Good or excellent? Factors determining online hotel ratings. A spatial approach

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Abstract

In a competitive environment, where hotel demand is lower than market supply, it is of interest to determine what factors explain how excellence differentiates certain hotels from others. Using spatial quantile regression, this research investigates the effect of locational factors as well as those related to the management of human capital investment in Spanish hotels rated on Booking.com. The study shows that human capital investment in hotels can significantly increase guest delight. As regards location, hotels in protected natural areas that are far from large cities obtain higher guest review scores. Additionally, a spatial spillover effect due to reputation transfer among nearby hotels with median scores is found. However, this effect is not observed for hotels with very high scores. These results can serve to rationalize the available resources and inform hotel owners and managers about the factors required to achieve high scores.

Keywords: hotel ratings; investment; location; spillover effects; spatial quantile regression

# Introduction

Consumer-generated electronic word-of-mouth (e-WOM), such as comments and ratings in online reviews by users of goods and services, has become increasingly important because it serves to obtain information from other consumers and, in turn, has the power to influence their decisions (Moro, 2020). Online ratings are considered an effective source of information to evaluate the basic quality of a product or service (Karaman, 2021). Thus, review sites or social networks that allow users to evaluate products or services have become a key source of information for potential customers (Moro, 2020).

In the tourism and hospitality industry, online reviews and ratings play a significant role (Hwang & Mattila, 2020). Tourists and guests often express their opinions on websites such as Booking.com and TripAdvisor (Schuckertel al., 2015). e-WOM has become one of the most crucial indicators of service reputation as it influences consumer decision-making when booking hotels online. Around 77% of customers indicate that they regularly consult online reviews prior to reserving a hotel room (Hwang & Mattila, 2020).

User-generated ratings and reviews are a valuable source of information as they reflect consumer characteristics and perceptions regarding service satisfaction (Langaro et al., 2020; Lu et al., 2021) and help to reduce information asymmetry in the hotel industry, especially for independent hotels that do not belong to a hotel chain (Manes & Tchetchika, 2018). Hotel scores are critical indicators of satisfaction (Nicolau et al., 2020) and hence of the establishment’s reputation (Rabadán-Martín et al., 2020).

It is important that hoteliers understand why guests rate their hotels and identify which aspects need improvement. Providing guests with positive experiences and emotions generates positive e-WOM and, in turn, contributes to customer retention and attracts new ones (Lu et al., 2021). However, to gain a competitive advantage over competing hotels it is not enough to have positive e-WOM, such as good scores or comments, given that the average score of these establishments is usually high (Molinillo et al., 2016). It is therefore important to determine the factors that could explain why some hotels differentiate themselves from the competition and obtain high scores.

In this regard, some studies have investigated the attributes that affect customer experience and satisfaction in the hotel industry (Akeb et al., 2022; Kim, 2021; Radojevic et al., 2017; Veloso & Gomez-Suarez, 2023). Jian-Wu et al. (2020) summarized these factors into five groups: facilities, room, staff, service, and location. Moreover, these are the factors operators such as Booking, Tripadvisor, or Google Travel use to rate hotels. Nicolau et al. (2020) evaluated the overall scores of hotels and found that room comfort, staff, services, and value for money are influential factors in customer satisfaction. Hotels can control these non-locational factors and continuously improve them throughout the hotel’s life. Additionally, according to Latinopoulos (2020) and Manolitzas et al. (2022), the location and distribution of hotels in space has an impact on the hotel industry as these factors affect not only room prices and hotel profits but also overall guest satisfaction. The choice of location is a decision made when establishing a hotel and affects hotel ratings permanently over time.

In sum, the attributes that impact customer satisfaction can be classified into non-locational and locational attributes. Non-locational attributes can be those related to the quality of the hotel installations (facilities and rooms) and characteristics related to investment in staff, namely staff attentiveness and professionalism in service provision (Anagnostopoulou et al., 2020). Hotel location is not just a geometric point, but also reflects the interactions between locations and links to other points of interest and daily activities. Therefore, the environment surrounding a hotel will influence its functions, customers, and activities (Psyllidis et al., 2022).

Hotel location is important because both positive and negative externalities may be generated due to the geographic clustering of hotels, what is known as agglomeration economies (Kim et al., 2021; Valenzuela-Ortiz et al., 2022). It has been shown that agglomeration economies can influence customer satisfaction in the hotel industry (Lee et al., 2023; Luo and Yang, 2016) due to competitiveness, the new knowledge acquired, and the imitation process that occurs between nearby hotels (Valenzuela-Ortiz et al., 2022).

Nevertheless, the significance of service attributes for customer satisfaction varies. The relationship between the performance of a hotel attribute and customer satisfaction may be non-linear. That is, an attribute that satisfies customers might be insufficient to delight them, indicating that the relationship is not monotonically linear (Anagnostopoulou et al., 2020). In their review of the literature on customer delight, Torres and Ronzoni (2018, p. 72) concluded that “compared to other fields, customer delight is still a relatively new phenomenon” and that more research about “the processes that lead to and flow from their [guest] delight” is needed.

While most of the literature has attempted to explain the effect of locational and non-locational (capital and staff investment) factors on mean customer hotel ratings, this study attempts to identify whether there is a difference in the contribution those factors when comparing hotels with an intermediate Booking score to other hotels with a delight score. Secondly, the study aims to contribute to the current literature on agglomeration in the accommodation industry by providing new insight into how the online ratings of guests of hotels located in a specific area can influence the ratings of other guests who have stayed in nearby hotels, thus leading to spatial spillover effects.

To this end, the paper addresses the following research questions related to:

Investment factors (physical and human capital)

RQ1: Does investment in physical capital have a positive and significant effect on both median-score and delight-score hotels?

RQ2: Does investment in human capital have a positive and significant effect on both median-score and delight-score hotels?

Locational factors (hotel location environment and agglomeration economies).

RQ3: Does the proximity of hotels to natural or built areas have a significant effect on both median-score and delight-score hotels?

RQ4: Is the presence of spatial spillover caused by reputation transfer between neighboring hotels with median scores and delight scores?

To achieve this objective, data on 965 hotels were obtained from Booking.com and the ORBIS company database using a quantile regression model with spatial effects for the median score (0.50) and delight score (0.95) quantiles. The results of the study can serve to identify which controllable factors (e.g., investment in facilities and rooms) and locational factors (exogenous and endogenous) allow hotels to differentiate themselves from the competition in the sector.

# Literature review and hypothesis

With the emergence of social media, electronic word-of-mouth (e-WOM) has changed and grown in importance as customers have begun to use the internet to create and disseminate brand-related content (Langaro et al., 2020). e-WOM has an impact on brands across a wide range of measures, including product sales, brand evaluations, purchase decisions and firm value (Langaro et al., 2020; Loureiro et al., 2020). As a result, consumers are becoming increasingly empowered since they can share their personal experiences about a product or service with others on any website or social network at any time (Moro, 2020). Because consumers express their opinions about hotel quality and service and their overall experience on websites or social media, hotels will try to mitigate the effects of negative e-WOM on hotel sales by improving their services.

To this end, hotels will focus their efforts on dissatisfied consumers as their opinions are likely to have a greater impact or contagion from e-WOM (Loureiro et al., 2020). Numerous studies have shown the positive relationship between customer ratings and hotel performance and guest satisfaction (Aakash et al., 2022; Berezina et al., 2016), hotel room sales (Kim, 2021) and purchase intention or increased sales (Cain et al., 2021), thus demonstrating the power of reputational e-WOM communications. Online reviews are generally presented in two forms: as an overall rating of the product (e.g., hotel scores) and as a description of that overall rating (e.g., feedback and comments).

Given that customer satisfaction plays a vital role in the success of a hotel business, researchers have devoted efforts to studying the ratings and contents of these websites to understand how customers perceive hotel attributes and their impact on overall customer satisfaction (Nicolau et al., 2020). The research on user-generated content has recognized that both tangible and intangible attributes contribute to hotel guests’ experiences, customer satisfaction, and customer delight (Aakash & Gupta Aggarwal, 2020; Alrawadieh & Law, 2019; Zarezadeh et al., 2022).

Stringam and Gerdes (2010), for example, used travelers’ ratings of hotels and found that they assign higher ratings to hotel staff, service and location. The authors compared ratings with website comments and observed that when hotel employees are “courteous,” “accommodating,” or “attentive,” customers reward the hotel by assigning high ratings to the service. Kim et al. (2016) obtained similar results in a study on satisfaction and dissatisfaction in reviews of two service segments (full-service and limited-service hotels) and found that the location and attitudes of staff were the highest rated attributes in both segments.

Manolitzas et al. (2022) examined online satisfaction ratings posted by hotel guests on TripAdvisor and found that investment in location, cleanliness, service and value for money can significantly improve overall guest satisfaction with a hotel and guests’ overall satisfaction ratings on travel platforms. Likewise, Alhamad and Singh (2021) analyzed consumer reviews on Booking.com and found that facilities, comfort, cleanliness, location, and staff all significantly impact online hotel ratings, which can also lead to increased hotel bookings and improved profitability.

In line with these studies, we consider three sets of explanatory variables. The first set captures hotel investment in facilities and workforce. The second is facilities-rooms, which is captured by star rating. Finally, the third set considers exogenous locational effects related to the proximity of the hotel to population centers and outstanding natural environments and endogenous locational or spatial spillover effects caused by reputation transfer.

### Customer satisfaction and delight

Customer satisfaction has been defined in numerous ways in the literature, with most definitions emphasizing the confirmation–disconfirmation process. In general, customer satisfaction can be defined as “an individual’s perception of the performance of a product or service in relation to his or her expectations.” In the context of hospitality, consumer satisfaction is defined as “the overall pleasure or contentment felt by the guest resulting from the ability of the hotel experience to fulfill the guest’s expectations and needs during their stay” (Anabila et al., 2022; Torres & Kline, 2013).

On the other hand, customer delight refers to when the experience goes beyond satisfaction and involves a pleasurable experience for the guest. Customer delight has also been described as emotions consisting of joy, excitement, thrill or exuberance and as an extreme level of satisfaction or the relationship between emotions and consumer engagement (Loureiro et al., 2020).

In the hospitality sector, hoteliers have the chance to develop customer experiences that create strongly positive emotions, including pleasure and joy, as components of service delight (Anabila et al., 2022; Loureiro et al., 2020; Torres & Kline, 2013). In the hotel industry, customer delight is a key predictor of tourists’ revisit intention. Previous research (Shoukat & Ramkissoon, 2022) has revealed a direct and positive relationship between customer delight, customer behavior, and intention to revisit a hotel. Thus, if the service offered by the hotel exceeds guests’ expectations, they will revisit that place.

### Capital and labor investment in the hotel industry

*Contribution of investment in installations to hotel score*

Hotel installations are the most tangible elements of accommodations and are therefore the easiest for customers to evaluate when assessing an establishment (Marić et al., 2016). In addition, they enable a more uniform assessment of a hotel, since although they can be subjective, their tangible nature facilitates the standardization of ratings (El-Adly, 2019; Haeruddin et al., 2022). Cherapanukorn and Charoenkwan (2017) evaluated online comments and ratings to examine hotel customer satisfaction. The authors found that overall customer satisfaction is largely influenced by tangible aspects of the hotel such as room and bathroom amenities and other available facilities.

Moreover, Hu et al. (2019) analyzed guest reviews of high-end and low-end hotels in New York City to identify factors that explain guest dissatisfaction. The results revealed that facilities-related problems are the leading cause of complaints from guests at lower-end hotels. Jedin et al. (2022) studied the importance of tangible services in the overall service experience. To this end, the authors proposed an econometric model to test to what extent the better the room facilities and amenities, the more attractive the room will be to guests. The results of the model showed that guests satisfied with the hotel facilities are more likely to become regular members and return to the hotel. Thus, these factors positively influence overall guest satisfaction and affect online hotel bookings.

Chiang and Huang (2022) found similar results in a study of 1545 reviews of budget hotels on Agoda.com and Booking.com. They examined reviews posted by six types of tourists and found that the most frequently mentioned hotel attributes were comfort of the rooms, the design and general state of the hotel facilities and the service provided. The authors recommend that hotels invest in these tangible attributes to improve guest satisfaction.

The appearance and physical characteristics of the hotel have a significant impact on tourists’ behavior. In this regard, the indoor and outdoor physical environment where the service is provided are considered essential attributes to achieve guest delight. Indoor and outdoor physical environment refers to the design and equipment of the building, the parking lot, the hotel’s colors, interior lighting, cleanliness, temperature, among other physical characteristics of the hotel (Selem et al., 2023). Previous studies (Han et al., 2020 b; Selem et al., 2023) found that the quality of a hotel’s physical environment significantly influences the consumer evaluation process, customer delight, purchasing behavior, and guest retention.

Physical elements are influential in overall customer satisfaction with the advantage that they can be controlled by hotels and therefore modified or renovated (El-Adly, 2019; Haeruddin et al., 2022). The quality of hotel facilities and rooms are positively related to customer satisfaction (Fuentes-Moraleda et al., 2020) and an essential benchmark of brand attitude and loyalty in the hotel industry (Loureiro et al., 2020). However, no studies have analyzed if increased investment in these facilities has the same effect on the degree of satisfaction for hotels that delight their customers (delight score) and hotels with median scores.

*Contribution of investment in workforce to hotel scores*

Service ratings, although susceptible to standardization, are more subjective since services are provided by people and factors such as the willingness, predisposition, reliability, responsiveness, assurance and empathy of the employees come into play (Chyi & Hee, 2022; Nguyen & Malik, 2022). Hu et al. (2022) analyzed qualitative and quantitative information on TripAdvisor about hotels in Beijing and Shanghai. The authors found that frontline employees’ interactions with guests allow the guests to visualize and anticipate the overall quality of the hotel’s service, thus highlighting the importance of empowering staff to enable them to create positive expectations and provide guests delightful experiences more effectively.

Through employee-customer interaction, these intangible components become tangible, since employees become part of the service offered and help create expectations of the hotel. Consequently, an increase in the level of guest satisfaction will generate positive e-WOM for the hotels (Chyi & Hee, 2022). Customer-staff interaction is widely recognized as being at the heart of most service experiences and has been shown to increase revisiting levels and recommendation intention (Alnawas & Hemsley-Brown, 2019). Therefore, hotel employees play an important role in guest satisfaction (Latinopoulos, 2020). In terms of the role of staff attitude and performance in guest satisfaction, several studies using big data have categorized this variable as an important factor of service quality in all types of hotels (Alrawadieh & Law, 2019; Zarezadeh et al., 2022).

Akeb et al. (2021) analyzed TripAdvisor reviews and ratings of a luxury hotel in a very touristic city and found that that staff service quality was the main cause of low ratings and negative reviews of the hotel. They also found that, from 2017 to 2019, investment in employee training had decreased and attributed the increase in negative reviews to this decrease in resources. Employees trained to deliver high quality services, such as providing personalized and unique experiences, are considered a source of competitive advantage (Alnawas & Hemsley-Brown, 2019; Panno, 2019) that positively affects hotel performance (Aakash et al., 2022), revenue maximization (Latinopoulos, 2020) and hotel scores (Nicolau et al., 2020).

Nguyen and Malik (2022) found that hotel employees’ responsiveness and empathy are key service quality factors that increase guest satisfaction. Specifically, they found that when guests make requests, and the requests are responded to promptly and effectively, guests are highly satisfied with the overall service and the hotel. The authors also point out that prompt service and responsiveness to ensure the guests’ stay is comfortable and relaxing are essential for the customer to give feedback or rate a hotel through social media or other websites such as TripAdvisor or Booking.com. Such reviews and ratings significantly affect the hotel’s marketing and reputation, as well as the purchase intention of future clients.

An analysis of negative online reviews and electronic complaints revealed that staff attitudes and performance were the most frequently mentioned aspects in luxury hotels. Online reviews also highlight staff attitudes and performance as the most common problems (Zarezadeh et al., 2022). A company that has more skilled and better qualified employees produces better results than a company with less human capital. The greater the investment in employees, the higher their performance and satisfaction and the higher the satisfaction of their customers, which is also likely to have an impact on the company’s performance (Hu et al., 2022; Xu & Gursoy, 2015).

Hotel staff (i.e., their attitude, responsiveness, personality and service delivery experience) are a key factor in providing delightful service (Wang et al., 2017). Hsieh and Chuang (2019) highlighted the importance of investing in training, education, management and the hiring of new, qualified staff to provide guests high quality service. Hiring more staff can be considered an indicator of hotel quality (Berezina et al., 2016). Having well-trained and motivated employees helps hotels improve guest satisfaction and further generate positive e-WOM. However, investing in staff is not only a question of hiring more employees. To achieve a staff adept at using technology that can have a positive effect on guest reviews and scores it is necessary to invest in their training and education (Chyi & Hee; 2022).

Trained employees with knowledge not only of the services they must provide, but also of the world outside the hotel are key to achieving high levels of customer experience quality (Alnawas & Hemsley-Brown, 2019). These authors affirm that such knowledge in staff-customer interaction makes guests feel better cared for and that their needs are meet effectively, thus resulting in customers’ satisfaction with the hotel brand.

Although most research indicates that investment in human resources is a means of differentiation from the competition, no studies have compared the role of human resources in explaining why some hotels obtain median scores, while others obtain delight scores.

### Contribution of locational factors to hotel scores

Customer satisfaction is closely related to the geographical location of the hotel (Latinopoulos, 2020). The spatial characteristics of the location where the service is provided influence service quality, hence the satisfaction of the person receiving the service (Valenzuela-Ortiz et al., 2022). Previous studies have suggested that location is an important factor in determining guest satisfaction (Alrawadieh & Law, 2019; Kim et al., 2016). In a study of online customer reviews of four types of hotels, hotel location was found to be the most important feature for guests (Xu & Li, 2016). The authors identified three sources of customer satisfaction related to hotel location: 1) accessibility to transportation; 2) walking distance from the hotel to attractions; and 3) views from hotel rooms (of parks, mountains or beaches). Therefore, the overall service experience is highly dependent on exogenous factors related to the surrounding environment of the tourist accommodation (Rukhsana & Sarika, 2020).

Two types of environments, the built and the natural environment, are essential for tourism. Valenzuela-Ortiz et al. (2022) stated that links with the built environment in the lodging industry and other sectors of the economy have advantages in terms of both supply (access to suppliers and services) and demand (lower costs for consumers). In addition, hotels close to other businesses (e.g., shopping malls, bars and restaurants, etc.) are more efficient than hotels with little accessibility to commercial areas (Latinopoulos, 2020).

Hotels located near other services also have the advantage of attracting more potential guests (Zhang & Enemark, 2016). Hotel establishments choose locations with a productive economic environment because they are highly developed areas that usually have efficient infrastructure and public services and good accessibility to tourism sites. This influences both the utility functions of tourists and the production functions of the hotel supply (Yang & Mao, 2020).

This proximity influences customer satisfaction since guests’ overall experience depends not only on the services provided by the establishment, but also on the time, effort and comfort that allows them to engage in other activities during their stay in a destination (Oviedo-García et al., 2019). However, other authors argue the opposite effect, that is, the proximity of a hotel to large population centers affects customer satisfaction negatively, since customers want to escape from the stress, confusion and difficulties of staying in a hotel in an urban area (Arbel & Pizam, 1977).

This same idea is also supported in a recent experiment where guests were shown images of the natural surroundings of a hotel and the built environment (Wang et al., 2019). The study found that participants associated greater restorative quality with hotels featuring natural rather than built scenes, as they related the natural environment with a potential for recovery from mental fatigue.

As regards the natural environment, protected areas are the natural destinations most preferred by tourists to visit (Leung et al., 2018). The availability of a natural outdoor environment (i.e., mountains, parks, lakes, rivers, forests, etc.) influences guests’ satisfaction with their hotel stay, their emotional attachment to the hotel and their willingness to return (Han et al., 2020b). In addition, these authors found a relationship between the proximity of a hotel to natural environments and respondents’ perception of well-being. That is, guests staying near natural environments experience emotional well-being and relief from anxiety and mental stress for the duration of their stay.

Some research has highlighted the importance of natural environments for people’s mental health (Han et al., 2020a, 2020b; Sohaib et al., 2022). These authors agree that the green spaces and natural surroundings of hotels have a positive and significant influence on guests’ mental health as they can reduce stress levels and mental fatigue, increase the confidence of tourists, and improve the feeling of well-being during their stay.

Another recent study found that tourists had a strong interest in the physical connection between the hotel facilities and natural spaces (Ruhanen, 2019). This may explain why an analysis of more than 3000 online tourist post-purchase reviews on TripAdvisor.com identified the accessibility and proximity of an accommodation to nature and natural attractions as a key theme in guest satisfaction.

Kankhuni and Ngwira (2022) suggested that there is a relationship between natural soundscape perceptions and tourist engagement (memorable tourism experiences). The authors used a partial least squares structural model to test 221 responses from tourists in African destinations who posted their experiences on Instagram. They found that the more engaged travelers are with the natural destination, the better the soundscape scores. In addition, most of the tourists reported positive perceptions of the natural soundscape. They stated that the natural soundscape helped them connect with local communities and other travelers, which resulted in higher overall satisfaction with the travel experience. This suggests that tourists in natural destinations tend to be more satisfied with their travel experience.

Hence, exogenous factors related to the built or natural environment of the place where the service is provided has an important impact on the overall service experience (Oviedo-García et al., 2019).

### Spatial spillover effect and reputation transfer

Spillover effects refer to the positive or negative externalities resulting from an economic activity (Bernini & Galli, 2023). In the accommodation industry, spatial spillover effects are normally positive externalities that result from the economic activity of hotels in a geographical location, which is in turn affected by the economic activity of neighboring hotels (Kim et al., 2021). Therefore, the geographic proximity of similar or related business establishments in the same cluster allows taking advantage of spatial spillovers from other business establishments in the same neighborhood in terms knowledge and labor diffusion, new technologies, competition or market access (Kim et al., 2021; Valenzuela-Ortiz et al., 2022).

Hotels located close in space share certain tangible (attractiveness of the area) and intangible (knowledge transfer) resources, which leads to reputation transfer between nearby hotels, at least when the hotels have similar standard characteristics. Geographical proximity allows firms to learn from each other, which permits hotel establishments to easily imitate certain aspects such as prices, quality of services and facilities and other non-locational characteristics (Chica-Olmo et al., 2020). These authors provided evidence of spatial spillover effects from one apartment to other neighboring apartments in a Spanish city. They found that rental prices of tourist apartments are affected not only by their own locational and non-locational attributes, but also by the prices, characteristics and services of neighboring apartments. That is, if a neighbor improves the features and services of their apartment, they will compel neighboring apartments to improve their features and services since they are direct competitors, thus indicating that tourist apartments with similar characteristics are clustered geographically.

In their study on Italian hotels using a spatial model, Bernini and Galli (2023) found that investing in labor and capital positively affects not only the productivity of the hotel itself, but also the productivity of neighboring hotels, thus giving rise to spillover effects and that different sources of innovation and investment generate spatial effects throughout the hotel sector. These results are in line with Valenzuela-Ortiz et al. (2022), who showed that investment and structural and reputational factors have direct and indirect spillover effects on hotel revenue in Spain. Specifically, they found that hotel improvements not only have a positive effect on the hotel’s revenue, but that such investments also have a marginal effect on nearby hotels. For example, if a hotel manager decides to invest in hiring more employees, this decision will also benefit nearby hotels, as it will be relatively easy to find skilled staff. These externalities arising from the innovative activity of neighboring hotels extend throughout the space, generating positive feedback for nearby hotels (Bernini & Galli, 2023).

According to Park and Chen (2017), however, spatial spillover effects do not occur only between business establishments within the same cluster, but also between nearby regions (towns, cities), what is known as the cross-city spillover effect. Small or less developed cities benefit from neighboring cities by mutually contributing to tourism development. The authors argue that the hotel industry in one region influences the number of guests in nearby hotels and hotels in other nearby regions. That is, a hotel in a specific region can be influenced (positively or negatively) by the strategies of adjacent hotels.

Considering the above arguments, it is assumed that some degree of spatial contagion is also likely in online ratings since customer scores are affected by the scores given to neighboring hotels. Thus, the online rating score of a hotel located in a geographical area may be affected (positively or negatively) by the opinions of other customers who have stayed in neighboring hotels, thus giving rise to spatial spillover effects through reputation transfer. One of the reasons for this spillover effect is the imitation effect among customers. That is, the presence of spatial autocorrelation is expected in the scores. Therefore, hotels with similar characteristics are likely to present similar ratings showing spatial groupings or clusters.

While this is to be expected in hotels with median scores, the characteristics of hotels with delight scores (i.e., those that seek differentiation, avoid standardization and offer tourists a unique experience) may differ greatly from their nearby competitors in space and the effect of reputation transfer may be low. Thus, by offering something different and unique that is valued as such by the client, investments are protected and reputation transfer to nearby competing hotels is avoided.

## Methodology and data

### Sample and variables

The data used in this study were selected from ORBIS Bureau Van Dijk, a global database that gathers financial, commercial and structural data from companies in a variety of sectors. Only individual hotels are considered in the study. Hotel chains are only included when individual data are available for each hotel separately. Specifically, information was collected for 965 hotels in Spain in 2018. Spain is considered among the most competitive economies in the world in terms of travel and tourism (World Economic Forum, 2019b). In 2018, Spain ranked second among the most visited tourist destinations in the world (UNWTO, 2019a). In the last ten years it has remained among the top three destinations in the world for inbound tourism (UNWTO, 2019b) and ranked second in number of arrivals in 2021 in the post-COVID recovery period (UNWTO, 2022). Spain’s main attractions are its natural and cultural offerings, and it is the third country in the world with the best tourism infrastructure services, including a high density of hotels (World Economic Forum, 2019a).

The scores and star ratings of the hotels under study were obtained from Booking.com in 2019. Booking.com is one of the most popular websites for travelers where they can rate the overall quality of hotel services through a 10-point rating system and comment on their experiences (Mellinas et al., 2016). Booking.com is a world leader in online accommodation bookings. In 2018, the company reported 760 million rooms occupied per night (Forbes, 2019), that is, two million rooms are booked per night on average, and it has more than 28 million accommodation options in 227 countries around the world (Booking.com, 2020). For this reason, hotel managers often analyze online ratings of hotels, especially those with high scores, as a starting point to attract potential customers (Radojevic et al., 2017)

The website uses the median score customers give to some hotel attributes (e.g., cleanliness, comfort, staff, location, services) to calculate hotels’ overall scores (Nicolau et al., 2020). Numerous studies have considered Booking.com’s hotel scores (Mellinas et al., 2016; Nicolau et al., 2020) to study factors that lead guests to rate hotels based on their level of satisfaction.

For the purposes of this study, the factors that may explain hotel scores are classified into three groups: investments (in capital and workforce), facilities-rooms (star ratings) and both exogenous location (proximity to cities with more than 100,000 inhabitants and proximity to protected natural areas) and endogenous location (spatial spillover effect). The variable *Workforce* represents the number of hotel workers (Mavrommati et al., 2018), while capital investment is represented by fixed asset investment (Pestana-Barros & Almeida, 2006), which is the maximum level of detail offered by ORBIS. To compare the results between hotels with different installed capacity, both variables were relativized by dividing them by sales in thousands of euros.

To account for facilities-rooms, a control variable based on the number of stars was used. We include a dummy variable that takes the value of 1 for 4- or 5-star hotels and 0 otherwise, since hotels in these categories are considered comparable in terms of facilities and rooms (Andersson, 2010).

The location of each hotel was obtained from the geographic coordinates provided by Booking.com. In the case of hotel chains, the location was determined for each establishment. The Euclidean distance in kilometers from each hotel to the protected natural areas of Spain and to Spanish cities with more than 100,000 inhabitants was calculated using geographic information systems. Regarding protected areas, in Spain there are approximately 1,800 legally protected sites for nature conservation purposes, which represent more than 27% of the land surface and almost 13% of the ocean surface (Ministry of Industry, Trade and Tourism, 2019). Finally, population centers with more than 100,000 inhabitants have been considered given that these medium or large-sized urban areas offer a wide range of services for tourists, which favors the evaluation of the stay (Oviedo-García et al., 2019; Zhang & Enemark, 2016; Barros, 2005). In Spain there are 63 cities with more than 100,000 inhabitants, accounting for 40% of the total inhabitants in the country.

Table 1 shows the descriptive statistics of the study variables. The median score of the sample on Booking.com is 8.5. In 2018, Spanish hotel accommodations ranked second among countries with the largest number of Guest Review Awards; an award Booking.com gives to the best accommodations worldwide.

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Figure 1 shows the location of the hotels included in the sample together with the respective values of the variable *Booking* and the spatial estimates obtained using the kriging method (Cressie, 1991). This method allows estimating the variable of interest (Booking hotel\_score) at any point on the plane assuming that it is spatially autocorrelated. These estimates are shown by means of choropleths that represent zones with similar estimated values of the score, thus indicating how the scores are spatially distributed. As shown in the figure, there are some areas, especially in the south, north and northeast, where hotels with high scores are concentrated (warm colors), while low and medium score values are distributed throughout the peninsula (cold colors). This indicates that the hotel scores are not spatially distributed in a purely random manner.

In geostatistics, variograms are used to detect the presence of spatial autocorrelation. The variogram shown in Figure 2 indicates that as the distance between hotels increases (h), the variability (Gamma(h)) also increases, in other words, the spatial autocorrelation decreases. Thus, it is observed that the variability of the score between hotels close to each other (e.g., at a distance of 10 km) is lower than the variability between hotels farther away from each other. As can be seen in the figure, the variogram tends to stabilize at a distance equal to or greater than approximately 24 km, that is, the variability of the score between hotels at a distance of more than 24 km remains stable. This distance or range indicates the radius of influence in the spatial autocorrelation structure. The figure also shows that the value of the nugget effect (which measures spatial randomness) accounts for 55% of the total variability represented by the sill ((0.145/(0.145+0.119))\*100=55), thus indicating moderate spatial dependence (Rouhani et al., 1996). These results are in agreement with those obtained with the Moran’s *I* test, which detected global autocorrelation (*I* = 0.1425, *p* < 0.000), thus indicating the presence of spatial clusters in this variable.

It is important to note that part of the detected spatial autocorrelation will be determined by exogenous locational factors such as distance to natural resources or cities and by endogenous factors such as the imitation effect. To filter out the effect of exogenous factors and thus capture to a greater extent the effect of reputation transfer for both medium and high levels of satisfaction, a spatial econometric model using spatial quantile regression including the spatial spillover effect is justified, as discussed in the following section.

### Data analysis strategy

Quantile regression has recently become an alternative to traditional regression models, especially in hospitality and tourism research (Assaf & Tsionasb, 2018), since it allows estimations for a given quantile using all cases in the sample by applying different weightings to positive and negative residuals (Koenker & Hallock, 2001). According to Buchinsky (1994), it is not sufficient to estimate mean effects when studying a heterogeneous population. Unlike conventional regression models, quantile regression belongs to the family of robust models and enables evaluating the effects of the independent variables on different quantiles of the dependent variable in a general way (Koenker & Hallock, 2001), especially in contexts where extreme cases are of interest, as in our case.

Given the objectives of the present research, the use of quantile regression is justified to examine whether there are differences in the coefficients at different points of the conditional distribution of the Booking.com ratings of the hotels under study. In particular, we are interested in analyzing the determinants that explain the ratings that give hotels a competitive advantage by comparing the quantiles representing the midpoint and the guest delight value. In the management and economics literature it is common to use quantiles of 0.50 and 0.95, respectively, to specify medium or very high scores of the dependent variable (Korobilis, 2017). When the data are geo-referenced, it is possible to consider the presence of spatial dependence (Kostov, 2009), that is, to quantify the spillover effect on neighboring hotels. The generalization of the quantile regression of the (linear) spatial lag model could be written as:

(1)

Where is the quantile of the dependent variable for which the estimation is made, is the vector of parameters accompanying the matrix X of explanatory variables (investment in capital and labor, distance to cities with more than 100,000 inhabitants and to protected natural areas and number of stars), is a spatial lag parameter representing the spatial spillover effect, W is the matrix of spatial weights determined according to the type of neighborhood considered and is the spatially lagged variable. Given that the spatial parameter is dependent on , the model allows for different degrees of spatial dependence at different points of the distribution, essentially making it a nonlinear model. The procedure used in this work has been proposed by Kim and Muller (2004). In this study, two hotels are considered neighbors if the distance between them is less than or equal to 24 km. Thus, a binary weight matrix W has been specified such that the elements of the matrix take the value of 1 if a hotel is within a radius of 24 km and 0 if the hotel is farther away. This radius has been determined from the range obtained previously in the variogram. Subsequently, this matrix is standardized by rows so that each row adds up to 1. To determine this radius, the value of the range of the variogram was used as the distance, as shown in Figure 2.

## Results

Equation 1 shows the model proposed to estimate each of the Booking score quantiles associated with the median score and the delight score. The estimates of the model coefficients were obtained using R package {McSpatial}, which tests for the existence of a spatial spillover effect considering quantiles 0.50 and 0.95 of the variable Booking hotel\_score. When the coefficient of “Wy” of expression (1) is positive, it indicates the presence of positive spatial dependence (i.e., hotels close in space with similar scores), which may be due to reputation transfer between neighboring hotels.

Table 2 shows the results of the quantile regression. Investment in physical capital has a significant and positive effect in determining the median-score in Booking, but not in delight-score hotels (RQ1). Investment in workforce shows the opposite effect. It is not significant at the 50th quantile, but it has a positive influence to explain very high scores in Booking. This result supports our theory regarding the higher relevance of this factor in guest delight (RQ2). This result is justified because investment in capital is considered a necessary but insufficient condition for hotels that aim to delight their customers, while the sufficient condition would be investment in high value-added services where staff is the differentiating factor (Fuentes-Moraleda et al., 2020).

The variable proximity of hotels to protected natural areas has a significant effect on both quantiles of the regression (RQ3.1). The signs of the coefficients of proximity to these places are negative due to the inverse relationship between the hotel score and the distance to these areas. As for proximity of hotels to cities with more than 100,000 inhabitants, this variable has a significant effect in both quantiles of the regression (RQ3.2). However, the signs of the coefficients of accessibility to these cities are positive, thus indicating a direct relationship between the hotel score and distance to these towns, that is, hotels that are further away from cities have higher scores. There is no consensus in the literature as to whether location in urban settings has a positive (Barros, 2005; Oviedo-García et al., 2019) or negative effect (Arbel & Pizam, 1977; Wang et al., 2019). Our results offer empirical support for this second tendency based on the need of guests to escape from the stress, confusion and difficulties associated with staying in hotels located in urban areas.

Additionally, the spatial spillover effect shows a positive and significant effect on hotels with intermediate scores in Booking.com but does not affect hotels with delight scores (RQ4). This suggests that hotels committed to delighting their customers protect themselves from the effects of reputation transfer, thus preventing their investments from generating value for the competition due to a singularity effect in consumers (the hotel stands out from other hotels in its surroundings).

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INSERT TABLE 2 ABOUT HERE

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## Discussion of results

Given that hotel scores are considered essential indicators of customer satisfaction, it is important to determine the main attributes of a hotel that guests value to differentiate it from the competition (Nicolau et al., 2020). Using spatial quantile regression, this study explored the effects of labor and capital investment and locational factors on hotel scores, specifically the median score (0.50) and the delight score (0.95) quantiles. The findings indicate that (1) investment in physical capital has a positive and significant effect on median-score hotels; (2) investment in human capital has a positive and significant effect on delight-score hotels; (3) the proximity of hotels to protected natural areas and cities has a significant effect on both median-score and delight-score hotels and (4) there is a spatial spillover effect caused by reputation transfer between neighboring hotels with median scores. A detailed discussion of the findings is presented below.

The results support the argument that physical capital investment in hotels is an influential factor in overall customer satisfaction. In this regard, guests use their sense of sight to evaluate service quality and guest perception is influenced by strong physical evidence. Physical capital is one of the factors that affects visitors’ expectations because they have higher expectations when there is strong physical proof (Haeruddin et al., 2022). This result is congruent with the study of Jedin et al. (2022) and Cherapanukorn and Charoenkwan (2017) who showed that facilities are a significant factor in customer satisfaction. Furthermore, Chiang and Huang (2022) pointed out that equipment and facilities received the most positive online reviews regarding the overall state of the accommodation. The fact that so many people have given these attributes positive reviews suggests that tourists value and consider the facilities and tangible services offered by hotels to be important. Facilities are an important factor in achieving guest satisfaction since without the proper facilities, guests can easily become dissatisfied. However, our results show that a hotel’s physical capital may satisfy guests but not delight them. Although the physical appearance of a hotel is an important measure of the service it provides, it does not generate high enough expectations to be able to delight guests. These results could be explained by the fact that although hotels often invest in upgrading their facilities, these are differentiation strategies that can be easily imitated by competing hotels, while providing a delight service is not as easy to replicate (Anabila et al., 2022). These findings are in line with Marić et al. (2016), who confirmed that in the hospitality industry, consumers typically attach more value to intangible characteristics (e.g., personalized guest attention). This suggests that investments hotels make to improve their facilities do not alone generate such high expectations nor do they have the potential to delight guests. Rather, it is guests’ general experience, not only in a physical space but emotionally, that will provide a feeling of delight.

The findings confirm that hotels that have invested in staff achieve delight scores in their overall rating. Guests are more likely to be pleased with the general service and the hotel if they believe that the staff provides high-quality service (Chyi & Hee, 2022; Hsieh and Chuang, 2019). For guests, trust in hotel staff, personalized attention, and the accuracy and speed of service are very important (Marić et al., 2016). In a similar line, previous studies, such as Hu et al. (2022), Latinopoulos (2020) and Akeb et al. (2021), showed that guest–staff interactions play an important role in increasing customer satisfaction. The helpful behaviors of hotel employees, such as a smile, prompt assistance and professional service, can easily make a good impression on customers. Negative interactions between staff and customers could have an unfavorable impact on the overall customer experience, leading to poor evaluations of hotel services (Alnawas & Hemsley-Brown, 2019).

Indeed, providing guests an exceptional service will ensure customer delight. However, not all hotels invest in staff and therefore not all of them succeed in delighting their guests. This is because staff accounts for the largest cost of hotel establishments and they therefore try to optimize this resource by standardizing their services to the greatest possible extent. As a result, most hotels in a geographical area offer a very similar catalog of services and staff to provide these services in a similar way (Jian-Wu et al., 2020). However, only those hotels that invest in staff competencies and skills will be able to create a competitive advantage in service delivery (Panno, 2019) and achieve customer delight (Wang et al., 2017). The ability and capacity of employees to provide unique ways to deliver services is costly to imitate and is therefore idiosyncratic to the firm and a sustained competitive advantage (Panno, 2019). Hiring more employees can be an indicator of the quality of service provided by the hotel. This is because hotels with more employees are able to provide faster and more personalized service to their customers, which reduces waiting time and leads to customer delight (Berezina et. al., 2016; Chyi & Hee, 2022; Marić et al., 2016).

Our results also indicate that the proximity of hotels to protected natural areas and cities has a significant effect on both median-score and delight-score hotels. Location plays an important role in the satisfaction of hotel guests. Previous studies, such as Xu and Li (2016) and Rukhsana and Sarika (2020), examined the determinants of online customer reviews and found that accessibility to transportation, attractions, and views from hotel rooms of parks, mountains or beaches improve the overall service experience. These findings highlight the importance of factors related to the environment surrounding the tourist accommodation and reveal that the natural environment provides more satisfaction to tourists. Previous studies, such as Breiby and Slåtten (2018) and Wang et al. (2019), found that the natural environment in which the tourism experience occurs predominates over the built environment in customer satisfaction and that hotels in natural areas will therefore receive higher service quality ratings. The availability of green spaces and a natural outdoor environment can be crucial factors in enhancing visitors’ well-being and mental health. In turn, these attributes will influence guests’ satisfaction with their stay and create a sentimental connection to the hotel and their willingness to return to the hotel (Han et al., 2020a, 2020b). Moreover, this finding reinforces previous results showing that natural factors affect tourists’ experiences and behaviors to a greater extent than built environments (Breiby & Slåtten, 2018). This can be explained by the positive impacts that a hotel’s natural environment has on guests. For example, being able to walk or ride a bike in the hotel’s natural environment improves physical health through recreational exercise, thus contributing to guests’ mental health by alleviating stress and fatigue (Leung et al., 2018; Sohaib et al., 2022).

Perceived well-being in the hospitality and tourism industry is particularly important as guests frequently seek happiness, relaxation, refreshment, excitement or health when staying at a resort hotel or traveling on a cruise (Han et al., 2020b). Additionally, previous research (Latinopoulos, 2020; Zhang & Enemark, 2016) has highlighted that hotels close to other businesses and services have the advantage of satisfying their guests and attracting a larger number of potential travelers, which can be explained by the fact that urbanized areas are an indicator of the services available to guests during their stay. Thus, location is an important and significant factor in guest satisfaction in all types of hotels, as well as for guests in Airbnb apartments (Yang & Mao, 2020). Similar results were reported by Alrawadieh and Law (2019), who found that tourists give positive comments to hotels near points of interest such as shopping malls, cafes and galleries since they have a positive effect on guest satisfaction.

Additionally, our results confirm the presence of spatial spillover caused by reputation transfer between neighboring hotels with median scores. In addition to the direct effects of proximity to certain areas of interest on scores given by hotel customers, it is also interesting to examine whether these scores are influenced by those of neighboring hotels. Studies have shown that establishments with the same characteristics located in the same cluster create specialized zones that cause spillover effects due to the transfer of knowledge, innovation and reputation, thus increasing the productivity of the sector (Kim et al., 2021; Valenzuela-Ortiz et al., 2022).

In this regard, a spatial spillover effect is observed for hotels with median scores, indicating the possible presence of spatial contagion. However, the same is not true for hotels with delight scores. That is, reputation transfer occurs between hotels with intermediate scores. This finding reinforces previous results that have shown a significant relationship between online consumer ratings of hotels in a city and online consumer ratings of other hotels in the same city (Park & Chen, 2017). A possible explanation for this is that online guest reviews for hotels generate e-WOM effects and reputation on nearby hotels in addition to “my” hotel. In the case of top-rated hotels (quantile 0.95) this effect has not been detected. This may be because service providers do not exploit the benefits of agglomeration as much to delight these customers but rather create a differential competitive advantage. According to Wang et al. (2017), delightful services are not easily imitable by competitors and thus protect the investment made against reputation transfer to neighboring hotels.

## Conclusions and theoretical and managerial implications

This study contributes to the literature on agglomeration economies in the hospitality industry by exploring the effects of capital and staff investment and locational factors for hotels with median scores and hotels very high scores. Most studies in the literature have analyzed the effects of these factors on average customer hotel ratings. Examining the determinants of very high scores or delight scores of guests can provide insight into how to increase hotel service quality and customer satisfaction.

The study also contributes to the literature on spatial spillover effects and customer ratings by examining the contagion effect between nearby hotels. Although previous studies, such as Chica-Olmo et al. (2020) and Valenzuela-Ortiz et al. (2022), have examined spatial spillover effects on room price or hotel revenue, few have measured the spatial spillover effects on customer ratings in the agglomeration economies literature.

The results of this study offer guidance on how the hotel industry can use e-WOM to provide excellent customer service. By analyzing hotel customer ratings, the study emphasizes the importance of consumer-generated e-WOM and suggests that hotel managers frequently monitor the ratings and reviews of their service to propose strategic efforts and address relevant problems raised by guests.

Since the content of online reviews and ratings can influence tourists’ decisions, hotel managers should value this content and identify the factors that are best rated and evaluated by guests. Such information can be used to prioritize actions for quality improvement that can, in turn, lead to better feedback. In this way, hoteliers could improve customer satisfaction and delight and achieve higher positive online customer ratings and feedback in the future. This approach opens a new channel of communication with potential customers and demonstrates the importance of managers’ commitment to achieving customer satisfaction and delight.

Using hotel ratings, we have identified the important role facilities play in guest satisfaction. In this regard, our findings indicate that hoteliers should seek to make both indoor and outdoor hotel facilities as pleasant as possible to delight tourists. However, investment in these facilities is insufficient to delight clients. This study has demonstrated that investment in staff and having a good location are the most influential factors to achieve guest delight. We have shown the importance of understanding the role of staff and the surrounding environment of the hotel in customer satisfaction and online hotel ratings. In this regard, hotel practitioners need to invest in these factors to achieve guest delight; for example, by hiring new employees or training staff to provide customers a delightful experience.

Our findings also identify locations that appear to be ideal for hotel development and highlight the importance of choosing a good location for potential new hotels. Optimally, hotels should be located in natural surroundings. In this regard, hotel location choice is a strategic decision for hoteliers since accommodations in natural environments have a significant impact on tourism demand, as well as customer satisfaction and well-being.

Moreover, managers of hotels located in natural environments should understand how to manage and preserve these areas as a strategy to enhance customer satisfaction and delight. This could include taking actions such as limiting noise pollution, reducing pollution in nearby areas, protecting natural habitats, and other similar measures. By prioritizing the natural environment and the soundscape, hotel managers could increase tourists’ satisfaction with their travel experiences and potentially enhance positive WOM recommendations.

Urban planners should also be encouraged to invest in the development of areas where hotels are located, such as providing access to natural spaces and adequate communications infrastructures. These locational characteristics can influence the overall experience of hotel guests and in turn influence the ratings they give hotels with respect to the service provided. This comprehensive understanding of factors can also contribute to long-term tourism planning and enhance the formulation of effective actions and pricing strategies for existing hotels.

Hotel investments aimed at increasing customer delight will not only result in improved reputation but can also protect these hotels from the reputation transfer effect observed in hotels with median scores. Faced with new crises in the tourism sector, the results of this research take on greater importance. For hotels in operation, the results allow identifying their capacity for structural resilience (due to location) in terms of maintaining a high score, but they are also relevant to identify the most efficient areas for investment (staff) in a period that will be marked by scarce liquidity.

## Limitations and future research

Despite the considerable effort made, a few limitations of the study must be acknowledged. First, we collected data from Booking.com but did not consider different types of travelers. We used Booking.com scores for hotels, which mix the opinions of travelers with different travel motivations. Therefore, future research could analyze tourist segments separately to determine if different types of travelers (e.g., business and leisure travelers) have different preferences in terms of hotel attributes. Additionally, further studies could consider demographic variables, such as age, gender, occupation, or nationality, that might influence hotel guests’ preferences or needs, since knowledge of these variables could aid hoteliers in targeting personalized services to each segment.

As concerns hotel category, our study considered star rating as a reflection of the category. However, it is increasingly common to differentiate hotel establishments using less concise categories, such as boutique hotels, unique hotels, eco-hotels, and others. These categories are related to the way in which the accommodation service is provided and can therefore condition customer satisfaction; a topic that could be of interest in subsequent studies.

This study only considered hotels in Spain listed on Booking.com. Although Spain is one of the most popular travel destinations worldwide, it would be convenient to validate these results in other destinations such as developing countries that present significant differences in terms of staff skills and may have disadvantaged social environments and degraded natural environments.

Finally, our study has shown that having properly trained staff and being located in a protected natural area are factors that contribute to hotel guest delight. Effective employee management is related to principles of good governance, while location in natural areas is associated with the need to conserve the environment (ecology). In future research, it would be interesting to examine how social factors related to the coexistence of tourists and residents affects guests’ hotel ratings. Further analyses could also focus on how environment, society and governance (ESG) factors related to location can contribute to improving guest experience and provide hotels added value.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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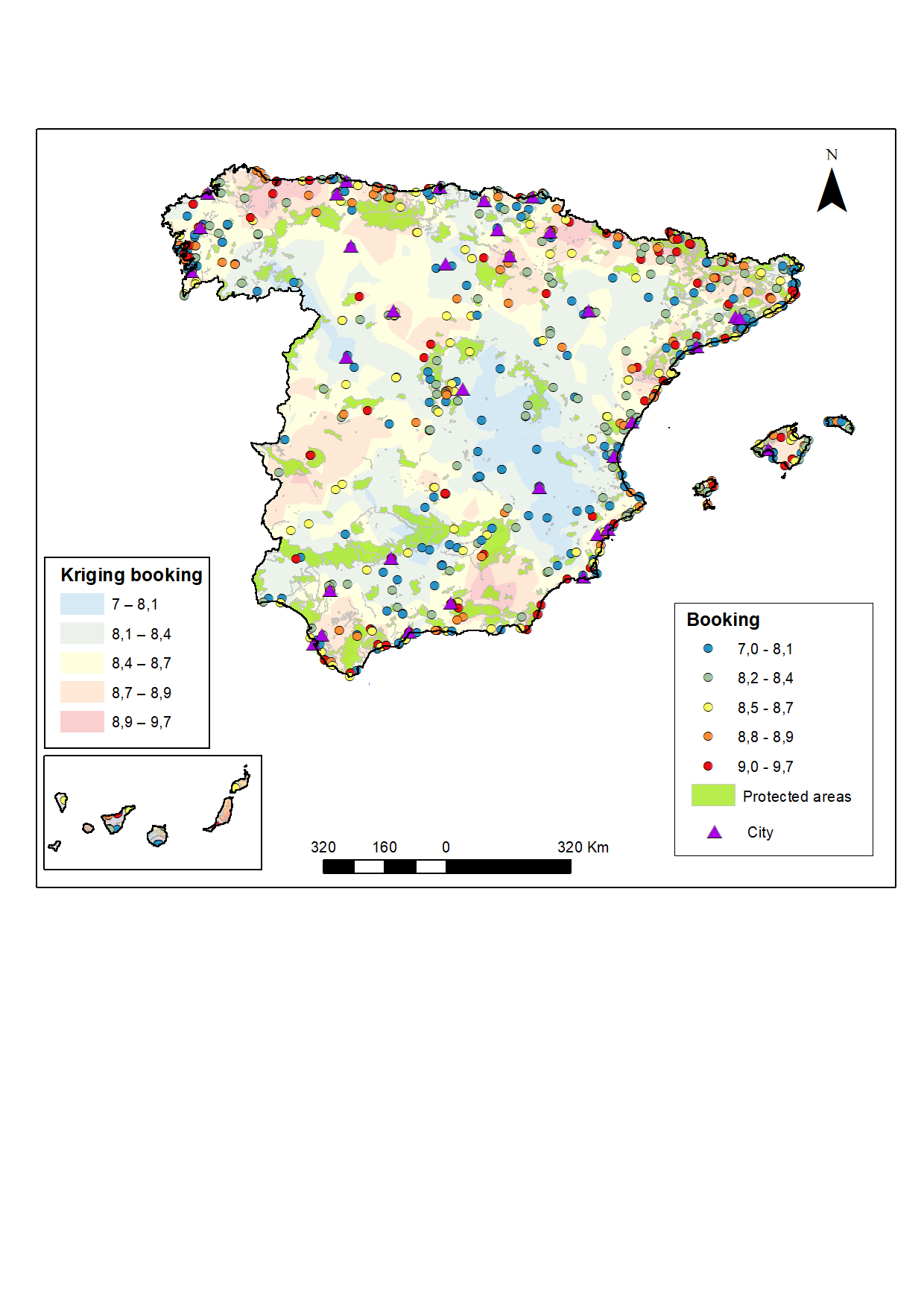
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Table 1. Descriptive statistics of study variables.

|  |  |  |
| --- | --- | --- |
| Variables | Mean or % | SD |
| Booking hotel\_score | 8.500 | 0.521 |
| Investment | | | |
| Capital (in thousands of euros) | 2886.84 | 5368.75 |
| Workforce (no. of employees) | 21.69 | 28.19 |
| Facilities-rooms | | | |
| Star rating (4 o 5 stars) | 27.98% |  |
| Locational factors | | | |
| Dist\_ProtAreas (distance in km to protected areas ) | 6.36 | 8.35 |
| Dist\_ Cities (distance in km to cities with more than 100,000 inhabitants) | 60.34 | 318.79 |

Table 2. Results of the quantile regressions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 50th quantile | | 95th quantile | |
|  | Coef. | Pr(>|z|) | Coef. | Pr(>|z|) |
| (Intercept) | 8.42 | 0.001 | 8.91 | 0.001 |
| Workforce | -8.65 | ns | 11.57 | 0.05 |
| Capital | 0.04 | 0.001 | 0.02 | ns |
| Dist\_Protareas | -0.01 | 0.001 | -0.01 | 0.001 |
| Dist\_Cities | 0.001 | 0.002 | 0.001 | 0.001 |
| Star-rating | 0.23 | 0.001 | 0.13 | 0.04 |
| Wy | 0.02 | 0.001 | 0.003 | ns |

Figure 1. Booking hotel scores, places of interest and kriging estimation

Variograma.emfFigure 2. Experimental variogram and model of scores.