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Using a General Ordered Logit Model to Explain the Influence of Hotel Facilities, General and Sustainability-Related, on Customer Ratings

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Abstract: The hotel market has become extremely competitive over the past years. Hotels try to differentiate themselves through their services and facilities. To make the best choice when searching for accommodation, guests increasingly use rating systems of booking sites. Using an ordered logit model (OLM), we identify, in our study, a sample that comprises of 635 hotels from Romania. These are the hotel facilities that significantly influence customer review scores (as an expression of customer satisfaction) on booking.com, the most widespread rating system. We also identify whether their impact on intervals of satisfaction levels vary. Some explanatory variables invalidate the Brant test for proportional odds assumption. Thus, for the final estimates, we use a generalized ordered logit model (GOLOGIT). The results show that food-related facilities, restaurants, and complimentary breakfasts, are very significant for customer ratings. Relevant hotel common facilities are the pool and parking spaces, while for the room—the flat-screen TV. It is interesting to note the negative influence of pets, which seem to disturb other tourists. In the sustainability category, only facilities for disabled people and electric vehicle charging stations are relevant.

Keywords: customer ratings; customer satisfaction; general ordered logit model; Brant test; sustainability; hotel facilities; booking.com; electronic word of mouth; online reviews; customer reviews

1. Introduction

With the rapid increase of internet usage in the world, the travel industry was one of the first (and most successful) industries to take advantage of utilizing the internet as a sales channel (online gross travel bookings revenue worldwide from 2011 to 2017 was about 67%) [1]. Electronic word of mouth (eWOM) is a powerful tool and resource for both sides of a transaction (offer and demand) in the hotel industry. It is used as a tool by guests to express their opinions on their experiences with hotels (through online ratings and reviews) and as a resource to reduce uncertainty when making a hotel choice. For hotels, it is a resource to understand the requirements, opinions, and experience perceptions of their guests, the information can, thus, be used to improve the quality of their services. It is also a tool for hotels to increase their financial performances and long-term sustainability, as positive reviews are associated with increased online bookings. In this respect, eWOM (expressed through online customer ratings and reviews) is an expression of customer satisfaction. The crucial point in studying and measuring this concept is to identify the factors that customers consider when evaluating global satisfaction with hotel services and their importance for satisfaction [2]. Before creating a package of services and facilities,

hotels should understand these customer preferences [3]. Customer satisfaction monitoring and use, to improve activity, is considered a sustainable management practice by the Global Sustainable Tourism Council (GSTC) [4]; therefore, it is essential for the long-term success of hotel businesses.

The hotel industry is characterized by informational disadvantages of consumers due to the intangibility of offers, high involvement purchases, and, usually, a large physical distance between the guests and hotels, or no prior personal experience with the hotel. Due to these aspects, it is difficult for guests to evaluate the quality of the hotel services before the actual experience. Word of mouth, electronic word of mouth, and recommendations of travel agents are considered the most powerful communication channels in this industry.

Travelers use the internet in all phases of their decision-making processes: 1) before the experience (to get information and decide on the accommodation unit); 2) to book the preferred alternative; and 3) after the experience (to share their views and opinions with others). Compared to the other two information sources, eWOM creates fast interactions [5] and is a good source of information for customers [6]. It influences consumer attitudes [7–9], purchase decisions [10], and perceived risk [11,12]. The power of eWOM comes from it being perceived as more reliable than, say, promotions coming from hotels or official destination marketing organizations [10]; eWOM also offers a wide reach.

Many customers are reluctant to provide feedback on hotel service performance to hotel personnel [13]. For them, the internet has provided a great opportunity to freely share their experiences on review websites, forums, blogs, vlogs, travel agencies, company websites, or social media [14]. Therefore, eWOM can be used as a marketing tool and a rich source of information in the hospitality industry [15–17]. Hoteliers should use this information provided by guests, free of charge, to discover what the important factors and hotel facilities are that lead to customer satisfaction, as well as what influences their choice intentions [18], to monitor service quality [19] and to identify significant areas for improvement [20].

Hoteliers can use customers' online reviews to improve the hotel's financial performance [21,22] and competitiveness, and, therefore, its long-term sustainability. Positive reviews are more efficient than other traditional promotional media [23]. They seem to increase online hotel bookings [24,25] and price [25] by enhancing the hotel's reputation [26] and customer trust in the hotel [11]. At the same time, negative eWOM discourages hotel reservations [16]. Moreover, eWOM means free promotion for hotels and it is more credible and effective than conventional advertising.

Online ratings and reviews have become an object of study since the 1990s [27] of the last century. However, research papers that rank the determinants of customer satisfaction in their order of the importance are rare [17] and, to our knowledge, there is no study employing the general ordered logit model.

The aims of the current research are twofold. First, we want to understand which of the hotel facilities, both general and sustainability-related, influence customer ratings, as well as how. Customer ratings are a part of online reviews (eWOM) and are used as a proxy for overall customer satisfaction; so, the eventual intention is to reveal the impact of hotel facilities on customer satisfaction. Second, we intend to discover whether there are differences between hotels in different intervals of customer ratings (satisfaction) with respect to the significance of determinants.

The present study contributes to literature in the following ways. First, it provides researchers and hoteliers useful insights on the determinants of hotel guests' satisfaction. Second, it reveals whether there are differences in the determinants of online hotel ratings between the hotels with different levels of customer satisfaction. Third, the methodology used for this research is a novelty in the field of eWOM and satisfaction research. Fourth, it is the first study of its kind to include sustainability factors.

The rest of the paper is structured as follows: a literature review on the concepts of satisfaction, eWOM (customer reviews and ratings), and the current state of research in the field of hotel facility influence on customer ratings. Then, the data, variables, and methodology of the research are introduced, followed by a discussion of the main results and conclusions.

2. Literature Review

2.1. Satisfaction

Customer satisfaction with hotel services is a concept that has been studied extensively over the years by both practitioners and academics [28]. However, there is no unanimous definition of the concept [29], although the approach of Oliver [30] is more widely accepted. However, even Oliver's theory has some limitations, as revealed in the literature [31,32]. The difficulty of reaching a unified definition of satisfaction comes from the fact that, it is the result of different processes, in terms of complexity and of cognitive, affective, and other undiscovered psychological and physiological dynamics [33]. Other researchers also support this idea that satisfaction is not a universal phenomenon [34], and consensus on how best to conceptualize customer satisfaction, is yet to be reached [31,32].

Oliver viewed satisfaction as a function of expectation and expectation disconfirmation [30], later describing it as a pleasurable fulfilment [35]. According to Oliver's theory, customers have pre-purchase expectations of what they would receive from a certain product. When the purchase outcome matches the expectations, confirmation occurs. When the perception on the performance they have received exceeds the expectation, positive disconfirmation occurs. These two situations lead to customer satisfaction. Negative disconfirmation, which is a lower than expected outcome, causes dissatisfaction. The theory does not distinguish between expectations. In literature, [36], expectations have been suggested to be of two main types: predictive and normative. Predictive expectations refer to customer beliefs about what will happen, whereas the normative ones refer to consumer beliefs about what should happen in their consumption experience [37]. Additional debate regarding Oliver's theory are over whether satisfaction is a cognitive evaluation or an emotional state [33].

There are nine theories on customer satisfaction [33]. These are (1) the expectancy disconfirmation theory; (2) the assimilation or cognitive dissonance; (3) contrast; (4) assimilation-contrast; (5) equity theory (which states that satisfaction is a result of the comparison between consumer inputs and outputs); (6) attribution; (7) comparison level theory (uses experience-based norms); (8) generalized negativity; and (9) value-precept (which posits that consumers judge satisfaction in relation to values and desires).

According to literature [31,32,34,38,39], customer satisfaction definitions can be classified into two types: outcome-oriented or process-based. The first type of definitions focuses on the end state resulting from the experience with the hospitality service, or other services or goods [31,39] while. This state may be a cognitive state of reward [40], an emotional response to an experience [41], or a comparison of rewards and costs to the anticipated consequences [39]. The second category of definitions concentrates on the entire experience process, emphasizing the perceptual, evaluative, and psychological processes that contribute to satisfaction [31,34,39]. Process definitions address the entire customer experience and the formation process of customer satisfaction, emphasizing developments of perception, evaluation, and other psychological processes contributing to customer satisfaction [31,39,42].

We can also notice, in literature, debates on the distinction, similarity, and relationship between satisfaction and quality, in terms of both definition and measurement. While there is a conceptual distinction between the two notions, there are researchers, practitioners, and customers who use them interchangeably [32,43], and for customers, they still might be undistinguishable.

A distinction is also made in literature [44] between transaction-specific satisfaction and overall satisfaction (holistic) and attribute satisfaction and overall (general) satisfaction. They are considered distinct, although related. While transaction satisfaction refers to a discrete service encounter, overall satisfaction is based on all encounters and experiences with a particular organization. It is considered [45] that overall customer satisfaction is based on the combined experience or a summary evaluation of the entire experience with all the products and services, not just individual attributes. Attribute satisfaction results from the assessment of the degree to which the individual element of the service experience (a good or a service) has met customer expectations and desires [46]. Satisfaction

with a hospitality experience is considered [28] more than the arithmetic sum of satisfaction with the attributes of all products and services that make up the experience. The arithmetic sum can only be used when consumer choice behavior is a non-weighted compensatory model. For all other types of choice models, it does not apply.

According to El-Adly [47], customer satisfaction has generally been studied as a unidimensional construct that measures the overall satisfaction with a service organization. Overall satisfaction is considered an overall impression, formed over time, concerning the service organizations performance [47–49]. It is a result of the aggregate judgement of all interactions and touch points with the service organization. There are fewer studies that have conceptualized and measured consumer satisfaction as a multidimensional construct. We refer to one study that suggests three elements of satisfaction: product, behavior, and environment [50], and to another one that discusses functional (tangible aspects) and performance-delivery (service) elements [51]. Even though the authors use different terminology, the concepts are fundamentally similar [28]. Other researchers [52,53] talk about effective and cognitive satisfaction, or technical and functional [29,54].

2.1.1. Satisfaction Measurement

There are three major approaches to satisfaction measurement in the literature: meeting expectations, benchmarking, and direct assessment [55]. The first approach is based on the expectancy disconfirmation theory by Oliver [30], adopted and adapted by certain researchers [56–59]. Since expectations can be difficult to measure before the service experience or sometimes difficult to express by consumers [55], the other two approaches are often used instead, by both researchers and practitioners. Benchmarking studies [60–62] consist of comparisons between the hotel evaluations, and those of its competitors, or the mean value of evaluations on a particular market. Benchmarking with the aid of customer satisfaction barometers is considered a driver of innovation in small and medium hospitality sectors [63]. Concerning direct assessment of satisfaction or performance—only satisfaction is considered a reasonable alternative for measuring satisfaction [64]. It is based on the theory of the Scandinavian school of service quality, led by Grönroos [65]. It does not use customer expectations for customer satisfaction measurement. The performance-only approach is focused on the perceived satisfaction after the service experience took place. It is measured either as an overall assessment or as a score based on the satisfaction with individual facilities of hotels [46,47,66–68].

The voluntary information posted by customers online is a great opportunity for hotel managers to understand customer satisfaction and expectations, to improve their services and gain competitive advantage [16,24,69]. Online reviews and ratings are often treated as proxy for customer satisfaction. The use of online hotel reviews to measure satisfaction is more like benchmarking. Its main advantage is that it does not require assessing customer expectations; this avoids potential bias of ensuing responses [55]. This is a new line of study in the field of hospitality customer satisfaction [17]. Positive online reviews show customer satisfaction with the hotels [70]. Other researchers, [71], also consider that the perception of customer experiences in the hospitality industry can be revealed from customers' online reviews. In the same approach, [17] have identified, using online reviews, the determinants of customer satisfaction and dissatisfaction. Their measurements use the same approach as the direct assessment of satisfaction. They are usually calculated as an arithmetic mean of individual customer ratings. These individual scores can be based on a set of determinants or expressed as a global evaluation. The exact methodology depends on the preference of each company.

2.1.2. Determinants of Satisfaction with Hotels

Customer satisfaction with hotels depend on total experience during their stay [34], which is, in turn, influenced by hotel attributes. Hotel attributes are considered everything, from price to hotel facilities. To enhance customer satisfaction, it is crucial to identify the important attributes considered by customers when evaluating services and how important each attribute is to satisfaction [2,72]. Hotel facilities are an important part of physical evidence and are correlated with hotel type, star rating,

location, size, etc. The list of hotel characteristics can be very long. Each hotel has a short description of its main features, which are considered by customers when making a choice. The list of attributes that impact overall customer satisfaction with a hotel may be a different set of services and amenities. The holistic experience with hotel services is composed of physical evidence (atmosphere, environment, and all the other tangible elements that define the servicescape), services and behavior, and attitude of employees, and all the other goods that complete the offer, such as food and beverages, toiletries, etc. [50].

Over the years, many researchers studied the attributes important to consumers when evaluating satisfaction with hotels. Among the factors identified are: cleanliness, security, value for money, and helpfulness of staff [73]; quality of staff service, quality of room, general amenities, business services, value added service, security, and hotel facilities [74]; physical facilities, service experience and provided services [75]; bed comfort, cleanliness of bathroom facilities, size of room and condition of facilities, location and accessibility, quality of food and drink, ancillary service, and staff performance [66]. Other researchers [76] demonstrated that technological amenities, such as business center services, express check-in/check-out, in-room telephone, in-room alarm clock and easily accessible electronic outlets, and in-room technologies, such as VoIP telephone services, pay-per-view movies, voicemail/messaging, game systems, and universal battery chargers significantly influence hotel customers overall satisfaction. Other more recent studies found friendliness of staff, hotel amenities, location, quality of food, value for money and room cleanliness and comfort positively influence overall satisfaction [46]; value, hotel service, rooms attributes, sleep quality, location and cleanliness [77]; star-rating, room price, air-conditioning, lobby bar, and free Wi-Fi, distance from the city center, size of the hotel, and general hotel price level in the city where the hotel is located [20]. Sources of customer satisfaction have also been summarized into four dimensions: tangible and sensorial experience, staff performance, aesthetic perception, and location [57]. Price, airport/local area shuttles, wireless internet, breakfast, and quality of coffee/tea were also found to influence satisfaction [3]; moreover, service quality and room and front desks [68]. Price, transaction, quality, and the hedonic dimension were found to have a significant direct positive effect on customer satisfaction [47].

2.2. Customer Ratings and Reviews (eWOM)

The development and consolidation of travel websites and online tourism agencies has facilitated communication between hotels and their customers [6]. The number of hotel reviews posted and used online is continuously growing. This development is also facilitated by the increased use of mobile devices and apps for travel planning and by the integration of all devices [17]. Therefore, traditional word-of-mouth has been taken to a new level, a global one. Word-of-mouth communication has been defined as a “volitional post-purchase communication by customers” [78]. When this communication takes the form of online reviews, evaluations, recommendations, and opinions on a company or a third-party website, it is referred to as electronic word of mouth (eWOM) [5]. EWOM is defined as “all informal communications directed at consumers through Internet-based technology related to the usage or characteristics of particular goods and services, or their sellers” [79]. While the traditional equivalent of online reviews, customer service phone calls and customer comment cards [80,81] have been applied for satisfaction measurement for quite some time, the use online customer reviews and ratings is a recently new phenomenon. Customer online reviews of hotels describe customer stay experiences and satisfaction levels [55] and are usually regarded as a comprehensive metric of customer satisfaction [20]. In fact, it was found that social media reviews and ratings have more predictive power for explaining the hotel performance metrics than traditional customer satisfaction [82]. Many consumers depend on other consumer reviews to infer the quality of goods and services [83]. User-generated content, especially online hotel reviews, is a rich source of customer information on the opinions and emotions of hotel customers. Online reviews are becoming one of the most popular tools for exploring customer behavior and can be a better instrument to identify determinants of satisfaction and the satisfaction level. Online reviews may express customer satisfaction or dissatisfaction more clearly and precisely than traditional methods used to study customer satisfaction, such as

surveys and case studies [72]. Hotels have started to pay more attention to social media review ratings as replacement for traditional customer satisfaction as a driver of financial performance of hotels. Their research confirms that social media review ratings have more significant impact on hotel performance indicators than traditional customer satisfaction measurement. Among social networking sites, TripAdvisor reviews are the best predictors [82].

In the hospitality industry, online reviews usually consist of two parts: a rating and a textual description (arguments or feedback) [9]. Online hotel ratings on various travel websites (TripAdvisor, Booking, Expedia, Priceline, etc.) are based on the satisfaction level of hotel guests expressed through reviews and/or ratings [72]. Thus, the average ratings provided by registered users of these websites can be used as proxies for general customer satisfaction with regards to hotel services [84]. The ratings are usually customer evaluations, ranging from 1 to 10, or from 1 to 5 stars, or, in the case of booking.com, an emoticon (from four available options) leading to a hotel score from 2.5 to 10 [85,86]. These evaluations either refer to a specific set of aspects of the hotel services or to the overall staying experience [17]. The written online reviews are more detailed than the rating and describe customer perceptions and opinions of their experience with the hotel.

2.3. Research on Hotel Facilities Influence on Customer Ratings

The increase in popularity of online reviewing on various travel and hospitality websites has stirred the interest of researchers. Thus, a new research topic, eWOM in hospitality and tourism, has emerged [27]. Many researchers have relied on information collected from Expedia, TripAdvisor, Booking, Agoda, Priceline, or from smaller travel agencies and hotel websites [24].

The literature review carried out by Cantalops and Salvi [5] on the topic of eWOM influence on the hotel industry reveals only two main lines of research. One includes review-generating factors (factors that motivate consumers to write reviews and ratings) and the second one, the impacts of eWOM on consumers and hotels. However, we identified a third line of research, and even a fourth one. The third line refers to studies that try to identify the determinants of online ratings and their influence upon these. The studies in the fourth category try to compare online reviews with official rating systems [87–89], and with customer satisfaction [82].

Our research, aimed at finding relevant hotel facilities on customer ratings, and the nature of their relationship, is included in the third line of research. Some similar and highly relevant studies that can be included in the same line of research as ours, are presented in the following paragraphs. All of these studies try to identify the cause and effect of hotel attributes on satisfaction, expressed through ratings and reviews.

Employing content analysis on TripAdvisor customer reviews of a sample of 100 hotels randomly selected from the London market, a study [90] identifies common causes of satisfaction and dissatisfaction among reviewers: room cleanliness, cleanliness of bedding, quality of electronic equipment, room decoration and atmosphere, bedroom lighting, bathroom cleanliness, and quality.

Using a sample of 600,000 online reviews from Expedia.com, Stringam and Gerdes [15] utilized the difference between proportions method (DBPM) to reveal words associated with high ratings or low ratings and, implicitly, the important aspects of hotel services for travelers. They discovered that the lack of cleanliness of a hotel was the most frequent concern for travelers, followed by bathrooms and beds. These words were correlated with lower ratings for hotels. Higher ratings were correlated with mentions of hotel staff, service and location, food and beverages, price, waffles, and attentive service. Hotel staff, management, and breakfast were present both in high and low reviews.

Zhou et al. [55] performed statistical analyses on a sample of over 1000 user-generated reviews on 4- and 5-star hotels that were posted on Agoda.com. They identified seventeen attributes influencing customer satisfaction. The attributes were classified in: satisfiers (exert only positive influence): public facilities; dissatisfiers: room size, cleanliness, dated quality of facilities, noise level, room price, proximity to attractions, accessibility with public transportation, language skills, efficiency; bidirectional: amenities in the room/bathroom, food quality, dining environment, friendliness of the staff,

welcoming extras, food variety, availability of special food service (e.g., room service; vegetarian options); and neutrals (no marked influence): Wi-Fi services, entertainment facilities, proximity to the airport/railway station, proximity to the city center, other price, food and beverage price.

Bulchand-Gidumal, Melian-Gonzalez, and Lopez-Valcarcel [91] used linear regression analysis to study the influence of four amenities on guest's satisfaction. Their sample included the rating scores on TripAdvisor for 10,282 hotels in the top 200 destinations in Europe. They found that free Wi-Fi and allowing pets help improve hotel ratings. Business centers decrease the overall rating; room service does not have any influence.

Chaves et al. [92] used an Excel pivot table function on 1200 reviews on 50 small and medium-size hotels in the Lisbon region. They identified the most relevant features of hotels that contributed to satisfaction, which should be prioritized by managers: rooms, staff, and location.

Li, Ye, and Law [72] used text mining and content analysis of 42,668 online reviews of 774 hotels. They identified the most important factors of satisfaction for budget and luxury hotels: transportation convenience, food, and beverage management, convenience to tourist destinations, and value for money. Other important factors are bed, reception services and room size, and decoration. Most determinants of customer satisfaction were common for the two categories of hotels, except for factors referring to lobby and sound insulation.

Radojevic et al. [20] analyzed, with a linear mixed model technique, a sample of 6768 hotels located in 47 capital cities in Europe. The results confirmed that hotel star rating, air-conditioning, bar, free Wi-Fi access, membership in a branded hotel chain, and price, are positively associated with customer satisfaction. Distance from the city center, size of the hotel, and general hotel price level in the city where the hotel is located negatively influence satisfaction.

Kim, Lim, and Brymer [9] found that both tangible factors (e.g., room cleanliness, facilities, hotel location) and intangible factors (e.g., service and attitude of hotel staffs) impact customer satisfaction.

Rhee and Yang [77] applied an exploratory multiple case study methodology using a 2×2 matrix design with four hotels in New York (two of 2 stars and two of 4 stars) selected from TripAdvisor.com. Using the conjoint analysis and total part-worth values, they identified the order of importance of the six attributes analyzed: rooms, value, cleanliness, sleep quality, service, and location. However, they noticed differences in the order of importance between the two categories of hotels and between the low-rated and high-rated hotel groups.

Kim, Kim and Heo [93] conducted a content analysis of 919 reviews posted on TripAdvisor of 100 full-service and limited-service hotels in New York. The hotel components analyzed were divided into five categories: room, staff, hotel property/appearance, facility, and other. They concluded for full-service hotels that satisfiers and dissatisfiers were distinct, except for "staff and their attitude" and "service". For limited-service hotels, "staff and their attitude" and four room facilities-related factors, "room cleanliness/dirtiness", "bed", "bathroom" and "room size", were common factors of satisfaction and dissatisfaction.

Xu and Li [17] used latent semantic analysis to analyze 3460 online customer reviews (posted on booking.com) of 580 hotels. They found differences between full-service hotels, limited-service hotels, suite hotels with food and beverage, and suite hotels without food and beverage, regarding the determinants that created customer satisfaction or dissatisfaction. Overall, the most relevant factors were Wi-Fi, facilities, parking, bathroom, noise, swimming pool, and room cleanliness.

Using the reviews on 132 hotels in Tirana and Durrës, Albania, from booking.com, Braimllari [6] estimated the logistic regression and the Tobit regression model to identify the factors influencing the overall online rating of hotels. The results indicate that hotel size and location negatively impact the overall online rating of hotels, whereas the hotel category, the number of online reviews, and the number of years on booking.com have a positive impact.

Cherapanukorn and Charoenkwan [14] analyzed a total of 682 online comments of six hotels in Myanmar posted on TripAdvisor. They found that the most important factors of satisfaction are room decorations and amenities (focusing on cleanliness of bedroom and bathroom), hotel environment

(pool, decor and view), staff service skills (friendliness and helpfulness of hotel staff), restaurants with local food, serving breakfast and dinner, and the Internet service (a quality of internet signal in the hotel).

In a longitudinal study, Jang et al. [2] performed regression analysis on 175,268 reviews from 149 hotels in Chicago from 2011 to 2016. They identified the top 30 important hotel attributes, the 10 most important being: staff, rooms, services, front desk, cleanliness, bed conditions, room space, view, quietness, and modernity for consumers. They found that attribute importance suffered small changes over the 6 years.

Gerdt, Wagner, and Schewe [94] investigated, using a sample of 106 hotels in Germany, the role played by sustainability measures in eWOM and customer satisfaction. They found a relationship between sustainability orientation and customer satisfaction, moderated by star classification. Furthermore, the relationship was different for specific sustainability measures.

The subject of this research fills in the gap we have identified by reviewing existing literature, and is supported by the conclusion of Gerdt, Wagner, and Schewe [95], concerning the lack of studies on the effect of sustainability measures in hospitality on customer satisfaction (expressed through eWOM—ratings and reviews). There are no studies on the differentiated effect of hotel facilities on customer ratings, or studies that approach sustainability-related facilities in this context, and, certainly, no studies that use the proposed econometric model to study the impact of hotel facilities on customer satisfaction or ratings. The following study intends to identify which hotel facilities (both general and sustainability-related) have an impact, and to what extent, on hotel customers ratings. Moreover, the research aims to reveal the categories of hotels these facilities are statistically significant (i.e., excellent, good, acceptable, or medium).

2.4. Variables Included in the Analysis

Most variables included in the analysis are the main facilities available for search refinement on booking.com. Moreover, hotel location (capital city, county capital city (large city) or holiday and wellness and mountain resort) and price have been included. Hotel facilities can further be classified into two main categories: general and sustainability related (wheelchair accessible, rooms adapted for disabled guests, electric vehicle charging station). The first category of general facilities can also be divided into four groups: common (parking, free Wi-Fi, pets allowed), room (surface, price/surface ratio, flat TV, air conditioning, balcony), food (complimentary breakfast, room service, restaurant), and wellness (massage, sauna, fitness, Jacuzzi, pool).

The second category of facilities is related to sustainability. The factors in this category have been selected by overlapping the criteria developed by the Global Sustainable Tourism Council (GTSC) [4], with the list of facilities used for refining the search of hotels on the booking.com website. The categories of criteria devised by GTSC are (a) sustainable management; (b) social and economic; (c) cultural heritage; and (d) environment. The factors found on both lists are just three. Two of them refer to the dimension “Access for all customers”, including those with physical disabilities and other special needs (A7.4. on the GSTC industry criteria, and the third one to pollution reduction (D2.2 on the 2016 GSTC list) by actively encouraging the use of cleaner, more resource-efficient transport alternatives by customers. The factors pertaining to the first sustainability dimension are: WHEELCHAIR (whether the hotel has basic facilities for people with disabilities; which means the hotel is wheelchair accessible) and DISABILITIES (whether the hotel has advanced in-room facilities for people with disabilities (adapted bathroom, raised toilet, walk-in shower, lowered sink, etc.; which make rooms accessible for disabled people). The factor related to environmental protection is ELEC_CHRG, which refers to electric vehicle charging stations provided by hotels for guests.

3. Methodology

3.1. Data

This study uses data from a sample collected in October–November 2019. Data has been gathered from the site www.booking.com for hotels situated in Romania. The hotels are grouped according to location (capital—Bucharest; cities over 300,000 inhabitants, such as Timișoara, Brașov, Cluj Napoca, Iași, Constanța; and wellness and mountain resorts), and rating score. Of the approximately 1300 hotels in Romania listed by booking.com, around 900 units correspond to the location of one of the three categories included in our study (the capital, the coast, a large city, or a wellness or mountain resort). Smaller towns and rural areas are dominated by apartments, guest houses, and holiday homes, but these types of accommodation are not included in our study. The final sample comprises 635 hotels (approximately 70% of the 900 corresponding to the target locations) for which complete data were available on all variables included in this study.

3.2. Ordered Logit Model (OLM)

The level of client satisfaction is measured in our study by the ordinal variable INTERVAL (see Table 1 for complete definition of the variable). This type of encoding permits the identification of factors that influence the passing from a lower quality class to a superior one. For estimation, we use the ordered logit model, with the following structure:

$$\text{Prob}(y_i = j|x, b, c) = F(c_{j+1} - x_i b) - F(c_j - x_i b)$$

$$\text{Prob}(y_i = j|x, b, c) = \frac{\exp(c_{j+1} - x_i b)}{1 + \exp(c_{j+1} - x_i b)} - \frac{\exp(c_j - x_i b)}{1 + \exp(c_j - x_i b)}$$

where

$i = \overline{1, N}$ is the index of each hotel from the sample,

$j = \overline{1, 4}$ is the index of the values of y (Excellent, Good, Medium, Acceptable, see Table 1),

x_i is the vector of the exogenous variables (SURFACE, PRICE, PRICE_SURF, LOCATION, BREAKFAST, MASSAGE, SAUNA, FITNESS, JACUZZI, WIFI, PARKING, POOL, PETS, ROOMSERVICE, RESTAURANT, FLATTV, AIRCOND, BALCONY, WHEELCHAIR, DISABILITIES, ELEC_CHRG),

b is the coefficient vector, and

$c_j, j = \overline{1, 4}$ are cut points of the distribution (technical coefficients of the model).

Table 1. The variables included in the analysis.

Variable Name	Explanations	Mean/Proportion	Standard Deviation
REVIEW_SCORE	Numerical attribute computed by booking.com, based on tourists' opinions regarding cleanliness, comfort, facilities, staff, value of money and location. Possible values between 2.5 and 10.	8.09	0.83
INTERVAL	Ordinal attribute from 1 to 4. It is a quality class of the hotel according to the tourists' perception. The intervals were defined according to the quartiles of the variable REVIEW_SCORE, to have an approximatively equal number of hotels in each class. 4 Excellent, if REVIEW_SCORE is between 8.7 and 10 3 Good, if REVIEW_SCORE is between 8.2 and 8.6 2 Medium, if REVIEW_SCORE is between 7.0 and 8.1 1 Acceptable, if REVIEW_SCORE is between 5.8 and 6.9	25.8% 24.3% 23.8% 26.1%	
PRICE	Numerical attribute. Price per night of a double room (in local currency, Romanian leu).	272	99.8
LOCATION	Dummy variable which denotes the hotel location. CAPITAL if the hotel is in the capital of the country. LARGE CITY if located in a town with over 300,000 inhabitants, other than the capital (Bucharest). RESORT if it located in a wellness or mountain resort.	37.6% 37.3% 25.1%	
COMMON			
WIFI	1 if the hotel has free Wi-Fi 0 if not	99.1% 0.9%	
PARKING	1 if the hotel has free parking for its clients 0 if not	90.9% 9.1%	
PETS	1 if the hotel allows pets 0 if not	26.3% 73.7%	
ROOM			
SURFACE	Numerical attribute. The surface of a double room in square meters.	22.0	6.13
PRICE_SURF	Numerical attribute; composite variable. It is the ratio between the natural logarithm of the variable PRICE and the natural logarithm of the variable surface.	1.82	0.17
FLATTV	1 if the hotel has flat-screen TV 0 if not	93.7% 16.3%	
AIRCOND	1 if the hotel has air conditioning 0 if not	75.4% 24.6%	
BALCONY	1 if the hotel has balcony 0 if not	70.6% 29.4%	
FOOD			
BREAKFAST	1 if breakfast is included in the room's price 0 if not	48.0% 52.0%	
ROOMSERVICE	1 if the hotel has room service 0 if not	58.1% 41.9%	
RESTAURANT	1 if the hotel has a restaurant 0 if not	74.2% 25.8%	
WELLNESS			
MASSAGE	1 if there are massage facilities 0 if not	32.4% 67.6%	
SAUNA	1 if the hotel has a sauna 0 if not	30.7% 69.3%	
FITNESS	1 if the hotel has a fitness center 0 if not	27.1% 72.9%	
JACUZZI	1 if the hotel has a Jacuzzi 0 if not	18.4% 71.6%	
POOL	1 if the hotel has a pool 0 if not	18.1% 81.9%	
SUSTAINABILITY			
WHEELCHAIR	1 if the hotel has basic facilities for people with disabilities (wheelchair accessible). 0 if not	28.2% 71.8%	
DISABILITIES	1 if the hotel has advanced facilities for people with disabilities (adapted bath, raised toilet, walk-in shower, lowered sink, etc.). 0 if not	13.8% 82.2%	
ELEC_CHRG	1 if the hotel has electric vehicle charging station 0 if not	4.6% 95.4%	

3.3. Brant Test

The ordered logit model may be represented by a series of logistic regressions for dependent binary variables, with common regression parameters reflecting the proportional odds assumption. Brant [95] proposed a test for verifying if the proportional odds assumption is validated $H_0: b_j = b$, $j = \overline{1, 4}$. The approach proposed by Brant [95] is based on viewing the augmented model as describing a set of $k - 1$ logistic regressions, for variables z_j ($j = 1, \dots, k - 1$) defined by:

$$z_j = \begin{cases} 1 & \text{if } y > j \\ 0 & \text{if } y \leq j \end{cases}$$

with success probability:

$$\pi_j = \text{Prob}(z_j = 1) = 1 - \gamma_j$$

Brant [48] constructs an omnibus test by combining contrasts in the $\hat{\beta}_j$'s into a quadratic form, giving rise to an asymptotic χ^2 test. One can take the $(k - 2)p \times (k - 1)p$ contrast matrix,

$$D = \begin{bmatrix} I & -I & 0 & \dots & 0 \\ I & 0 & -I & \dots & 0 \\ \dots & \dots & \dots & \dots & \dots \\ I & 0 & 0 & \dots & -I \end{bmatrix}$$

and form the associated Wald-type goodness-of-fit statistic

$$\chi^2 = (D\hat{\beta})^T [D\hat{V}(\hat{\beta})D^T]^{-1} (D\hat{\beta})$$

which will be asymptotically χ^2 on $(k - 2)p$ degrees of freedom under the null hypothesis. If χ^2 is found to be significant, individual differences $\hat{\beta}_j - \hat{\beta}_1$ may be considered in relation to their approximate standard errors to elucidate the nature of the lack of fit.

3.4. Generalized Ordered Logit Model (GOLOGIT)

As Fu [96] and Williams [97,98] notes, researchers have given the generalized ordered logit (GOLOGIT) model brief attention, but, generally, have passed over it in favor of the parallel-lines model. The GOLOGIT model can be written as

$$\text{Prob}(y_i = j) = g(Xb_j) = \frac{\exp(\alpha_j + x_i b)}{1 + \exp(\alpha_j + x_i b)}, \quad j = 1, 2, \dots, M = 1$$

where M is the number of categories of the ordinal dependent variable. From the above, it can be determined (see [50]) that the probabilities that y will take on each of the values 1 to M are equal to:

$$\text{Prob}(y_i = 1) = g(x_i b_1)$$

$$\text{Prob}(y_i = j) = g(x_i b_{j-1}) - g(x_i b_j) \quad j = 2, \dots, M - 1$$

$$\text{Prob}(y_i = M) = g(x_i b_{M-1})$$

The main motivation for using GOLOGIT instead of OLM is the rejection of proportional odds assumption according to the Brant test. In addition, GOLOGIT may emphasize, in a differentiated way, factors that influence the quotation of the hotels only for certain levels of the endogenous variable INTERVAL.

4. Results and Discussions

In the following regressions (1, 2, and 3) introduced in Table 2, the variables PRICE and SURFACE have been introduced as explanatory factors, both together and separately. Although statistically significant, those are strongly correlated with the number of hotel facilities. In addition, the variable PRICE has a positive sign, a result that is counterintuitive. We could interpret that if the price is higher, customer satisfaction increases. This result is misleading and is due to the mentioned correlation. This may induce biases in some factors' representativity. To eliminate this inconvenience, they have been replaced with a variable that measures their ratio, PRICE_SURF in regression 4. In this specification, some facilities of the hotels become statistically significant on tourist ratings. However, these results are obtained subject to fulfilment of the proportional odds assumption. For testing this hypothesis, we use the Brant test [95] (Table 3).

Table 2. The results of the ordered logit model (OLM) robust regressions on the hotels score (coefficients and *t*-stat).

	Regression 1 OLM, Dependent Variable (Dep. Var.): INTERVAL		Regression 2 OLM, Dep. Var.: INTERVAL		Regression 3 OLM, Dep. Var.: INTERVAL		Regression 4 OLM, Dep. Var.: INTERVAL	
PRICE	0.002 *	1.73	0.003 ***	2.66				
CAPITAL	−0.440 *	−1.73	−0.516 **	−2.00	−0.416	−1.64	−0.445 *	−1.73
BIG_CITY	−0.077	−0.35	−0.108	−0.48	−0.073	−0.33	−0.086	−0.38
RESORT	0.000	ref.	0.000	ref.	0.000	ref.	0.000	ref.
COMMON								
WIFI	1.147	1.41	0.921	1.16	1.203	1.51	1.085	1.45
PARKING	0.865 ***	3.03	0.918 ***	3.18	0.865 ***	3.09	0.913 ***	3.33
PETS	−0.335 **	−2.07	−0.362 **	−2.26	−0.312*	−1.93	−0.321 **	−2.01
ROOM								
SURFACE	0.042 ***	3.12			0.049 ***	3.82		
PRICE_SURF							−0.968 **	−2.06
FLATTV	0.510 *	1.79	0.493 *	1.71	0.533 *	1.91	0.544 **	1.97
AIRCOND	−0.013	−0.06	0.033	0.14	0.033	0.15	0.108	0.48
BALCONY	0.192	1.18	0.181	1.11	0.205	1.25	0.215	1.31
FOOD								
BREAKFAST	0.177	1.10	0.170	1.06	0.246	1.57	0.305 **	1.96
ROOMSERVICE	−0.082	−0.46	−0.043	−0.25	−0.065	−0.37	−0.012	−0.07
RESTAURANT	0.515 ***	2.76	0.479 ***	2.57	0.536 ***	2.89	0.529 ***	2.84
WELLNESS								
MASSAGE	0.288	1.20	0.312	1.30	0.338	1.41	0.410 *	1.70
SAUNA	−0.524	−0.71	−0.584	−0.93	−0.463	−1.52	−0.449	−1.47
FITNESS	−0.008	−0.03	0.033	0.13	0.002	0.01	0.034	0.13
JACUZZI	0.326	1.37	0.306	1.30	0.346	1.46	0.355	1.51
POOL	0.501 **	2.02	0.454 *	1.88	0.561 **	2.28	0.588 **	2.42
SUSTAINABILITY								
WHEELCHAIR	0.167 **	1.98	0.148 **	2.01	0.205 *	1.83	0.191 *	1.91
DISABILITIES	0.202 *	1.78	0.179 *	1.88	0.247 *	1.92	0.231 *	1.94
ELEC_CHRG	0.148 ***	2.95	0.131 ***	2.58	0.182 ***	2.73	0.176 ***	2.67
Log likelihood	−875.92		−871.08		−877.62		−862.71	
Probability > chi ²	0.000		0.000		0.000		0.000	
Pseudo R ²	0.0917		0.0858		0.0895		0.0835	

*, **, *** statistically significant at 10%, 5% and 1% level. Robust standard errors were applied. Source: authors' calculations in STATA statistical software for data science.

Table 3. Results of Brant test.

Variable	Chi ²	<i>p</i> > chi ²	Degrees of Freedom
ALL	577.39	0.000	40
PRICE_SURF	4.85	0.089	2
CAPITAL	0.07	0.965	2
BIG_CITY	1.89	0.388	2
RESORT	ref.	ref.	2
COMMON			
WIFI	14.05	0.001	2
PARKING	0.50	0.778	2
PETS	2.38	0.305	2
ROOM			
FLATTV	3.11	0.211	2
AIRCOND	0.91	0.634	2
BALCONY	3.17	0.205	2
FOOD			
BREAKFAST	3.02	0.221	2
ROOMSERVICE	1.12	0.572	2
RESTAURANT	0.06	0.972	2
WELLNESS			
MASSAGE	2.95	0.229	2
SAUNA	1.32	0.517	2
FITNESS	0.77	0.680	2
JACUZZI	2.08	0.354	2
POOL	1.66	0.435	2
SUSTAINABILITY			
WHEELCHAIR	2.58	0.275	2
DISABILITIES	6.33	0.042	2
ELEC_CHRG	8.17	0.017	2

Source: authors' calculations in STATA.

Overall, the Brant test rejects the proportional odds assumption hypothesis. This means that at least one variable rejects the hypothesis. However, only the variables PRICE_SURF, WIFI, DISABILITIES AND ELEC_CHRG are in this situation, at 10% significance level. Thus, we respecify the OLM model, using a GOLOGIT model, in which we allow the four variables to take separate coefficients for each outcome of the endogenous variable INTERVAL (see Table 4).

Among the variables that have different coefficients from one outcome to another, PRICE_SURF and WIFI are statistically significant only for lower levels of client satisfaction. For receiving qualificatives, such as good or excellent, the ratio between room price and its surface and the existence of Wi-Fi in the hotel are not significant.

It is interesting to note that both variables measuring food facilities (BREAKFAST and RESTAURANT) are positively significant for all outcomes of the endogenous variable. The breakfast included in the price, and the restaurant inside the hotel, positively influence both lower and higher review scores, which means that they are relevant for highly demanding guests. The results confirm those of Cherapanukorn and Charoenkwan [14] and of Li, Ye, and Law [72].

A unique result is given by the significance of the negative coefficient of the variable PETS. It seems that allowing pets in the hotel or in the room has an opposite effect than expected. This facility disturbs the tourists that do not own pets, leading to a decrease in the review scores for all hotel rating levels. This conclusion is different from that of Bulchand-Gidumal, Melian-Gonzalez, and Lopez-Valcarcel [91], who found a positive linear relationship between pet admission in hotels and guest satisfaction.

This may be due to cultural differences between Romania and other countries. In traditional Romanian households, pets are not allowed in houses.

Table 4. The results of the generalized ordered logit model (GOLOGIT) regression on the hotels score (coefficients and *t*-stat).

Regression 5 GOLOGIT, Dep. Var.: INTERVAL						
	Outcome 2 vs. 1		Outcome 3 vs. 2		Outcome 4 vs. 3	
PRICE_SURF	−1.528 ***	2.78	−0.630	−1.20	−0.580	−0.94
CAPITAL	−0.473 *	−1.85	−0.473 *	−1.85	−0.473 *	−1.85
BIG_CITY	−0.097	−0.44	−0.097	−0.44	−0.097	−0.44
RESORT	0.000	ref.	0.000	ref.	0.000	ref.
COMMON						
WIFI	1.753 *	1.65	14.20	0.03	−14.68	−0.01
PARKING	0.916 ***	3.28	0.916 ***	3.28	0.916 ***	3.28
PETS	−0.322 *	−1.93	−0.322 *	−1.93	−0.322 *	−1.93
ROOM						
FLATTV	0.568 *	1.88	0.568 *	1.88	0.568 *	1.88
AIRCOND	0.118	0.54	0.118	0.54	0.118	0.54
BALCONY	0.212	1.26	0.212	1.26	0.212	1.26
FOOD						
BREAKFAST	0.312 **	2.02	0.312 **	2.02	0.312 **	2.02
ROOMSERVICE	0.004	0.02	0.004	0.02	0.004	0.02
RESTAURANT	0.536 ***	2.93	0.536 ***	2.93	0.536 ***	2.93
WELLNESS						
MASSAGE	0.399 *	1.71	0.399 *	1.71	0.399 *	1.71
SAUNA	−0.449	−1.56	−0.449	−1.56	−0.449	−1.56
FITNESS	0.027	0.11	0.027	0.11	0.027	0.11
JACUZZI	0.308	1.30	0.308	1.30	0.308	1.30
POOL	0.534 **	2.17	0.534 **	2.17	0.534 **	2.17
SUSTAINABILITY						
WHEELCHAIR	0.188 **	2.09	0.188 **	2.09	0.188 **	2.09
DISABILITIES	0.212	1.43	0.245	1.28	0.257 **	1.99
ELEC_CHRG	0.149	1.31	0.164 **	2.04	0.189 ***	2.12
Constant	0.214	0.15	0.214	0.15	0.214	0.15
Log likelihood				−946.97		
Prob > chi ²				0.000		
Pseudo R ²				0.0903		

*, **, *** statistically significant at 10%, 5% and 1% level. Robust standard errors were applied. For the hotel location we have used a dummy variable, and RESORT is the reference outcome. Source: authors' calculations in STATA.

Among the room facilities, the flat-screen TV (variable FLATTV) is well appreciated by the tourists and affects all categories of hotel ratings. This result may be due to some extent to the period in which our study was conducted (October–November), when there are fewer outdoor activities.

The availability of free parking places at the hotel (variable PARKING) is positively correlated with the hotel score and very significant for all score categories. The sample comprises hotels from the capital, large cities, and wellness and mountain resorts, located in very crowded places, with dense car traffic. As a result, access to a parking place is difficult, and such a facility offered by the hotel is well appreciated and positively influences the reviews. Parking has also been proved as a good influencer of satisfaction by other researchers, such as Xu and Li [17].

Among the general facilities of the hotel, the existence of the pool (variable POOL) and of massage (variable MASSAGE) are statistically significant and positive for all categories of hotels. The importance of pool for customer satisfaction has been confirmed by Xu and Li [17] and Cherapanukorn and Charoenkwan [14] as well.

Variables that point to the location also deserve attention. The variable CAPITAL is statistically significant with a negative coefficient. This means that, for the same facilities, the hotels from the capital are less rated than those considered as a reference in the model, located in the wellness or mountain resorts (variable RESORT). This behavior indicates a higher level of tourist expectations for those who visit the capital, especially since prices are higher in this city.

The most interesting results are obtained for sustainability facilities. The WHEELCHAIR variable is statistically significant for all levels of the hotel score. This implies that the facility is appreciated by the guests, regardless of the level of expectation regarding other qualities of the accommodation. Basically, when it is considered a necessity, it is scored positively by tourists with very different levels of quality expectations.

Instead, more advanced facilities for people with disabilities are expected, rather at high score levels. Consequently, the variable DISABILITIES is statistically significant only for obtaining the highest score level. It seems that such facilities are not expected for lower rated hotels and low and medium scores are not affected. This finding is similar with those of Gerdt, Wagner, and Schewe [94]. The mentioned authors reveal that the criterion inclusion (accessibility and integration of all guests), which includes our variable DISABILITIES, is neutral to customer satisfaction.

A unique result is obtained for the variable ELEC_CHRG, which is significant for the good and excellent score levels. Basically, although most tourists staying did not use the facility, its existence at the hotel makes a good impression. This behavior is in line with the growing trend of population awareness on sustainable and ecological aspects of the economy, in general, and hotel services, in particular. This finding is in line with the conclusions of Gerdt, Wagner, and Schewe [94]. Their research also asserts that transport dimension, which includes our variable, electric vehicle charging station, is critical for customer satisfaction.

Robustness Check

Hotels for which complete data on all regression variables were not found were removed from the sample. We preferred this method because the generalized ordered logit model does not handle missing data. We consider that the elimination of those units do not significantly affect the results of the study, due to the following arguments: (a) there are complete data for most hotels (approximately 70%) and (b) we did not find a systematic bias, i.e., the proportion of hotels with missing data was similar in the four customer rating categories.

The design of our study was realized from the beginning to avoid as much as possible the problems of multicollinearity. If we had used the price of a room as an endogenous variable, the more expensive hotels generally have more facilities and there would have been higher correlations between the explanatory variables. Instead, the high ranking of a hotel may be due to several factors, hotels with fewer facilities can be well appreciated due to a low price compared to the facilities offered. In Appendices A and B, we give the correlations between the variables. Globally, we notice that most of the coefficients are positive, a normal phenomenon if we consider the general trend. Basically, if the explanatory variables positively influence the endogenous variable, there is a certain structure of positive correlation between them. However, there are no serious multicollinearity problems, the highest coefficient being 0.63.

Higher coefficients occur in normal and expected situations; for example, between WHEELCHAIR and DISABILITIES, which measure slightly different aspects of the same facility. Furthermore, more important correlations can be noticed between the facilities from the same category (MASSAGE, SAUNA, FITNESS, JACUZZI, POOL). Interesting correlations also exist between CAPITAL and AIRCOND (explainable by the need for this facility in a city with hot climate during the summer and air pollution problems) and between CAPITAL and PARKING (negative correlation, due to the difficulty of providing such a facility in the city with higher traffic in the country). However, all these correlations are not very high, so they do not introduce significant biases on the estimates and cannot affect the overall results of the study.

Tests about the normality of distribution cannot be applied as in the case of linear regressions (e.g., Ordinary Least Squares). We used econometrics of discrete regressions, so the endogenous variable does not have a continuous distribution, having only four possible values in this empirical application. Instead you can test the distribution of the residual variable, which is supposed to be logistics in the generalized ordered logit model. After estimating the coefficients from the final regression, we recovered the values of the residual variable and performed an extended Kolmogorov–Smirnov test in “R”. The result shows a logistical error distribution, with an error probability of 0.042.

Davidson and MacKinnon [99] propose test statistics for heteroskedasticity in logit and probit models. It is assumed that the heteroskedasticity is a function of variables Z . The Z variables are typically chosen from the X variables that are included in the logit or probit model. Test statistics are based on the Lagrange multiplier (LM) principle. As a result of this test, in the final model we accept that there are no problems of heteroskedasticity, with a risk of error of 0.039.

5. Conclusions

The econometric model and the database allow to highlight the significance of some facilities over the tourist review scores. These facilities are those that characterize the hotel in general (parking, restaurant, complimentary breakfast, massage, pool, pet friendliness), but also the room (flat TV) and sustainability (wheelchair accessibility, rooms for disabled people, electric vehicle charging station). For some variables, we have not been able to prove the influence on the score from the comments. These may have no influence, or their influence could be proven only through specific studies, focused on a certain facility. For example, it is probable that the influence of air conditioning in the rooms can be successfully highlighted only through a study conducted during the warm season of the year. Or the balcony could influence review scores only conditioned by the existence of a remarkable view.

We find various levels of importance of different facilities over the hotel’s ranking (score). The existence of the restaurant and the complimentary breakfast are statistically very significant in any regression specification, and so are TVs. Hotel location is also important for tourist expectations regarding the facilities provided. In general, the same level of facilities yields lower scores in the capital than in other regions.

We have also succeeded in highlighting the differentiated effect in relation to the satisfaction levels for some explanatory variables. The price-to-room surface ratio and free Wi-Fi significantly influence only low score levels of customer ratings. On the other hand, the advanced facilities for people with disabilities and charging stations for electric vehicles significantly and positively influence the high scores.

The results of our study could help hotel managers calibrate more precisely the type and number of facilities offered in relation to the profile and expectations of customers. From our results, it is obvious that rooms must be equipped with modern TVs. Hotel managers must also be aware of the importance of good and free breakfasts for high ratings, and of the influence of restaurants on these. The hoteliers should take this result into account, especially as the breakfast price is very low compared to the room rate. Instead, an increase in the quote is likely to bring more tourists, offsetting the cost of introducing breakfast. The fact that price-to-room surface ratio and free Wi-Fi do not significantly influence high score levels of customer ratings probably means that, from a certain point on the ratings scale, customers expect free Wi-Fi and a good price-to-room surface ratio to be implicit, so they do not further increase their satisfaction. However, this does not make them less important. Their absence or inadequate level would probably cause dissatisfaction. The fact that advanced facilities for people with disabilities and charging stations for electric vehicles significantly and positively influence the high scores suggests that, for managers of more expensive and refined hotels, provision of these facilities is a must to satisfy their demanding customers. We also understand that capital city hotel customers have higher expectations, and hoteliers should seek to enrich facilities and services to increase their ratings.

Of course, the study has its limitations on representativeness. This comes from considering hotels from only one country. Most of their guests are Romanians—culturally different from Western Europe or other parts of the world. Moreover, another limitation comes from considering hotels altogether, regardless of their star classification or the affiliation to international chains. We can identify two main future research directions. One is deepening the research on groups of hotels. The other is extending the research to the international level, and to include all seasons. Instead, the study has a significant contribution to scientific literature in the field of factors that influence customer ratings. The strength of the research comes from its singularity in terms of methodology, theme, market approached, as well as conclusions. The research approaches variables and relationships previously ignored by literature, as relieved by Gerdt, Wagner, and Schewe [94], and comes with unique conclusions. It can be a solid methodological base for large-scale studies at the national and international level.

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Appendix A

Table A1. Matrix of correlations between the dependent variable (INTERVAL) and the explanatory variables from the LOCATION, COMMON, and ROOM categories.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
INTERVAL (1)	1.00										
CAPITAL (2)	−0.16	1.00									
BIG_CITY (3)	0.06	−0.60	1.00								
RESORT (4)	0.12	−0.45	−0.45	1.00							
WIFI (5)	0.01	0.08	0.08	−0.17	1.00						
PARKING (6)	0.20	−0.32	0.05	0.18	−0.03	1.00					
PETS (7)	−0.06	−0.07	0.04	0.33	−0.02	0.05	1.00				
PRICE_SURF (8)	−0.03	0.05	−0.02	−0.03	0.05	0.01	0.03	1.00			
FLATTV (9)	0.09	0.07	−0.08	0.02	−0.03	−0.02	0.01	0.02	1.00		
AIRCOND (10)	−0.04	0.43	0.06	−0.55	0.17	−0.10	−0.03	0.06	−0.03	1.00	
BALCONY (11)	0.13	−0.09	−0.02	0.12	−0.06	0.15	0.06	0.06	0.12	−0.04	1.00

Source: authors' calculations in STATA.

Appendix B

Table A2. Matrix of correlations between the dependent variable (INTERVAL) and the explanatory variables from the FOOD, WELLNESS, and SUSTAINABILITY categories.

	(1)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
INTERVAL (1)	1.00											
BREAKFAST (12)	0.12	1.00										
ROOMSERVICE (13)	0.08	0.06	1.00									
RESTAURANT (14)	0.19	0.06	0.46	1.00								
MASSAGE (15)	0.16	0.15	0.24	0.12	1.00							
SAUNA (16)	0.13	0.08	0.20	0.14	0.68	1.00						
FITNESS (17)	0.16	0.12	0.22	0.19	0.64	0.72	1.00					
JACUZZI (18)	0.18	0.18	0.16	0.13	0.49	0.56	0.48	1.00				
POOL (19)	0.22	0.10	0.12	0.22	0.50	0.58	0.50	0.46	1.00			
WHEELCHAIR (20)	0.09	0.15	0.18	0.08	0.09	0.05	0.11	0.12	0.07	1.00		
DISABILITIES (21)	0.10	0.17	0.14	0.06	0.10	0.03	1.13	0.16	0.06	0.63	1.00	
ELEC_CHRG (22)	0.21	0.11	0.13	0.09	0.11	0.02	0.08	0.10	0.12	0.24	0.30	1.00

Source: authors' calculations in STATA.

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