Pinelopi Athanasopoulou / Apostolos, N. Giovanis / Marilou Ioakimidis

How Are Guests Satisfied? Exploring the Asymmetric Effects of Hotel Service Attributes on Customer Satisfaction by Analyzing Online Reviews

Abstract

Online reviews provide a wealth of information on how customers assess the different attributes of a service. Research shows that the performance of hotel service attributes is expected to have asymmetric effects on customer satisfaction. The purpose of this study is to analyze online reviews and determine whether different hotel service attributes have asymmetric or symmetric effects on hotel customer satisfaction and how these effects differ for different customer segments. Positive and negative comments on hotels are analyzed using three-factor theory and penalty-reward contrast analysis. Results show that the most important service attributes for customer satisfaction and dissatisfaction (hybrids) are location/access and personnel quality. All other attributes are either frustrators (cleanliness, process quality, perceived value) or dissatisfiers (installation quality, room quality, food quality). However, when the sample is split into business (solo and groups) and leisure (solo, groups, families, couples) results differ by customer segment. Results show that there should be a customized approach to managing customer satisfaction based on online reviews where service attributes are prioritized differently according to their importance for the satisfaction of different customer segments.

Keywords: online reviews, hotels, customer satisfaction, asymmetric effects, consumer-generated content

1. Introduction

The use of new technology and the advent of social media have drastically changed the travel services industry (Rhee & Yang, 2015). Online reviewing is an increasing trend today that affects many industries, including hotels and restaurants. Consumers create content on review sites that electronic word-of-mouth (eWOM) and influences other customers more than any other form of communication used by firms. Customers regard online peer reviews as a more reliable, up-to-date, and trustworthy source than data from immediate service providers (Hennig-Thurau et al., 2004; Gavilan et al., 2018; Yan et al., 2018). Consequently, reviews by fellow customers affect information search, travel planning, and purchase decisions (Gretzel & Yoo, 2008; Kim et al., 2011; Ögüt & Tas, 2012; Vincent, 2018).

The impact of customer-generated content created in online reviews is particularly salient when it comes to service products such as hotels or restaurants (Xie et al., 2014). Research has emphasized that online reviews can affect hotel performance (Ye et al., 2009; 2014; Xie et al., 2014; Anagnostopoulou et al., 2020) and customer satisfaction (Xu, 2018; Ahani et al., 2019; Zhao et al., 2019). Various studies try to review online comments to determine which service attributes lead to customer satisfaction (Li et al., 2013; Berezina et al., 2016) and dissatisfaction (Levy et al., 2013). However, not all service attributes are equally important for customer satisfaction (CS) with hotels. Various studies show that the relationship between attribute performance (AP) and CS can be nonlinear or asymmetric (Füller et al., 2006; Mikulić & Prebežac, 2008;

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Kim et al., 2016; Zhang & Cole, 2016; Mellinas et al., 2019; Xu, 2020; Bi et al., 2020). This means that the same positive or negative change in the performance of an attribute can lead to different changes in CS. The analysis of the asymmetric relationship between AP and CS can help hotels in their decision-making regarding which attributes are important for satisfying different customers. Previous research shows that the effect of different service attributes on CS seems to differ substantially across different types of travelers (i.e., couples, family, friends, and solo), a reason to travel (business, leisure), and travelers' region of origin (Banerjee & Chua, 2016; Radojevic et al., 2015, 2018; Wang et al., 2020; Bi et al., 2020). Therefore, there is a call for further research to investigate the specific impact of different service attributes on CS (Viglia et al., 2016; Zhao et al., 2015; Bi et al., 2020) and how this impact differs for different customer segments (Zhang et al., 2021; Bi et al., 2020).

All previous studies use the performance of service attributes, either extracted through market research or through online reviews analysis, to study their asymmetric/symmetric effects on CS (i.e., Kim et al., 2016; Bi et al., 2020; Zhang et al., 2021; Kwon et al., 2022). This study uses a different methodology and investigates the asymmetric effects of service attributes on hotel CS by considering only the presence of customers' positive and/or negative evaluations of relevant service attributes in their online customer reviews. Therefore, we assume that a negative evaluation of a service attribute means an attribute of low performance, while a positive evaluation of a service attribute means an attribute of high performance. The objective of this study is to analyze online reviews and determine whether different hotel service attributes, identified either as being negative or positive by customers, have asymmetric or symmetric effects on CS and how these effects differ for different customer segments.

The main research questions are the following:

▪ Which service attributes have asymmetric effects on hotel customer satisfaction?
▪ Which service attributes have symmetric effects on hotel customer satisfaction?
▪ How do these effects differ for different customer segments (types of travelers and reasons to travel)?

The findings of this study are expected to be very important, as they can be used by hotel managers to better prioritize their investment in service quality improvements to prevent dissatisfaction and enhance customer satisfaction.

The paper is structured as follows. First, we review the literature; then, we describe the methodology followed; third, we present results; fourth, we discuss the results; and finally, we conclude with theoretical and managerial implications, limitations, and suggestions for further research.

2. Literature review

2.1. Online reviews and hospitality

In today's electronic environment, travelers can find a wide selection of information on any destination or hotel, and they can also learn other people's opinions and attitudes towards these destinations or hotels by reading comments about their experiences (Hu, 2009). Many researchers refer to such user-generated content on the internet as a form of electronic word-of-mouth (eWOM) (Cantallops & Salvi, 2014) that has increased dramatically because social-media-friendly customers are increasingly inclined to report their honest opinions of their service experiences on social networks (Xiang & Gretzel, 2010).

The importance of eWOM (blogs, reviews, etc.) is increasing today, especially in the form of online reviews (Cantallops & Salvi, 2014). One of the most influential social media tools in the hotel industry is online review sites that allow customers to share their experiences and opinions online (Xiang & Gretzel, 2010). A wealth of opinions on hotels, travel destinations, and travel services are often articulated in the form of online

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consumer reviews (Sigala, 2009). Research shows that online content and recommendations generally inform searching, travel planning, and purchase decisions (Gretzel & Yoo, 2008; Kim et al., 2011; Ögüt & Tas, 2012; Gesenhues, 2013; Casaló et al., 2015). Furthermore, they can shape the reputation of tourism enterprises (Phillips et al., 2015); and influence consumers' attitudes toward brands (Lin & Xu, 2017). Mathwick and Mosteller (2016) argue that online reviews are becoming increasingly important sources of information for shoppers, impacting as much as 20–50% of online purchase decisions. Gretzel and Yoo (2008) find that among TripAdvisor users, 97.7% are influenced by other travelers' reviews, and among those, 77.9% use the reviews for help in choosing the best place to stay. Ninety percent of customers in the United States report that their buying decisions are influenced by online reviews (Gesenhues, 2013), and 80% of British consumers are influenced in the same way (Casaló et al., 2015). Many hotel guests find reviews nearly as influential as hotel brand or price (Ögüt & Tas, 2012) and are likely to change their minds after reading negative online reviews from other travelers (Ramanathan et al., 2017; Sharifi, 2019). Also, consumers tend not to book a hotel without seeking online reviews (Kim et al., 2011). As Xie et al. (2014) argue, online reviews generate an eWOM effect, which influences future customer demand and hotels' financial performance and thus, has significant business value.

As a result, online reviews are recognized as the most accessible and valuable type of feedback platform in the hospitality industry (Verma et al., 2012) and are trusted more by customers than data originating from service providers (Hennig-Thurau et al., 2004; Gavilan et al., 2018; Yan et al., 2018). Reviews are typically independent of marketers' selling efforts, so they appear more trustworthy and credible in the eyes of consumers (Nieto et al., 2014). Therefore, they are more successful in influencing consumer behavior, compared to traditional marketing tools (Phillips et al., 2017).

Furthermore, the emerging literature shows a significant link between eWOM and the performance of companies (Manes & Tchechik, 2018). There is a significant effect of customer online review characteristics (i.e., review valence, volume, or dispersion) on hotel performance that is expressed in the form of room bookings (e.g. Ye et al., 2009), sales (e.g. Zhu & Zhang, 2010), prices (Yacouel & Fleischer, 2012), revenue per available room (RevPAR) (e.g. Xie et al., 2014; Phillips et al., 2015; Kim & Park, 2017), or occupancy (e.g. Viglia et al., 2016). Various studies conclude that online reviews can affect hotel sales and profitability (Ye et al., 2014; Anderson, 2012; Ögüt & Tas, 2012; Kim et al., 2015), as well as bottom-line financial performance (Phillips et al., 2015; Anagnostopoulou et al., 2020).

Ye et al. (2014), in a first attempt to uncover such relationships, use, as a proxy of sales, the number of reviews. Recently, Kim et al. (2015) take the research further by examining the impact of an aggregate measure of online reviews on two financial indicators, revenue per available room (RevPAR) and average daily rate (ADR). Also, Yacouel and Fleischer (2012) study the qualitative effect of hotels' online review scores on listed room prices and find that better review scores translate into higher prices. Furthermore, Vermeulen and Seegers (2009) conclude that both negative and positive reviews increase consumer awareness of a hotel and can impact hotel sales. A one-point increase in the 1–10 average review score across online platforms is associated with an occupancy boost of 9% (Viglia et al., 2016). Finally, Anagnostopoulou et al. (2020) try to quantify the impact of online customer reputation on hotel financial profitability and conclude that the themes associated with positive online reviews are significantly associated with better hotel financial performance. Therefore, it is important to increase customer ratings provided through online reviews to enhance financial performance.

2.2. Online reviews and customer satisfaction

Customer satisfaction is a psychological concept that involves the feeling of well-being and pleasure or displeasure that results from customer's perception of service performance compared with their expectations (Oliver, 1981). Customer satisfaction has been extensively studied as a measure of company performance (Chen, 2015; Tontini et al., 2017) that is affected by online reviews. Anderson (2012) argues that social

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media play an increasingly important role in affecting hotel guests' satisfaction. Reviewing content on social media helps firms to understand customers' satisfaction and dissatisfaction (Levy et al., 2013; Li et al., 2013; Berezina et al., 2016; Radojevic et al., 2017). Because of the quickly increasing popularity of online review websites, they are now playing a significant role in investigating CS and preference in hospitality and tourism (Liu et al., 2017; Zhao et al., 2019). One of the main advantages of studying customers' reviews and ratings is that they can directly display customers' satisfaction (Zhao et al., 2019). Positive reviews indicate customer satisfaction, whereas negative reviews indicate customer dissatisfaction (Xu & Li, 2016).

Most researchers argue that customer satisfaction should be investigated using multiple attributes that incorporate all parts of a service (Chen, 2015; Slevitch & Oh, 2010). Various studies in recent years try to understand the determinants of customer satisfaction and dissatisfaction through analysis of online reviews. Certain studies analyze the attributes of products and services customers frequently mention in their online reviews of hotels to find out the determinants of customer satisfaction and dissatisfaction (Berezina et al., 2016; Kim et al., 2016). Zhao et al. (2019) use a sample of 127,629 reviews from Tripadvisor.com and try to predict overall customer satisfaction using the technical attributes of online textual reviews and customers' involvement in the review community. Padma and Ahn (2020) investigate which luxury hotel service attributes contribute to Malaysian guests' satisfaction and dissatisfaction by analyzing online reviews. Zhou et al. (2014) find that the determinants of customer satisfaction include location, staff, food, value, and the physical attributes of the room and hotel. Conversely, the determinants of customer dissatisfaction include poor cleanliness, high room cost, and poor employee language skills. Ahani et al. (2019) segmented hotel customers according to their satisfaction level through online reviews. Results help to identify four customer segments for Canary Islands hotels. These segments are "Highly Satisfied Travelers," "Satisfied Travelers," "Moderately Satisfied Travelers," and "Unsatisfied Travelers," showing that travelers have various degrees of satisfaction and dissimilar preferences.

Overall, there has been an increase in studies of customers' satisfactory and unsatisfactory experiences through analysis of online reviews mainly because online reviews help hotels define satisfied and unsatisfied customers and recognize their preferences (Berezina et al., 2016; Zhao et al., 2019). If tourism managers understand traveler behavior and preferences, they can formulate strategic plans to improve their services (Li et al., 2013). Therefore, there is still a need for further research on the underpinnings of satisfied and dissatisfied customers (Berezina et al., 2016; Ahani et al., 2019).

2.3. The three-factor theory of customer satisfaction

The concept of customer satisfaction is traditionally based on the expectancy-disconfirmation paradigm (Oliver et al., 1997). CS depends on the comparison of perceived quality and customer expectations. If an attribute meets or exceeds customer expectations, the customer is satisfied. Alternatively, if the performance of an attribute is lower than expectations, then the customer is dissatisfied. This theory is based on a symmetric relationship between AP and CS. A change in an attribute's positive or negative performance will lead to the same change in CS.

Most CS studies conceptualize the relationship between AP and CS as linear or symmetric (Chen, 2015; Liu et al., 2017; Slevitch & Oh, 2010). However, there is growing evidence that the relationship between attribute-level performance and overall satisfaction with a service can be asymmetric or nonlinear (Matzler & Sauerwein, 2002; Matzler et al., 2003; Füller et al. 2006; Mikulić & Prebežac, 2008; Albayrak, 2015; Albayrak & Caber, 2013a, b; Slevitch & Oh, 2010). These studies consider three types of attributes based on the three-factor theory of customer satisfaction (Matzler & Sauerwein, 2002; Mikulić & Prebežac, 2011). The three-factor theory is an extension of the two-factor theory used to analyze the asymmetric relationship between attribute performance levels and overall customer satisfaction. According to Herzberg's two-factor theory (Herzberg et al., 1958), specific factors causing satisfaction do not generate dissatisfaction and vice

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versa. In other words, two different sets of satisfiers and dissatisfiers emerge, showing that the typical statement that satisfiers and dissatisfiers lie on a continuum is a fallacy. In Herzberg's opinion, the variables, the presence, or absence of which cause satisfaction or no satisfaction, are not the same as those that cause dissatisfaction or no dissatisfaction.

Starting with Kano et al. (1984), researchers investigate the asymmetric relationship between AP and CS using a three-factor theory that classifies service attributes into the following three categories:

1) Basic attribute: These attributes express the minimum requirements that service providers have to offer to customers. They cause dissatisfaction if customer expectations are not exceeded, but do not create high satisfaction if expectations are exceeded. Customers take these attributes for granted. When the performance of the basic factors is low, their influence on satisfaction becomes very important, while when their performance is high, their influence on satisfaction decreases and becomes unimportant.

2) Performance/hybrid attribute: These attributes produce high customer satisfaction when expectations are exceeded, but they also cause dissatisfaction if expectations are not exceeded. The effect of these attributes on overall customer satisfaction is linear and symmetric.

3) Excitement attributes: These attributes increase customer satisfaction when expectations are exceeded but do not cause dissatisfaction when expectations are not exceeded. These attributes are used to excite customers. When their performance is high, their influence on satisfaction becomes very important; while when their performance is low, their influence on satisfaction decreases and becomes unimportant.

2.4. Asymmetric relationships of AP on CS in tourism and hospitality — Evidence from online reviews

Recent research on online reviews assumes that hotel service attributes can have asymmetric effects on customer satisfaction with a service (e.g., Kim et al., 2016; Mellinas et al., 2019; Xu, 2020; Bi et al., 2020). Zhang and Cole (2016) analyze consumer-generated content and provide empirical evidence of the asymmetric effects of different service attributes on lodging guest satisfaction among guests with mobility challenges. Tontini et al. (2017) analyze the content of positive and negative online reviews provided by hotel guests at www.Tripadvisor.com and conclude that there is a nonlinear impact of comments on customer satisfaction. Furthermore, Mellinas et al. (2019) aim to assess the interrelationships of online review scores between objective (hotel location) and subjective (cleanliness, comfort, facilities, staff, and value for money) hotel attributes. Results show that the assessment of location is influenced by the evaluation of other hotel attributes and that this influence is asymmetric. Xu (2020) finds an asymmetric effect between the emphasis level of certain product and service attributes in online reviews and the importance level of these attributes in influencing customer satisfaction. Zhang et al. (2021) analyze online reviews for one hotel and calculate the high and low levels of attribute performance by quantifying the sentiment tendencies and intensities expressed in online reviews. Finally, Kwon et al. (2022) use topic modeling to analyze online customer reviews of luxury restaurants and then investigate the asymmetric impact of service attributes on customer satisfaction.

Although research on the asymmetric effects of AP on CS is growing, research on how these effects vary between different market segments is still rare, especially in the hotel industry (Bi et al., 2020). This stream of research is important because customers tend to value certain features of service more than others (Becerra et al., 2013). Customer reviews are idiosyncratic by nature, as travelers have individualized preferences. For example, some customers value the quality of breakfast or hotel location depending on their internal and external context (Buhalis & Foerste, 2015). Sometimes, there is disagreement about the desirability of different hospitality service attributes among guests (Becerra et al., 2013), which means that people differ in the service attributes that satisfy or dissatisfy them. Different cultures, needs, and reasons to travel (e.g., business or leisure) affect guest preferences for various hotel attributes, e.g., value for money, cleanliness, and location

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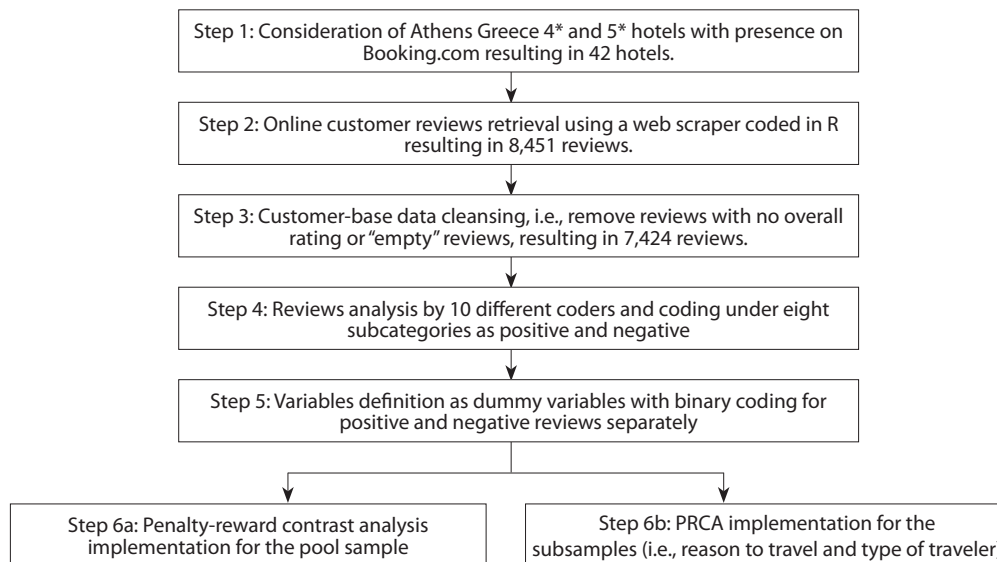Vol. 71/ No. 1/ 2023/ 8-28

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(Liu et al., 2017). TripAdvisor reports that travelers' rating patterns differ substantially between different types of hotels (independent vs. chain), across different types of travelers (business, couple, family, friend, and solo), and according to travelers' region of origin (Banerjee & Chua, 2016). Business and leisure travelers differ in their information search behavior (Jones & Chen, 2011), hotel selection criteria (Yavas & Babakus, 2005), and preferences for hotel attributes (Kashyap & Bojanic, 2000); and they have different perspectives about the value, quality, and price of hotels (Kashyap & Bojanic, 2000). Also, it seems that travelers in different travel group compositions (e.g., couples, families, solo) have different perceptions of the product/service quality because they have different needs and expectations (Ramanathan & Mcgill, 2007). Xu (2018) examines online customer review behaviors and determinants of overall satisfaction with the hotel choice of travelers in various group compositions (business, couples, families, friends, and solo). Radojevic et al. (2015) assess the customer satisfaction of four types of travelers (solo, friends, couples, and families) with data from Booking. com. Wang et al. (2020) investigate hotel selection factors and specifically, the differences in hotel key factors using criterion importance, and selection results among five types of travelers, namely business, couples, families, friends, and solo. Furthermore, Radojevic et al. (2018) find that customers report significantly lower (4% on average) levels of overall satisfaction with hotel services after for-business stays than after for-leisure stays. This effect is, moreover, found to be moderated by certain contextual factors, such as the traveler's general leisure versus work orientation, the economic and cultural characteristics of the destination, and the traveler's country of origin. Finally, Bi et al. (2020) find that there are asymmetric effects of AP on CS that vary across different customer segments including different types of hotels, different types of travelers, and travelers from different regions. Although research in this area is increasing, there is still a need for further analysis of the online review behavior of customers from different backgrounds and on different kinds of trips (Cantallops & Salvi, 2014; Bi et al., 2020).

3. Methodology

3.1. Research method

This study, as shown in Figure 1, is a six-step mixed-type research that comprises qualitative analysis of verbal data (content analysis) and extraction of structured data, followed by quantitative analysis of the structured data.

Figure 1
The research process of data collection and analysis

Step 1: Consideration of Athens Greece 4* and 5* hotels with presence on Booking.com resulting in 42 hotels.

Step 2: Online customer reviews retrieval using a web scraper coded in R resulting in 8,451 reviews.

Step 3: Customer-base data cleansing, i.e., remove reviews with no overall rating or "empty" reviews, resulting in 7,424 reviews.

Step 4: Reviews analysis by 10 different coders and coding under eight subcategories as positive and negative

Step 5: Variables definition as dummy variables with binary coding for positive and negative reviews separately

Step 6a: Penalty-reward contrast analysis implementation for the pool sample

Step 6b: PRCA implementation for the subsamples (i.e., reason to travel and type of traveler)

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In the first five steps, netnography is used. Netnography studies virtual populations or communities that are created by using some kind of internet technology. It is a non-intrusive method, which uses secondary data, namely the information generated during the interaction of the community members. Furthermore, netnography is an interpretive method, which requires the researcher to reflect on the available data to extract meaningful information (Kozinets, 2002). Baka (2016) uses netnography to analyze review comments of the travel and hospitality industry. In this study, netnography is used to get secondary data in the form of review comments. Then, content analysis is used to appropriately assign each comment to a relevant service feature and then categorize it as either positive or negative. Most previous studies utilize sentiment analysis to determine the performance of service attributes (i.e., Kim et al., 2016; Bi et al., 2020; Zhang et al., 2021; Kwon et al., 2022) and then analyze how high and low performance of these attributes differently affect CS. The current study investigates the asymmetric effects of hotel service attributes on customer satisfaction by considering only the presence of customers' positive and/or negative evaluations of relevant service attributes in their online customer reviews. Therefore, we assume that a negative evaluation of a service attribute means an attribute of low performance, while a positive evaluation of a service attribute means an attribute of high performance.

In the sixth step, a specific quantitative analysis is conducted using the data structure created in the previous step to investigate the asymmetric impact of different service attributes (in terms of positive/negative comments) on overall satisfaction.

3.2. Data collection — Sample

The data collection process includes the first five steps of the process presented in Figure 1. Online reviews were scraped from www.booking.com. Booking.com is amongst the world's leading tourist websites and was deemed to be the best source of such information for several reasons. First, the site boasts a large number of guest-reviewed hotels with a large number of reviews per the hotel; second, information shared on this site is considered trustworthy, as only actual guests are entitled to write reviews; therefore, fake reviews are avoided (Yahoo Finance, 2019); third, since Booking.com specializes in online hotel reservations, it has an interest in ensuring that the hotel descriptions published on its website match the actual hotel characteristics; fourth, Booking.com's reputation mechanism assures reviewers' full anonymity, thereby enhancing the perceived reliability of their online reviews. Finally, the ratings on Booking.com are detailed and therefore, carry more information about user preferences than single overall ratings alone (Jannach et al., 2014).

In this study, the online reviews posted by customers in 2018 and 2019 on Booking.com for all 4- and 5-star hotels in Athens, Greece, were collected using a web scraper developed in R (Kwon et al., 2022). In total, 8,451 reviews were scraped. Each review provided information on the traveler's nationality, type of traveler (solo, groups, families, couples) and reason to travel (leisure, business), overall CS, and positive and negative evaluations of a hotel's service attributes separately. After deleting online reviews with missing data and those which did not provide customers' service attribute evaluations, the final sample consisted of a total of 7,424 online customer reviews.

All reviews were analyzed by 10 different coders and coded under eight subcategories as positive or negative. After the consistency of codes was checked, the terms related to each service attribute were identified in each review and categorized based on an extended categorization scheme done by Booking.com. This scheme includes cleanliness, location/access, personnel quality, installation quality, room quality, food quality, service process quality, and perceived value. Table 1 shows the categories of comments included in each service attribute. This categorization was selected because it better reflects the services marketing-mix elements and is expected to be more helpful in determining specific theoretical and managerial implications that stem from results.

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Table 1
Categorization of comments per service attribute

Service attribute	Relevant comments
Cleanliness	Clean room, corridors, facilities, etc.; bad smell, mold, stains
Location/access	Location, access, view (from common spaces), neighborhood
Personnel quality	Service, polite, helpful, smile
Installation quality	Parking, pets allowed, airport shuttle, nonsmoking rooms/areas, free Wi-Fi, family rooms, room service, restaurant, facilities for disabled guests or children, gym, spa, pool, lobby, corridors, luggage room
Room quality	Air conditioning, tub, balcony, kettle, flat-screen TV, kitchenette, soundproofing, coffee/tea maker, room view, bed's comfort, lighting, safe, fridge/minibar, extra pillows/blankets, table/desk, chairs, keycard, room/hotel instructions, room arrangement/decor
Food quality	Menus, breakfast, lunch, dinner, juice, drinks, cocktails
Service process quality	Check-in, check-out, luggage handling, housekeeping service, room service, opening hours of breakfast/gym/pool, room change, problem-solving, addressing requests, web page convenience, booking process, the accuracy of information
Perceived value	Price worthiness, logical price, overpriced

Later, these variables have been defined as dummy variables with binary coding for positive and negative reviews separately and added to a regression model as independent variables to implement the penalty-reward contrast analysis (Mikulić & Prebežac, 2008).

3.3. Data analysis

Data is analyzed using the penalty-reward contrast analysis (PRCA) (Mikulić & Prebežac, 2008), the outcome of which is used to determine the type of each service attribute (i.e., satisfier, dissatisfier, hybrid) using the three-factor theory of customer satisfaction (Matzler & Sauerwein, 2002; Matzler et al., 2003). PRCA has been previously used in tourism research (e.g., Fuller et al., 2006; Fuller & Matzler, 2008; Albayrak & Caber, 2015; Bi et al., 2020) to determine how different hotel service attributes affect customer satisfaction.

There are three different approaches to using the three-factor theory: the critical incident technique; the importance grid approach; and, the most popular approach, the penalty-reward contrast analysis (PRCA) (e.g., Mittal et al., 1998; Anderson & Mittal, 2000; Fuller et al., 2006). The input for PRCA is the customer's assessment of the performance of preselected service attributes. For each attribute, a positive and a negative dummy variable is derived from each customer evaluation. If a specific service feature is rated as low performing, the positive dummy variable gets the value "0" and the negative dummy variable gets the value "1". In the opposite situation, if a service feature is performing well, the positive dummy variable gets the value "1" and the negative dummy variable gets the value "0". In our case, it is assumed that a low-performing feature is that for which a negative comment is recorded, and a high-performing feature is that for which a positive comment is recorded. Additionally, the score for overall satisfaction for each customer is recorded. After the creation of the positive and negative dummies, the following regression is implemented using the dummy variables as independent variables and the scores for overall satisfaction as a dependent variable.

$$OS_i = a + \sum_{i}^{n} p_i \times NDV_i + \sum_{i}^{n} r_i \times PDV_i + e_i$$

Where i = 1, 2, ..., n is the index representing the number of available comments
OS = the overall score for each review
NDV = negative dummy variable (negative comment)
PDV = positive dummy variable (positive comment)
p_i = the penalty index
r_i = the reward index

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In the next step, the absolute values of penalty and reward indices for all dummy variables are added to compute the Range of Overall Customer Satisfaction (RIOCS). Then these indexes are used to find the impact index (IA) using the following expressions:

$$RIOCS_i = r_i + p_i \qquad SGP_i = \frac{r_i}{RIOCS_I} \qquad DGP_i = \frac{p_i}{RIOCS_i}$$

$$SGP_i + DGP_i = 1. \qquad IA = SGP_i - DGP_i$$

The IA takes values from -1 to +1 that are interpreted as follows:
- A value of +1 shows that the service attribute is a delighter or perfect satisfier.
- A value of -1 shows that the service attribute is a basic factor or perfect dissatisfier.
- A value of 0 shows that the service attribute is a perfect hybrid.

More specifically, using the five categories advanced by Mikulić and Prebežac (2008), the IA index is interpreted as follows:
- If IA > 0.4 then the attribute is a delighter
- If 0.4 ≥ IA > 0.1 then the attribute is a satisfier
- If 0.1 ≥ IA > -0.1 then the attribute is hybrid
- If -0.1 ≥ IA > -0.4 then the attribute is a dissatisfier
- If IA < -0.4 then the attribute is a frustrator

A second categorization is also performed according to the *RIOCS* values into "high impact," "medium impact," and "low impact" attributes. To do so, the range between the highest and the lowest *RIOCS* is split into three equal intervals. Attributes with *RIOCS* in the lower interval have a low impact, those with *RIOCS* in the middle interval have a medium impact, and all the others have a high impact.

4. Results

4.1. Overall sample results

Table 2 shows the results of PRCA and IA for the pool sample. It is obvious from the results that all coefficients are statistically significant at the 5% significance level except the reward coefficient of service process quality. The model explains 36% of the variance in overall customer satisfaction (OCS). To categorize service attributes based on their scores on IA and RIOCS, we use five categories adopted from the work of Mikulić and Prebežac (2008), namely frustrator, dissatisfier, hybrid, satisfier, and delighter.

Table 2
Results of the PRCA and IA for the pool sample

POOL SAMPLE (N = 7.424)									
ATTRIBUTE	r_i	p_i	**RIOCS**	**SGP**	**DGP**	**IA**	**TYPE**	**IMPACT**	**GOF**
Cleanliness	0.048***	-0.139***	0.187	0.257	-0.743	-0.487	F	MI	
Location/access	0.089***	-0.090***	0.180	0.497	-0.503	-0.005	H	MI	
Personnel quality	0.174***	-0.168***	0.342	0.509	-0.491	0.019	H	HI	
Installation quality	0.086***	-0.133***	0.219	0.392	-0.608	-0.216	DS	MI	F = 266.181
Room quality	0.112***	-0.247***	0.359	0.313	-0.687	-0.374	DS	HI	$R^2 = 0.365$
Food quality	0.066***	-0.098***	0.164	0.401	-0.599	-0.198	DS	LI	
Service process quality	0.000[ns]	-0.085***	0.085	0.000	-1.000	-1.000	F	LI	
Perceived value	0.042***	-0.129***	0.170	0.244	-0.756	-0.512	F	LI	

Note: F – frustrator. DS – dissatisfier. H – hybrid. S – satisfier. DL- delighter. LI – low impact. MI – medium impact. HI – high impact. GOF – goodness-of-fit.
[ns] = not significant.
* p < 0.1. ** p < 0.05. *** p < 0.001.

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Results show that there are indeed asymmetric effects of AP on CS. Specifically, we conclude that cleanliness, perceived value, service process quality, room quality, installation quality, and food quality have asymmetric effects on CS; whereas personnel quality and location/access have symmetric effects on CS as they both are hybrid attributes. Furthermore, after analyzing further the service attributes with asymmetric impact on CS, we find that:

- cleanliness is a frustrator of medium impact,
- service process quality and perceived value are frustrators of low impact,
- room quality is a dissatisfier of high impact,
- installation quality is a dissatisfier of medium impact,
- food quality is a dissatisfier of low impact.

Also, no characteristic is found to be a satisfier or delighter, showing that delighting customers is exceedingly difficult. However, hybrid factors can be used to increase customer satisfaction and delight customers.

4.2. Results for different customer segments according to reason to travel and type of traveler

Further analysis of data for different customer segments based on reason to travel and types of travelers (leisure - solo, groups, families, couples; and business – solo and groups) show that there are differences in the asymmetric effects of AP on CS (see Tables 3 and 4 for the results of PRCA and IA for leisure and business customers).

For leisure travelers, room quality is a frustrator of high impact instead of a dissatisfier. Leisure guests consider room quality to be a very important basic characteristic of hotel service, and their satisfaction is affected more by low-quality in rooms, especially in the case of families and groups. Also, customer satisfaction of leisure travelers can be increased mainly through better location/access, which is a delighter for solo travelers and a hybrid for couples and families; and through better food quality, which is a satisfier for solo travelers and a hybrid for groups. Location/access is dissatisfier only for groups in the leisure segment.

Table 3
Results of the PRCA and IA for leisure customers

ATTRIBUTE	r_i	p_i	RIOCS	SGP	DGP	IA	TYPE	IMPACT	GOF
LEISURE PURPOSE (N = 6329)									
Cleanliness	0.045***	-0.140***	0.185	0.244	-0.756	-0.511	F	MI	
Location/access	0.097***	-0.103***	0.200	0.484	-0.516	-0.033	H	MI	
Personnel quality	0.169***	-0.168***	0.337	0.500	-0.500	0.000	H	HI	
Installation quality	0.084***	-0.130***	0.214	0.392	-0.608	-0.216	DS	MI	F = 220.536
Room quality	0.109***	-0.256***	0.365	0.299	-0.701	-0.403	F	HI	R^2 = 0.359
Food quality	0.067***	-0.094***	0.161	0.416	-0.584	-0.167	DS	LI	
Service process quality	0.000^{ns}	-0.083***	0.083	0.004	-0.996	-0.993	F	LI	
Perceived value	0.033**	-0.123***	0.156	0.211	-0.789	-0.578	F	LI	
LEISURE - SOLO (N = 726)									
Cleanliness	0.057***	-0.142***	0.199	0.284	-0.716	-0.431	F	MI	
Location/access	0.076***	-0.028***	0.103	0.733	-0.267	0.466	DL	LI	
Personnel quality	0.119***	-0.138***	0.258	0.463	-0.537	-0.074	H	MI	
Installation quality	0.072***	-0.071**	0.143	0.506	-0.494	0.013	H	LI	F = 17.476
Room quality	0.133***	-0.237***	0.370	0.359	-0.641	-0.282	DS	HI	R^2 = 0.283
Food quality	0.100***	-0.053***	0.153	0.653	-0.347	0.307	S	LI	
Service process quality	0.039^{ns}	-0.045^{ns}	0.083	0.465	-0.535	-0.070	H	LI	
Perceived value	0.031^{**ns}	-0.144***	0.175	0.177	-0.823	-0.646	F	LI	

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Table 3 *(continued)*

			RIOCS	SGP	DGP	IA	TYPE	IMPACT	GOF
LEISURE - COUPLES (N = 3.351)									
Cleanliness	0.046**	-0.140***	0.186	0.247	-0.753	-0.505	F	LI	F = 136.574 R^2 = 0.396
Location/access	0.109***	-0.115***	0.224	0.485	-0.515	-0.029	H	MI	
Personnel quality	0.184***	-0.179***	0.363	0.506	-0.494	0.011	H	HI	
Installation quality	0.087***	-0.143***	0.230	0.378	-0.622	-0.243	DS	MI	
Room quality	0.116***	-0.266***	0.382	0.303	-0.697	-0.394	DS	HI	
Food quality	0.059***	-0.098***	0.156	0.375	-0.625	-0.249	DS	LI	
Service process quality	0.003^{ns}	-0.086***	0.089	0.030	-0.970	-0.941	F	LI	
Perceived value	0.014^{ns}	-0.127***	0.142	0.102	-0.898	-0.796	F	LI	
LEISURE - FAMILIES (N = 1.525)									
Cleanliness	0.043*	-0.141***	0.184	0.233	-0.767	-0.533	F	MI	F = 43.91 R^2 = 0.318
Location/access	0.077***	-0.082***	0.158	0.484	-0.516	-0.032	H	LI	
Personnel quality	0.157***	-0.166***	0.323	0.486	-0.514	-0.028	H	HI	
Installation quality	0.099***	-0.115***	0.214	0.463	-0.537	-0.075	H	MI	
Room quality	0.094***	-0.225***	0.319	0.294	-0.706	-0.411	F	HI	
Food quality	0.065***	-0.115***	0.180	0.363	-0.637	-0.274	DS	MI	
Service process quality	0.019^{ns}	-0.089***	0.109	0.178	-0.822	-0.644	F	LI	
Perceived value	0.072**	-0.117***	0.188	0.381	-0.619	-0.238	DS	MI	
LEISURE - GROUPS (N = 727)									
Cleanliness	0.035ns	-0.146***	0.181	0.195	-0.805	-0.610	F	LI	F = 27.972 R^2 = 0.387
Location/access	0.104**	-0.158***	0.262	0.397	-0.603	-0.206	DS	MI	
Personnel quality	0.169	-0.151***	0.320	0.528	-0.472	0.055	H	HI	
Installation quality	0.051**	-0.141***	0.192	0.263	-0.737	-0.473	F	LI	
Room quality	0.094**	-0.293***	0.387	0.243	-0.757	-0.514	F	HI	
Food quality	0.080**	-0.066**	0.147	0.549	-0.451	0.099	H	LI	
Service process quality	0.020^{ns}	-0.085**	0.105	0.191	-0.809	-0.618	F	LI	
Perceived value	0.033^{ns}	-0.107***	0.140	0.237	-0.763	-0.527	F	LI	

Note: F – frustrator. DS – dissatisfier. H – hybrid. S – satisfier. DL- delighter. LI – low impact. MI – medium impact. HI – high impact. GOF – goodness-of-fit.
^{ns} = not significant.
* $p < 0.1$. ** $p < 0.05$. *** $p < 0.001$.

On the other hand, for business travelers, location/access is a satisfier and a delighter for groups. Also, the satisfaction of business customers can be increased through better personnel quality (satisfier for solo travelers) and better installation quality (satisfier for groups). Finally, food quality is a hybrid factor for all business travelers and room quality is hybrid for groups.

Table 4
Results of the PRCA and IA for business customers

ATTRIBUTE	r_i	p_i	RIOCS	SGP	DGP	IA	TYPE	IMPACT	GOF
BUSINESS PURPOSE (N = 1441)									
Cleanliness	0.055**	-0.127***	0.182	0.302	-0.698	-0.396	DS	LI	F = 52.768 R^2 = 0.372
Location/access	0.066***	-0.040^{ns}	0.106	0.626	-0.374	0.252	S	LI	
Personnel quality	0.185***	-0.160***	0.345	0.536	-0.464	0.073	H	HI	
Installation quality	0.071**	-0.123***	0.194	0.364	-0.636	-0.271	DS	MI	
Room quality	0.124***	-0.222***	0.346	0.358	-0.642	-0.285	DS	HI	
Food quality	0.071**	-0.086***	0.157	0.450	-0.550	-0.100	H	LI	
Service process quality	0.017^{ns}	-0.105***	0.122	0.140	-0.860	-0.720	F	LI	
Perceived value	0.065**	-0.147***	0.212	0.308	-0.692	-0.385	DS	MI	

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Table 4 *(continued)*

BUSINESS SOLO (N = 887)									
Cleanliness	0.045ns	-0.107***	0.152	0.295	-0.705	-0.411	F	LI	
Location/access	0.050ns	-0.054**	0.103	0.481	-0.519	-0.039	H	LI	
Personnel quality	0.204***	-0.127***	0.330	0.616	-0.384	0.232	S	HI	
Installation quality	0.049ns	-0.152***	0.201	0.243	-0.757	-0.515	F	MI	F = 37.767
Room quality	0.106***	-0.253***	0.359	0.295	-0.705	-0.410	F	HI	R^2 = 0.399
Food quality	0.070**	-0.092**	0.162	0.432	-0.568	-0.136	DS	LI	
Service process quality	0.017ns	-0.116***	0.132	0.127	-0.873	-0.745	F	LI	
Perceived value	0.083**	-0.129***	0.212	0.393	-0.607	-0.215	DS	MI	
BUSINESS GROUP (N = 554)									
Cleanliness	0.066ns	-0.146***	0.212	0.313	-0.687	-0.374	DS	MI	
Location/access	0.098**	-0.031ns	0.129	0.761	-0.239	0.522	DL	LI	
Personnel quality	0.157***	-0.200***	0.358	0.440	-0.560	-0.120	DS	HI	
Installation quality	0.108**	-0.076**	0.184	0.587	-0.413	0.174	S	LI	F = 16.072
Room quality	0.163***	-0.170***	0.334	0.490	-0.510	-0.020	H	HI	R^2 = 0.304
Food quality	0.077**	-0.082**	0.159	0.487	-0.513	-0.026	H	LI	
Service process quality	0.021ns	-0.094**	0.115	0.185	-0.815	-0.629	F	LI	
Perceived value	0.036ns	-0.171***	0.207	0.175	-0.825	-0.650	F	MI	

Note: F – frustrator. DS – dissatisfier. H – hybrid. S – satisfier. DL- delighter. LI – low impact. MI – medium impact. HI – high impact. GOF – goodness-of-fit.
ns = not significant.
* p < 0.1. ** p < 0.05. *** p < 0.001.

5. Discussion

Results answer all three research questions set at the beginning of this study. Results show that there are both symmetric and asymmetric effects of AP on CS in hotels that vary between different customer segments. Specifically, we find that cleanliness, service process quality, and perceived value are frustrators for the pool sample. Also, installation quality, room quality, and food quality are dissatisfiers. This means that all these factors are included in customers' expectations of service and their absence will create dissatisfaction, but their enhancement will not necessarily increase satisfaction. However, hotels need to focus on the frustrators and dissatisfiers to prevent dissatisfaction.

On the other hand, results also show that two service attributes have symmetric effects on customer satisfaction, location/access, and personnel quality. This means that the selection of an appropriate location and any efforts to enhance access to the hotel will significantly affect customer satisfaction. Also, the existence of highly trained and efficient personnel is critical for customer satisfaction. However, if the hotel underperforms in these attributes, customers may be dissatisfied. The importance of these attributes for customer satisfaction is emphasized in previous research. O'Connor (2010) finds that among the top 10 most common topics mentioned in the reviews for London hotels are hotel location and staff. Also, Barreda and Bilgihan (2013) conclude that guests are more likely to write positive reviews for hotels that are conveniently located to attractions, shopping, airports, and restaurants and that hotel frontline employees play a key role in customer satisfaction and trigger customers to write positive online reviews. Among the most important hotel attributes found by Mohsin and Lockyer (2010) are helpful and friendly staff, whereas Ekiz et al. (2012) argue that one of the two main categories in online consumer complaints is hotel staff attitudes (misbehaviors, bad attitude, lack of knowledge, inadequate skills, and lack of passion). Finally, Kim et al. (2016) conclude that the most significant factor in a hotel, regardless of customers' level of satisfaction and expectation, is "staff and their attitude" and that location and staff attitude are the most highly ranked satisfiers, while staff attitude is also a highly ranked dissatisfier in both full-service and limited-service hotels (Kim et al., 2016).

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However, hotel guests want and need different things to be satisfied and have different expectations and therefore, not everyone gets the same satisfaction out of the same hospitality experience (Pizam et al., 2016). In line with this trend, our analysis shows that the asymmetric effects of AP on CS vary for different customer segments. In the leisure segment, location/access is a delighter (LI) for solo travelers and a dissatisfier (MI) for groups. Also, food quality is a satisfier (LI) for solo travelers and a hybrid (LI) for groups. In the business segment, food quality is a hybrid (LI) for business customers and especially groups. Also, room quality is a hybrid (HI) and installation quality is a satisfier (LI) for business groups. Finally, personnel quality is a hybrid (HI) for business customers and a satisfier (HI) for solo travelers; and location/access is a satisfier (LI) for business customers, a hybrid (LI) for solo business travelers, and a delighter (LI) for business groups. These findings are in line with previous research that identifies attributes such as room size, breakfast, in-room facilities (O'Connor, 2010), room furnishings (Mohsin & Lockyer, 2010; Berezina et al., 2016), bedroom and bathroom interiors and cleanliness (Barreda & Bilgihan, 2013), and physical attributes of the room and the quality of the amenities provided in the room (Ekiz et al., 2012) as important for customer satisfaction. Also, Kim et al. (2016) find that room size, breakfast, and bed are salient satisfiers in both full-service and limited-service hotels, whereas dirtiness is a highly ranked dissatisfier.

Moreover, results show that both tangible (cleanliness, location/access, food quality, installation quality, room quality) and intangible (personnel quality, service process quality, perceived value) attributes can be satisfiers and dissatisfiers. In contrast, previous research shows contradicting results. Earlier studies indicate that satisfiers are intangible features and dissatisfiers are tangible features (Chan & Baum, 2007; Herzberg et al., 1958; Jones et al., 1997). However, more recently, Kim et al. (2016) show that most satisfiers in the full-service hotel segment are associated with tangible features, whereas most dissatisfiers showcase a tendency of demonstrating intangible features.

Finally, results show that it is difficult to delight customers. Service attributes that satisfy or delight customers can create positive emotions because they exceed customer expectations. However, such attributes are few and particular to specific customer segments. Two hybrid attributes can be used to satisfy or delight customers and create positive emotions for all segments: location/access and personnel quality. Also, food quality, installation quality, and room quality can enhance customer satisfaction for some customer segments. This finding agrees with previous research on the role of emotions, particularly of delight, in customer satisfaction and loyalty in hedonic services such as holidays or culinary experiences (Hosany & Prayag, 2013; Collier & Barnes, 2015).

6. Theoretical and managerial implications

6.1. Theoretical implications

This study extends the theory on the asymmetric effects of AP on CS by considering only the presence of negative/positive evaluations of service attributes extracted from online reviews. The importance of research on the asymmetric effects of AP on CS is shown in relevant studies. Various scholars have contributed to the subject in the area of hospitality (e.g., Kim et al., 2016; Zhang & Cole, 2016; Bi et al., 2020; Zhang et al., 2021). However, most studies analyze one market segment, whereas studies on the asymmetric effects of AP on CS in different customer segments are still few (Bi et al., 2020). To fill this research gap, this study investigates the asymmetric effects of AP on CS in luxury hotels (4* and 5*) and for different market segments (traveler types and reason to travel). The study analyzes all parts of the service mix. Reviews are analyzed based on a comprehensive attribute list that includes both tangible (cleanliness, location/access, installation quality, room quality, food quality), and intangible attributes (personnel quality, service process quality, and perceived value).

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Specifically, from the intangible attributes, service process quality is a frustrator for both leisure and business customers but is a hybrid for only solo leisure travelers, whereas perceived value is a frustrator or dissatisfier for all segments. Both these attributes are basic factors of service expected by customers. On the other hand, personnel quality is a hybrid for most market segments, but for business groups, it is a dissatisfier and for solo business travelers it is a satisfier.

Moreover, the tangible attributes also show differences in their asymmetric effects on CS across market segments. Cleanliness is a powerful frustrator for all leisure customers and solo business customers and a dissatisfier for business customers overall and the business groups segment. This is expected since cleanliness is one of the most important basic factors of service for hotels, especially luxury hotels. Installation quality is a dissatisfier for both leisure and business customers overall, but there are differences within types of travelers. For solo business travelers and leisure groups, it is a frustrator, and for solo leisure travelers and families, it is a hybrid. An interesting result is that installation quality is a satisfier for business groups, which is expected since the quality of the installation that can help business managers work during their hotel stay is a very important part of the service. Room quality is a frustrator for leisure customers and a dissatisfier for business customers, but it is a hybrid for business groups. Therefore, the quality of rooms can be used by hotels to increase customer satisfaction for business groups. Food quality is a dissatisfier for leisure customers and business solo travelers and a hybrid for business customers and leisure and business groups. Unexpectedly, it is also a satisfier for solo leisure travelers. Location access is a hybrid for leisure customers but a satisfier for business customers. Also, within these groups, location access is a delighter for leisure solo travelers and business groups and a dissatisfier for leisure groups. Table 5 summarizes the differences in asymmetric effects of service attributes on CS for the different customer segments.

Table 5
Asymmetric effects of service attributes on customer satisfaction for different customer segments

Attribute	Pool sample	Leisure (L)	L solo	L couples	L families	L groups	Business (B)	B solo	B groups
Service process quality	F	F	H	F	F	F	F	F	F
Perceived value	F	F	F	F	DS	F	DS	DS	F
Personnel quality	H	H	H	H	H	H	H	S	DS
Cleanliness	F	F	F	F	F	F	DS	F	DS
Installation quality	DS	DS	H	DS	H	F	DS	F	S
Room quality	DS	F	DS	DS	F	F	DS	F	H
Food quality	DS	DS	S	DS	DS	H	H	DS	H
Location/access	H	H	DL	H	H	DS	S	H	DL

Note: F – frustrator. DS – dissatisfier. H – hybrid. S – satisfier. DL- delighter.

6.2. Managerial implications

Apart from the theoretical implications, the results of this study have major implications for hotel management. First, hotels will be able to use the results of this study as a guide for customizing their service according to the hotel service attributes that are more important for each type of customer. Hotels need to effectively manage customer satisfaction and therefore, since resources are limited, they should prioritize the attributes that can cause customer dissatisfaction and then use the attributes that can increase satisfaction to delight customers.

The results of the study show that the priorities of service attributes differ per customer segment. Table 6 shows the prioritization of attributes per customer segment to prevent dissatisfaction. Since the performance of each attribute is not available, the priorities are set based on the scores of each attribute on AI and RIOCS (their impact).

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Table 6
Service attribute priorities by type of customer segment

Priorities	1	2	3	4	5	6	7	8
Pool sample	Cleanliness	Perceived value	Service process quality	Room quality	Installation quality	Food quality	Personnel quality	Location / access
Leisure (L)	Room quality	Cleanliness	Service process quality	Perceived value	Food quality	Installation quality	Personnel quality	Location / access
L solo	Cleanliness	Perceived value	Room quality	Personnel quality	Installation quality	Service process quality	Food quality	Location / access
L couples	Cleanliness	Perceived value	Service process quality	Room quality	Installation quality	Food quality	Personnel quality	Location / access
L families	Room quality	Cleanliness	Service process quality	Perceived value	Food quality	Personnel quality	Installation quality	Location / access
L groups	Room quality	Installation quality	Cleanliness	Perceived value	Service process quality	Location / access	Personnel quality	Food quality
Business (B)	Service process quality	Room quality	Perceived value	Installation quality	Cleanliness	Personnel quality	Food quality	Location / access
B solo	Room quality	Installation quality	Cleanliness	Service process quality	Perceived value	Food quality	Location / access	Personnel quality
B groups	Perceived value	Service process quality	Personnel quality	Cleanliness	Room quality	Food quality	Installation quality	Location / access

Cleanliness is a major frustrator for the whole sample because it has a big negative IA value and medium impact. Also, it is a high priority for leisure solo travelers and couples. Cleanliness is a basic attribute that can cause major dissatisfaction if expectations are not met. However, when different customer segments are analyzed, we find that other important attributes can affect customer satisfaction. Room quality is the most important attribute for leisure travelers, specifically families and groups, and for solo business travelers. Therefore, hotels can decrease the dissatisfaction of those travelers by improving the quality of rooms. Quality improvements may include better lighting, more comfortable beds, bigger rooms, good quality furniture, efficient layout of rooms, good heating, air-conditioning, etc.

Furthermore, service process quality and perceived value, two intangible attributes, are important frustrators or dissatisfiers for leisure couples and business travelers, especially business groups. It seems that when traveling in couples or groups, the service process is very important for satisfaction. As a result, hotels should effectively manage the processes of the hotel (e.g., waiting in lines for check-in or check-out, room service, etc.). Also, hotels should offer the best possible service at the best possible price to prevent dissatisfaction. Possibly, the offer of certain extra services for free or at a reduced fee can exceed the expectations of such travelers and prevent dissatisfaction through perceived value.

Food quality is a hybrid attribute for leisure groups and business customers and especially for business groups. Also, it is a satisfier (an excitement attribute) for leisure solo travelers. As a result, if hotels enhance the quality of food offered, they can decrease dissatisfaction, enhance satisfaction, and even exceed the expectations of certain customers.

Installation quality is also a hybrid attribute for leisure solo travelers and families and a satisfier for business groups. Therefore, if hotels enhance the quality of installations (e.g., parking, spa, pool, lobby, etc.) they can prevent dissatisfaction, enhance the satisfaction of these customer segments, and even exceed the expectations of business groups.

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Moreover, location access is a higher priority for the satisfaction of leisure groups and personnel quality for business groups. This seems logical since when traveling for leisure in a group, it is important to stay in a hotel with a convenient location so that access to the city or other sights is easy. On the other hand, business groups consider the quality of employees very important because they usually need help from the hotel to work effectively from their room or in the hotel's installations. Also, business customers may stay long hours in the hotel and meet personnel more often.

Finally, location/access and personnel quality are hybrids or satisfiers and delighters for most customer segments, and they are not prioritized to prevent dissatisfaction. However, these are the main attributes to use to increase customer satisfaction and excite customers. So, the enhancement of access to the hotel or having a preferred location and the appropriate selection and training of personnel can increase customer satisfaction and even delight customers.

Finally, an important implication for hotel management is that the process followed in this study can be automated and used continuously. Specifically, positive, and negative comments can be automatically scraped from the internet and analyzed to provide hotels with a continuous flow of information on the attributes that affect customer satisfaction per customer segment. This will enable hotels to automate the process of prioritization of service attributes for each customer segment in case of limited resources and identify the attributes that can lead to higher customer satisfaction and delight for each customer segment.

7. Conclusion

Overall, we conclude that there are both symmetric and asymmetric effects of AP on CS in hotels that vary between different customer segments that have different preferences and expectations for service attributes. Therefore, effective customization of the service mix based on information mined from online reviews can help hotels enhance customer satisfaction and prevent dissatisfaction, and this may lead to higher hotel performance (higher ratings, higher profitability).

8. Limitations and suggestions for further research

This study advances theory and practice on how we can use consumer-generated content provided in online reviews to manage customer satisfaction. However, it is limited to hotels in one city. Future research can expand the sample of reviews to include whole countries or economic areas. Also, a qualitative analysis of comments can provide more tangible and specific information on the aspects of service attributes that are important for each type of customer and on the emotions or sentiments that are related to each service attribute.

Furthermore, the effect of service attributes on customer satisfaction should be analyzed according to hotel class, star rating, customer origin, culture, customer mix, or type of hotel (branded vs. nonbranded, individual or chain, etc.). Finally, Zhao et al. (2015) find that there is a positive relationship between reviewer expertise and people's booking intentions. This is consistent with previous studies discussing the effects of source expertise on respondents' perceptions (Tan et al., 2008). In the hotel industry, this expertise includes a good reputation, greater hotel knowledge, and a good credit record, all of which are typical features of opinion leadership (Bloch et al., 1989). Therefore, it would be helpful to know how the impact of comments is affected by the quality of the reviewer or by the reviewer's expertise.

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