presented based on positive and negative hotel guest reviews that described their satisfaction and dissatisfaction. These recommendations aimed to represent the dimensions that identified positive reviews that were linked to guest satisfaction and negative reviews that were linked to consumer dissatisfaction. Tables 2 and 3 present the significant factors determined using the LSA. Each factor shows a dimension of positive and negative customer recommendations. As each factor includes many terms, we chose to present the top terms as the “high-loading terms”. Four factors (nice room, good location, variety of services, friendly staff) significantly affected customers’ satisfaction, and four factors (old facilities, poor services, inconvenient location, and expensive prices) significantly influenced consumers’ dissatisfaction. The findings showed that the factors included all the unique terms. This implies that the factors presented all dimensions of online hotel guests’ positive and negative recommendations. The name of each factor is based on the meaning represented by the terms that were included in the specific factor.

Table 2. Factors regarding customer satisfaction.

Factors and Singular Values	Interpretations (Labels)	High-Loading Terms
Factor 1 (2.499)	Good location	Place, Area, Location, View, Beach
Factor 2 (2.412)	Friendly staff	Friendly, Helpful, Kind
Factor 3 (2.033)	Nice room	Hotel, Room, Clean, Facilities, Spacious, Balcony, Luxury, Modern, Design
Factor 4 (1.947)	Services	Breakfast, Pool, Food

Table 3. Factors regarding customer dissatisfaction.

Factors and Singular Values	Interpretations (Labels)	High-Loading Terms
Factor 1 (3.285)	Poor services	Breakfast, Pool, Food, Restaurant, Services, Hot/Cold Water, Shower, Towel
Factor 2 (2.962)	Inconvenient location	Place, Area, Location, View, Beach
Factor 3 (2.053)	Old facilities	Hotel, Room, Clean, Stairs, Facilities, Bed, Clean
Factor 4 (1.936)	Expensive price	Price, Expensive

In Table 2, the first factor includes words such as “place”, “area”, “location”, “view”, and “beach” and seems to be related to location. The second factor, named “friendly staff”, involves words that characterize hotels’ staff. Words such as “hotel”, “room”, “clean”, “facilities”, “spacious”, “balcony”, “luxury”, “modern”, and “design” are included in the

third factor named “nice room” because they seem to be related to room attributes. Finally, the fourth factor contains words such as “breakfast”, “pool”, and food” that are related to the services provided to customers.

In Table 3, the first factor includes words such as “breakfast”, “pool”, “food”, “restaurant”, “services”, “hot/cold water”, “shower”, and “towel” and seems to be related to the services provided to customers. The second factor, named “inconvenient location”, involves words that characterize the location of a hotel. Words such as “hotel”, “room”, “clean”, “stairs”, “facilities”, “bed”, and “clean” are included in the third factor named “old facilities” because they seem to be related to hotel/room attributes. Finally, the fourth factor contains words such as “price” and “expensive”, associated with the accommodation cost.

5. Discussion

Table 2 indicates that a good location was a factor that affected hotel guest satisfaction. Location and accessibility are significant determinants of consumer satisfaction because these aspects help consumers find a hotel quickly, which presents a beautiful view of the surroundings, and save time when they want to explore nearby attractions. The levels of consumer satisfaction were increased if the hotel was close to a public transportation center (e.g., an airport). Some hotels provided a free shuttle bus, which increased hotel guests’ satisfaction and increased the hotel’s location benefits. The walking distance between the hotel and the attractions contributed to customer satisfaction. Consumers will save time commuting if they are close to attractions. Then, the hotel’s beautiful views improved hotel guests’ satisfaction with the location. Some hotels provide rooms with views of mountains or parks, amongst others, and having these views increased consumers’ contentment with the hotel, resulting in higher hotel guest satisfaction [11,47,48,50,54,59–65].

Staff performance was another factor that affected consumer satisfaction. Consumers are interested in employee performance because the link between consumer satisfaction and staff performance in the tourism sector is strong, and the interaction between consumers and employees is high. Friendly and well-trained employees increased consumer satisfaction. Furthermore, the quality of the rooms is always a factor that affects consumer satisfaction. The room itself is the core product, and consumers spend the majority of their time there. Therefore, pleasant, clean, comfortable, and cozy rooms can increase hotel guest satisfaction [52,54,66–69].

In contrast, Table 3 shows that the factors influencing consumer dissatisfaction were more specific. Determinants regarding poor-quality services are one of the most critical factors. Another aspect concerns facility problems, which included noisy swimming pools, old furniture, malfunctioning vending machines, dirty bathrooms, and broken in-room fridges and microwaves. All of these problems increased consumer dissatisfaction. These determinants are among the most crucial attributes of hotel facilities and services, and their absence leads to customer dissatisfaction. Nevertheless, while their existence is required, these factors are insufficient to increase hotel guest satisfaction on their own. These findings confirm the results of the existing studies about customer dissatisfaction [11,42,51,70].

6. Conclusions

In this paper, text analytics was implemented to analyze a significant number of hotel guest reviews. This paper contributes to the analysis of many online customer reviews and the examination of the drivers of customers’ experience and satisfaction in a manner that was not applied in traditional surveys in hospitality management. By exploring the various factors of consumer satisfaction and dissatisfaction in hospitality management, this paper confirms the effects of different hotel products or services on consumer expectation. Although a hotel’s positive specific characteristics, products, or services—involving its staff, location, and rooms—increase consumer satisfaction, the absence of some particular characteristics enhances consumer dissatisfaction. Simultaneously, the presence of similar dimensions is not adequate by itself to increase satisfaction levels. While consumers are in-

terested in several dimensions, the extent of the influence of particular hotel characteristics, products, and services on consumer expectation varies. This paper concludes that hotels' main aspects, products, or services, such as staff performance, location, and the quality of the room, impact consumers' attitudes towards hotels more significantly than auxiliary services.

6.1. Theoretical and Managerial Implications

This article provides some theoretical contributions. First, this paper demonstrates the contribution of big data to innovative methods of examining consumer behavior in hotel management using UGC. This paper highlights that semantic analysis on big data can be implemented using available software and can be conducted in other research fields related to hospitality, such as consumer and employee satisfaction, hotel performance, spending patterns, etc. While the results of this paper are based on online reviews posted on a particular hotel website, they describe the way customers present their experiences in recommendations. Second, analyzing UGC offers scholars an innovative perspective on exploring consumer satisfaction that yields more accurate reports of consumers' experiences than survey methods, such as customer surveys or interviews, due to the open structure of the texts. Online reviews describe consumer perception more coherently and comprehensively compared to consumer ratings. Hotel guest reviews provide significant information for both customers and service providers. Consumers consider UGC as one of the most reliable data sources and use recommendations as a tool for making hotel booking decisions. On the other hand, service providers can use hotel guest recommendations to gather input from consumers and formulate and evaluate marketing strategies. Customer reviews offer updated and complete information and can be considered as an important communication channel between customers and hotel managers. Both positive and negative reviews affect possible consumers' attitudes about online hotel booking, since they impact the online transaction stages of both the information phase and the after-sales phase.

From a practical perspective, this paper provides significant insights for hoteliers because the use of LSA offers an effective method for analyzing significant amounts of text. Hotel managers can often implement big data analysis to define the aspects of consumer satisfaction and dissatisfaction within a timeline. Hence, hotel managers can identify their hotels' performance and implement specific improvement actions dynamically. The hotel's success is not guaranteed if big data are used. Business analysts are required to transform complex data into valuable information. Thus, hotel managers should be aware of how big data can be used to create value and how they can be used to improve hotel performance and success.

Hotel guest reviews provide meaningful knowledge to potential consumers that permit them to understand the services and facilities provided during their accommodation. The classification of hotel guest reviews into the following categories, namely, "positive", "negative", or "neutral", assists hotel managers in gaining a better understanding of consumer experiences and the factors that affect consumer satisfaction or dissatisfaction. Defining the factors of consumer satisfaction and dissatisfaction could support hoteliers to effectively use eWOM by conducting improvements to particular attributes of their services. To enhance consumer demand by enhancing satisfaction and reducing dissatisfaction, hotel managers should improve their products or services and understand consumers' concerns. Therefore, hotel managers may make better decisions regarding segmentation processes and marketing strategies if they have a better grasp of their customers' profiles, needs, and attitudes.

This paper highlights that, in order to increase hotels' products and services, hoteliers should focus on improving operational performance characteristics, such as room quality and staff performance, as these aspects increase consumer satisfaction. Among the customer satisfaction factors, location was the essential factor which affected guest satisfaction. For future hotels, accessibility and hotel location have to be taken into consideration, as

they are significant dimensions of consumer satisfaction. While existing operating hotel firms cannot transform their locations, they can improve access to tourist attractions or transportation hubs by offering brochures, free shuttles, and hand-drawn maps. In particular, the entire facility, including the décor and the layout of the hotel, should be updated. Building facilities, involving elevators, swimming pool, and business center, should all be restored, while in-room amenities, such as refrigerators, microwaves, bathrooms, and air conditioners, should be improved. These aspects improve service operations and help hoteliers receive limited negative reviews.

The quality of sleep and cleanliness are still important factors that contribute to customer satisfaction. Customers need a hotel room in order to have a good night rest. Hotel managers cannot ignore providing a good night sleep, whatever services are provided. Thus, hoteliers should not overlook this aspect in their hotel guest reviews.

6.2. Limitations and Future Research

This paper has many limitations. The sample represented only urban hotels in Thessaloniki. The hotel features defined in online reviews clearly reflect location-related features of the hotels. Consumer experience in these hotels is not similar to the experience in hotels in less populated, rural areas, or Greek islands. Nevertheless, possible restrictions on the generalizability of the results do not decrease the data's internal validity. They, therefore, do not prevent the goal of presenting the significance of big data in the tourism sector. Furthermore, only one source of data was used in this paper. While booking.com includes adequate hotel guest reviews, the outcomes of this paper may be limited and should be explained carefully. Future researchers may consider applying different methods to multiple data sources to create a complete understanding of customer satisfaction using big data. Further research can be implemented to explore the factors of consumer satisfaction and dissatisfaction using various data sources, such as consumer comments cards, surveys, interviews with consumers, hotel booking websites, different social media websites, and so on. These sources may provide more details about consumer perception, such as consumer familiarity and consumer loyalty; consumer willingness to pay can also be analyzed through UGC.

Future researchers can compare consumer satisfaction and dissatisfaction factors regarding different types of hotels that provide various services. By analyzing hotel types and the significance in customer ranking of consumer satisfaction and dissatisfaction regarding different types of hotels, future researchers will be able to examine the benefits and disadvantages of each type of hotel's performance based on their consumers' attitudes. Hotel managers can formulate market segmentation strategies to define various consumers' needs with various travel purposes and demographics. Therefore, service quality can be increased. Hotel managers may implement the market segmentation process to fulfill the specific demands of consumers for each hotel type. Thus, further research is necessary in order to examine whether demographics such as consumers' gender, age, or travel purpose (leisure vs. business) can impact on guest satisfaction and dissatisfaction.

Future researchers can examine if positive reviews significantly influence hotels' online transaction volumes and if negative reviews impact on staffs' personal and professional outcomes as well as on hotels' outcomes. These dimensions negatively affect online hotel bookings. Therefore, defining the dimensions of hotel guest satisfaction and dissatisfaction using UGC and offering specific improvement actions are significant actions for hoteliers to take in order to improve their reputation, relationships with customers, and hotel performance.

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