The power of price and quality to explain customer satisfaction through spatial analysis

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Abstract

Customer experience is a relevant concept in marketing and tourism research since its correct understanding allows companies to achieve competitive advantage and service providers can reach several outcomes such as customer engagement, loyalty and customer satisfaction. This chapter aims to analyze one of the main outcomes of the customer experience, the customer satisfaction through online reviews and using spatial analysis as a tool to incorporate the contextual nature of the customer experience. Thus, our study considers online rating as a measure of customer satisfaction and tries to analyze the impact of actions under the control of the service provider (price and objective quality) and actions under the control of the customer (subjective quality) on customer satisfaction.

With the Spanish hotel industry as a study framework, an empirical study is developed to analyze, through geographically weighted regression techniques, the relationship between price, objective quality and subjective quality and online ratings given by consumers with a sample of 1870 of geolocated hotels in Spain. The findings show how a premium price, depending on the geolocation, is an indicator for better customer experiences and they also show that objective quality is the antecedent of customer experience whose positive effect on customer satisfaction is geographically more widespread. Results show contradictory effects of subjective quality, while in some areas subjective quality does not match the product fit of customers, in others it allows hotels to provide more satisfactory experiences.

Keywords: Price; Quality**;** Customer satisfaction**;** Customer experience**;** Online review**;** Spatial analysis

Introduction

Nowadays, the customer experience (CX) has become a relevant topic in marketing research due to the companies can achieve competitive advantage through meaningful customer experience (Lemon & Verhoef, 2016; McColl-Kennedy et al., 2015). Through CX both customers and service/product providers can achieve several outcomes, such as emotions, value and utility (customer-related outcomes) or engagement, loyalty and customer satisfaction (brand-related outcomes) (Godovykh & Tasci, 2020). For this reason, CX is a concept with great scope in various areas of research such as economics, psychology or marketing, so that there is a profusion of studies related to CX (Adhikari & Bhattacharya, 2016).

Also, in tourism and hospitality the CX plays an important role (Pizam, 2010), since both areas are dedicated to providing experiences to consumers (Bueno et al., 2019) that they cannot enjoy in their daily routine life (Cohen, 1979) so travellers are deeply focused on their experiences related to travel and lodging (Smith, 1994). Consequently, from a services management perspective, it is essential that services providers consider CX in the design of their offer to attain a better position in the marketplace with respect to their competitors (Cetin & Dincer, 2014).

Due to the great interest that the CX concept has generated in the tourism context, previous literature has provided a plenty of conceptualizations (Godovykh & Tasci, 2020) that show CX as a multidimensional concept that requires an integration of different perspectives (Klaus & Maklan, 2012). Thus, Godovykh and Tasci (2020) consider that CX encompasses several components (affect, cognition, sensory, and conation) affected by situational, brand-related and customer-related antecedents that eventually can produce several brand-related and customer-relate outcomes.

Due to the complexity of the conceptualization of CX, despite extensive previous studies that have addressed the relationship between antecedents and outcomes of CX in the tourist context (Ali et al., 2018; Cetin & Dincer, 2014; Chen & Chen, 2010; Khan et al., 2015; Tapar et al., 2017), a more in-depth analysis is necessary given the diversity of antecedents and outcomes. Thus, this chapter aims to analyze how price and objective quality, as brand-related antecedents, and subjective quality, as customer-related antecedent (Godovykh & Tasci, 2020; Jaziri ,2019) influence a brand-related outcome, the customer satisfaction. Customer satisfaction is essential to achieve competitive advantage (Bueno et al., 2019) and through customer satisfaction brands and companies can achieve other outcomes related with CX such as loyalty, word-of-mouth or revisit intention (Ali et al., 2018; Khan et al., 2015; Tapar et al., 2017).

For it, we will consider the hotel industry as a study framework, and we will use the rating of the services provided from online reviews as a proxy measure of customer satisfaction. Online reviews, as a prevalent form of eWoM (Hong & Pittman, 2019), currently plays a relevant role as a source of information for both customers and service providers in an e-commerce context (Engler et al., 2015) and it can be a convenient tool to better understand CX (Robertson et al., 2021). Also, previous studies have shown that online ratings represent a reliable measure of customer satisfaction with the service provided (Engler et al., 2015).

Since CX and customer satisfaction have a situational antecedent (Godovykh & Tasci, 2020), for a more appropriate analysis, it is necessary to incorporate the context of the experience (McColl-Kennedy et al., 2015). Additionally, in the tourism context, it is necessary to correctly understand the spatial patterns of tourist behavior for better destination management and planning (Ye et al., 2018) and concerning customer satisfaction, there is spatial autocorrelation in the online reputation of companies since location is a relevant factor in online reputation (Alvarez Leon et al., 2021;

Radojevic et al., 2017). Also, there is a spatial relationship between positive assessment from customer and location of companies in areas with a high mixture of urban functional units that allow access to various public facilities and the impact of some factors on online rating can vary in space (Zhai et al., 2015). However, to the best our knowledge, there are few previous studies that attempt to analyze customer satisfaction through the geolocated information provided by user generated content (Latinopoulos 2020; Zhai et al., 2015) and they do not analyze factors such as price or subjective quality.

To fill this gap, our proposal incorporates the geolocation of the hotel as a methodological innovation to incorporate the context of CX. The use of geolocated information through the geographic information system (GIS) has enabled to acquire knowledge about certain phenomena of interest in various areas (Nicholls & Kim, 2019) and specifically in marketing research where fields such as geomarketing or geocompetition have emerged recently so that geolocated information is a key aspect to improve the efficiency of marketing actions and achieve competitive advantage (Illescas-Manzano et al., 2021). Thus, through geolocation, we can use spatial analysis as a tool to analyze whether the impact of price, objective quality and subjective quality on customer satisfaction can vary spatially. Furthermore, our work also incorporates geolocation to analyze the contradictory effect of price from previous studies (Abrate et al., 2021; Cao et al., 2003; Martin Fuentes, 2016; Ye et al., 2014) and attempts to clarify the confrontation of Expectancy-disconfirmation versus placebo effect in the hospitality context (Abrate et al., 2021). Finally, regarding quality (objective and subjective) our work tries to analyze in a geolocation context how quality can enhance satisfactory experiences (Iacobucci, et al., 1995)

However, spatial analysis requires more sophisticated techniques to accounts for spatial heterogeneity and spatial dependence (Nicholls & Kim, 2019), such as Geographically Weighted Regression (GWR) that can locally explore the relationship between the dependent and explanatory variables and enable us to incorporate geolocated data in the model estimation (Fotheringham et al., 2003). Our proposal aims to illustrate with a sample of geolocated Spanish hotels, how GWR can be applied through the R software (Team R Core, 2021) to incorporate the contextual context of CX for a better analysis of the relationship between customer satisfaction and price, objective quality and subjective quality.

Our proposal is intended to provide several contributions. Firstly, our work covers both customer-related and service provider-related antecedents to analyze their relationship with customer satisfaction and thus achieve a better understanding of CX. Secondly, our proposal also incorporates the situational component of CX through the spatial analysis, so that it encompasses the multiple dimensions of CX. Finally, our work is a new contribution to use the information provided by online reviews as a tool to achieve greater knowledge about CX.

The chapter is organized as follows. First, in section 2, we will review the previous literature about the relationship between CX and customer satisfaction. Also, we will highlight how online reviews can be a useful tool to monitor customer experiences with the company services and we will review the relationship among antecedents of CX and customer satisfaction and the relationship between CX and spatial analysis. Secondly, in Section 3 we will propose our model and describe the estimation method and its assumptions. Thirdly, in Section 4 results from model estimation will be showed. Finally, in Section 5, the conclusions will be explored.

Literature review

Relevance of customer satisfaction in customer experience studies

Although CX and customer satisfaction share common components such as emotional and cognitive components (Godovykh & Tasci, 2020), CX and customer satisfaction are different concepts (Garbarino & Johnson, 1999) that are strongly related (Godovykh & Tasci, 2020) and both topics are relevant topics in the tourism context (Bueno et al., 2019; Chen & Chen, 2010; Tapar et al., 2017).

Firstly, following Westbrook and Oliver (1991), customer satisfaction can be considered as a post-consumption evaluation of a specific purchase. From a tourism perspective, satisfaction is one of the most studied topics through several frameworks (Tapar et al., 2017) and it is considered as a subjective post-assessment of the whole tourism experience (Pizam et al., 1978) where experience factors have stronger impact than other factors (Baker & Crompton, 2000), given that tourism is an industry that provides unique experiences that customer cannot enjoy in their daily routine (Cohen, 1979).

Secondly, following Godovykh and Tasci (2020), CX can be consider as "the totality of cognitive, affective, sensory, and conative responses, on a spectrum of negative to positive, evoked by all stimuli encountered in pre, during, and post phases of consumption affected by situational and brand-related factors filtered through personal differences of consumers, eventually resulting in differential outcomes related to consumers and brands".

Consequently, CX is a broader construct comprising customer satisfaction as a brand-related outcome and the previous literature argued that through its different components, it fosters the customer feelings which can influence the customer satisfaction (Godovykh & Tasci, 2020) due to satisfaction is primarily affected by experience factors (Baker & Crompton, 2000). This relationship has been empirically verified by previous studies in several contexts (Andersson & Mittal, 2000; Pareigis et al., 2011) and specially in tourism context (Ali et al., 2018; Cetin & Dincer, 2014; Chen & Chen, 2010; Khan et al., 2015; Tapar et al., 2017).

On the other hand, customer satisfaction is an essential concept to attain a better understanding of CX (Westbrook & Oliver, 1991) and its cognitive component (Jaziri ,2019). Its achievement can make it easier for companies to attain other outcomes related to CX such as loyalty (Ali et al., 2018; Khan et al., 2015), word-of-mouth (Khan et al., 2015) or revisit intention (Tapar et al., 2017). Thus, CX and customer satisfaction are different concept that both share a beneficial relationship (Fornell, 1992).

Relevance of online reviews in customer experience studies

The great technological advance experienced in recent years has been a great ally of companies when it comes to understanding and improving the customer experience (Bolton et al., 2018). In this way, the online environment allows customers to share their opinions and experiences (Van Esch et al., 2018) where sensations, pleasure, fulfillment and enjoyment occupy the first position when customers want to express their customer experience (Jaziri, 2019). Thus, the online environment is a relevant source of information for both customer and companies to monitor customer experiences with the company services through, for example, online reviews (Engler et al., 2015; Robertson et al., 2021), a prevalent form of eWoM (Hong & Pittman, 2019), that currently plays and essential role in the customer journey (Moran et al., 2014).
The online customer reviews include customers' experiences with product/service quality which can influence the consumer purchase decisions and product sales (Chen & Xie, 2008). Consequently,

companies can obtain information about the customer experience through automated text analysis tools and know what their customers think about their products and services and identify any problems (Balducci & Marinova, 2018) to enrich their marketing strategy (Cui et al., 2012). In fact, Robertson et al. (2021) have confirmed how online reviews are an effective tool to achieve a better knowledge of a CX.

On the other hand, online reviews include a series of metrics to support consumers in their purchases, the online rating being one of the most persuasive (Hong & Pittman, 2019). Recently, the previous studies have shown the relationship between online rating, CX and customer satisfaction (Engler et al., 2015; Robertson et al., 2021). Thus, Engler et al. (2015) confirmed that online ratings represent in a convenient way the customer's satisfaction with the service or product provided while Robertson et al. (2021) demonstrated how high-scoring online reviews provide a better user experience versus low-scoring reviews and online rating can be seen as a proxy measure for direct customer satisfaction measures. In fact, the previous literature recently (Latinopoulos 2020; Radojevic et al., 2017) has considered online ratings in the analysis of customer satisfaction.

Antecedents of customer experience and customer satisfaction

As a broad construct, the CX can include a plenty of antecedents that can influence the customer behavior (Godovykh & Tasci, 2020). Previous research has shown factors such as advertising (Bapat, 2018), social environment and self-service technologies (Verhoef et al., 2009) can drive CX. Specifically, in tourism, CX can be driven by antecedents as tourist engagement (Melón et al., 2021; Rather, 2020), destination image (Melón et al., 2021), interactions with the staff and other customers (Ali et al., 2018), involvement, motivation or knowledge (Prebensen et al., 2014).

Despite the plenty of antecedents that CX can include, following Godovykh and Tasci (2020), we distinguish between brand-related and customer-related antecedents. Among the former, we analyze price and the objective quality, while among the latter, we analyze subjective quality (Godovykh & Tasci, 2020; Jaziri , 2019).

Concerning price, it is a key factor that influence the consumer post-purchase satisfaction (Varki & Colgate, 2001) whose impact has been debate in marketing literature due to the existence of two contradictory directions. Firstly, when consumers face a purchase with uncertainly about product/service quality, price can be considered for several customers as a pre-purchase signal related to product/service quality (Völckner & Hofmann, 2007). Consequently, under this approach based on the expectation disconfirmation theory (EDT) (Oliver, 1980), price influences negatively the customer satisfaction (Abrate et al., 2021; Ye et al., 2014) through the mismatch between their expectations and the real experience consumption. On the other hand, low prices can raise doubts about the quality of the products/services (Raab et al., 2009) and it may negatively influence overall satisfaction (Cao et al., 2003; Martin-Fuentes, 2016). Additionally, there is a placebo effect related to high price that supports the increase in consumers' expectations and the enhancement of behavioral performance, and it can improve the customer experience (Kim & Jang, 2013). Concerning this contradictory effect, within the hospitality context, Abrate at al. (2021) analyzed the confrontation of Expectancy-disconfirmation versus placebo effect and Chen et al. (2015) suggested an inverse U-shape relationship between price and customer satisfaction.

Concerning objective quality, it is related to the degree of excellence of product/service performance (Kwark et al., 2014) and it has been identified as key factor in the customer selection behavior for marketing research (Zeithaml, 1988). Before purchase, consumers must deal with the product/service quality uncertainty for finding a desired level of quality (Dimoka et al., 2012), and all consumers agree on the preference for high quality over low quality, all things being equal so quality uncertainty is related with vertical differentiation (Kwark et al., 2014). Products/services from

brands and services providers may exhibit vertical differentiation in terms of quality (Cremer & Thisse, 1991) and, consequently, the customer expectations with a product/service can vary depending on quality differentiation (Manes & Tchetchik, 2018). Expectation Confirmation Theory (Anderson & Sullivan1993) postulates that customer expectations related to quality can influence customer satisfaction to the extent that the product/service can exceed, match or not meet quality expectations. In hospitality research, the role of quality as a predictor of customer satisfaction has been empirically confirmed (Martin-Fuentes, 2016; Radojevic et al., 2017). In fact, hotel category is a vertical differentiation factor of service quality provided by hotels and a convenient predictor of customer satisfaction (Martin-Fuentes, 2016).

Concerning subjective quality, most products/services are a mix of objective attributes and subjective attributes which evaluation before purchase is harder than objective ones. In addition to vertical differentiation, products/services may exhibit horizontal differentiation in terms of customer preference (Cremer & Thisse, 1991). Therefore, before a purchase, customer face product fit uncertainty on the horizontal quality/preference dimension (Hong & Pavlou 2014). The product/service fit is customer specific because it refers to the subjective preferences of customer for the same attribute (Kwark et al., 2014). Product fit uncertainty arises when consumers have difficulty evaluating whether the horizontal differentiation of a product/ service matches their subjective preferences (Hong & Pavlou, 2014).

On the other hand, customers can use online reviews as a source of information to reduce product fit uncertainty and choose the product that best suits their needs (Hong & Pavlou, 2014). However, product/services with higher levels of horizontal differentiation are more influences by the self-selection bias, that is, how the positive bias generated by the early customer experiences can led future buyers to wrong decisions, due to different preferences to early customers. These mistaken choices can originate mismatch between expectations and experience subjective quality that can impacts on customer satisfaction (Li & Hitt, 2008). Therefore, horizontal differentiation of product/service as a subjective quality can influence customer satisfaction.

Finally, our study aims to analyze if the client is more satisfied with a better service offer from the company and how quality (objective and subjective) can provide more satisfactory experiences (Iacobucci, et al., 1995).

Customer experience and spatial analysis

The context where the consumption occurs can influence the CX (Lemond & Verhoef, 2016) since all experience occurs in some place, which inevitably produces a relationship among the customer, the experience and the surrounding environment (Jaziri, 2019). Thus, the specific environment in which an experience occurs can act as a driver of the CX (Godovykh & Tasci, 2020) through the externalities and amenities associated to this environment (Lemond & Verhoef, 2016).

In tourism, where an accurate understanding of the spatial patterns of tourist behavior is essential for destination management and planning (Ye et al., 2018), this role of the environment as an antecedent of CX is even more relevant, since tourists can be attracted by a specific physical environment and the perception of it by the customers can influence their satisfaction and their intention towards positive behaviors such as word of mouth (Han & Ryu, 2009). Tourists, during their tourist experience, spend long periods of time in the surroundings of their hotel, whose location can also influence the places visited (Shoval et al., 2011). Consequently, both in tourism and hospitality, the environment of the experience must be incorporated into the analysis for a better understanding of CX (McColl-Kennedy et al., 2015)

Nowadays, there is an important interaction between social media and geolocated information (Nara et al., 2018), so the availability of geolocated information has increased, especially in tourism (García-Palomares et al., 2015). This issue has promoted the use of spatial analysis techniques for example in the assessment of tourist hot spots (García-Palomares et al., 2015) or destinations (González-Ramiro et al., 2016). Also, in hospitality research, geolocation has been employed in the analysis of hotel location decisions (Fang et al., 2019), pricing (Latinopoulos, 2018) or hotel performance (Urtasun & Gutiérrez, 2017).

Concerning geolocation and customer satisfaction in tourism, customer satisfaction is higher in urban contexts than in coastal contexts, and in both contexts the hotel location can cause differences in customer satisfaction (Alvarez Leon et al., 2021). Also, the spatial autocorrelation in the online reputation of companies has been verified since location is an especially relevant factor in online reputation (Alvarez Leon et al., 2021; Radojevic et al., 2017). Despite this, to the best our knowledge, few previous studies in tourism research have addressed the incorporation of spatial analysis to achieve a better understanding of customer satisfaction (Latinopoulos 2020; Zhai et al., 2015), but they show that the influence of some factors on customer satisfaction can vary geographically and the existence of a spatial relationship between customer satisfaction and location in areas with a plenty of urban functional units (Zhai et al., 2015). Also, the customer assessment of hotel location can influence the overall customer satisfaction related with hotel services and features (Latinopoulos 2020).

Our proposal aims to incorporate the situational factors in the analysis of the relationship between antecedents of CX and customer satisfaction through the spatial analysis. To incorporate this spatial dependence between customer satisfaction and location, we will use GWR (Fotheringham et al., 2003) that considers a no static relationship between antecedents of CX and customer satisfaction that depends on the geographical location.

Methodology

Research framework, variables and model specification

To analyze the impact of the antecedents of CX on customer satisfaction, we have considered the Spanish hotel industry in the pre-Covid19 era as an area of study. Specifically, the dataset collects data from 1870 Spanish hotels in the year 2017, when Spanish tourism industry showed outstanding figures related to both international arrivals and international tourism revenues (UNWTO, 2018) and the main reason was to analyze the CX in a context of normality, since the situation generated by the pandemic can significantly affect how customer feel the tourism experience. To obtain the database, the information system of Veturis.com, an international travel agency, was used together with web analysis techniques to crawl the information of the hotels directly from their web pages through the “Rcrawler” package (Khalil & Fakir, 2017) from R software. Finally, with the GPS coordinates obtained, the geolocation of the hotels was carried out through the R package "sf" (Pebesma, 2018).

Regarding the variables, the customer satisfaction is the dependent variable of the analysis and is denoted by ***Satisfaction***. To measure the customer satisfaction with hotels, we consider the yearly average rating made by users. As mentioned in the previous section, the online review rating is a reliable measure of customer satisfaction (Engler et al., 2015). Specifically, the online review rating ranges from zero (the worst valuation) to ten (the best valuation).

On the other hand, we consider the following antecedents of CX as explanatory variables:

- ***Price***. This variable is the annual average room rate for a standard double room in each hotel during the year 2017.
- ***O_Quality***. This variable represents the objective quality and it measures the official hotel category, from one to five stars, assigned by the agencies based on Spanish regional regulations. Hotel category is a trustworthy indicator of service quality and all consumers agree with hotel category as a ranking of hotel quality (Silva, 2015).
- ***S_Quality***. The horizontal differentiation in the services offered by each hotel has been measured with a product differentiation distance measure (Chisholm et al., 2010):

$$(\mathrm{Dif})_{\mathrm{i}} = \min_{\mathrm{j}} \left(\cos^{-1} \frac{\mathrm{V_i} \cdot \mathrm{V_j}}{\|\mathrm{V_i}\| \cdot \|\mathrm{V_j}\|} \right) / \left(\frac{\pi}{2} \right)$$

  where V_i is a vector with 71 dummy variables that represent the services available in a hotel and that include services such as available sports activities, food services and hotel style. The range of ***S_Quality*** goes from 0 to 1 (from minimum differentiation to maximum horizontal differentiation).

For all variables in the sample, Table 1 provides the main descriptive statistics.

Table 1: Sample descriptive statistics

Variable	Min	Median	Mean	St. dev.	Max
Satisfaction	0.200	7.600	7.510	0.841	10
Price	24.960	62.180	74.760	60.408	1224
O_Quality	1	4	3.453	0.793	5
S_Quality	0	0.460	0.452	0.372	1

The GWR method considers a non-static relationship between the dependent variable and explanatory variables throughout the study area (Fotheringham et al., 2003) and for every unit included in the sample it estimates a different set of regression parameters. For it, GWR considers spatial weights for the observations according to their geographical locations. Thus, we propose the following model to analyze the impact of antecedents of CX on customer satisfaction for each sample unit with vector of location coordinates u:

$$\boldsymbol{Satisfaction}_{\mathrm{i}}(\mathrm{u}) = \alpha_0(\mathrm{u}) + \beta_1(\mathrm{u})\boldsymbol{Price}_i + \beta_2(\mathrm{u})\boldsymbol{O\_Quality}_i + \beta_3(\mathrm{u})\boldsymbol{S\_Quality}_i + \boldsymbol{\varepsilon_i}$$

where β_i are coefficients estimated by:

$$\beta(u) = (X^T W(u) X)^{-1} X^T W(u) \cdot eWOM$$

and W(u) is the geographical weighting matrix of each observation for the model estimation of the sample unit with geographical coordinates u and X denotes the matrix with explanatory variables. For this analysis, W(u) is calculated with an adaptive bi-square spatial kernel function based on Euclidean distance and the adaptive kernel bandwidth required is defined as a fixed number of nearest neighbors based on their spatial location. The optimization of the kernel bandwidth is

obtained through the minimization of AICc (the corrected Akaike Information Criterion score; Hurvich et al., 1998).

Results

Firstly, previously to the model estimation with GWR, we obtained its estimation using OLS and we analyzed the spatial autocorrelation of customer satisfaction and residuals from OLS by the Moran's I statistic whose results show a positive spatial autocorrelation (Table 2).

Table 2. Moran's I tests for customer satisfaction and residuals from OLS

	Moran's Index	Expected Index	Variance	p-value
Satisfaction	0.052	-5.4E-4	0.008	3.5E-11
Residual	0.038	-5.4E-4	0.008	1.1E-6

Secondly, a relevant issue in GWR is the analysis of both global and local multicollinearity (Gollini et al., 2015). We calculated variance inflation factor values (VIF) and condition numbers (CN). To detect global and local multicollinearity, we consider the following thresholds, VIFs greater than 10 and CN greater than 30 (Gollini et al., 2015). Table 3 shows that global and local CN and VIFs values are below the respective threshold. Thus, the proposed model does not have multicollinearity problems.

Table 3. Multicollinearity Statistics

	Global	GWR					
		Min	0.25	Median	Mean	0.75	Max
CN	11.61	9.59	11.18	11.66	12.38	13.22	17.70
Variable				VIF			
Price	1.035	1.004	1.032	1.048	1.074	1.063	1.349
O_Quality	1.035	1.001	1.021	1.039	1.067	1.075	1.297
S_Quality	1.001	1.000	1.005	1.018	1.023	1.036	1.074

Results from GWR estimation are showed in Table 4 that also provides the following measures AIC, AICc, R^2 value and adjusted R^2 (Fotheringham et al., 2003). For R^2 value, Figure 1 shows its spatial distribution. Local values of R^2 value varies from 0.1216 to 0.3469 and from Figure 1, the biggest values of R^2 are located in the Autonomous Community of the Canary Islands, Murcia and Alicante show the highest R squared values and it suggests that the relationship between antecedents and customer satisfaction is stronger in these areas than in other areas of Spain. On the other hand, the areas with the smallest R^2 are Catalonia, Balearic Islands, Asturias, Cantabria and areas in Aragon, so in these areas, customer satisfaction may be influenced by other antecedents of CX (customer-related antecedents such as interaction with hotel staff members, interaction with other customers).

Table 4: GWR model estimation

	GWR					
	Min	**0.25**	**Median**	**Mean**	**0.75**	**0.9**
Intercept	5.0021	6.0173	6.1361	6.0880	6.2466	6.6134
Price	-0.0009	0.0008	0.0011	0.0016	0.0023	0.0074
O_Quality	0.2514	0.3439	0.3687	0.3900	0.4264	0.5664
S_Quality	-0.4191	-0.3183	-0.0921	-0.1167	-0.0105	0.6434
Local R^2	0.1216	0.1483	0.2225	0.2110	0.2395	0.3469
R^2	0.2119					
Adj R^2	0.1908					
AIC	4250.403					
AICc	4292.584					

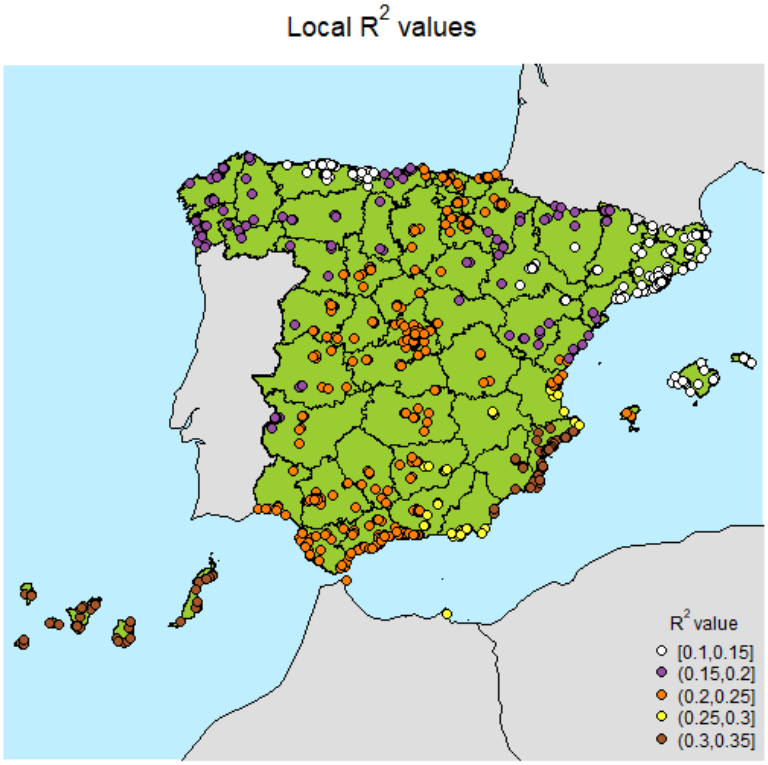

Figure 1: Local R^2 values from GWR

The model estimation from GWR shows strong evidence of spatial variation in some coefficient values. Thus, Table 4 shows show a wide range of values for the coefficient of ***S_Quality***, specifically it ranges from negative value -0.4191 to positive value 0.6434. To test the significance of spatial variation in the coefficients values of each explanatory variable, a F3 test was performed (Leung et al., 2000) and its results confirm the significance of spatial variation in the coefficients values of all explanatory variables (Table 5).

Table 5: Significance of spatial variation

	Price	**O_Quality**	**S_Quality**
F3 statistic	3.717	1.191	1.420
p-value	2.2E-16***	0.0023***	2.2E-16***

*Significant at 5%

**Significant at 1%

***Significant at 0.1%

Figure 2 displays the spatial distribution of coefficients and significance values (p-value) for each antecedent of CX included in the analysis. The last ones can be used to show, in an informal sense, which areas have a statistically significant relationship between each antecedent and customer satisfaction (Latinopoulos, 2018). The coefficients for ***Price*** range from -0.0009 to 0.0074 but it has no significance in areas with negative impact. Thus, the impact of ***Price*** on customer satisfaction is significantly positive in the central area of the country, with the strongest impact of price on customer satisfaction, southeast, northwest regions and Menorca. Thus, hotels in these areas can achieve higher customer satisfaction through high prices because the premium price meets the customer expectations.

Objective quality is the antecedent whose effect on customer satisfaction is more geographically widespread. Figure 2 shows that its impact is significant throughout Spain, but the intensity of its effect varies spatially. The areas with the strongest effect are Canary Islands, Salamanca, Navarre, Valladolid, Ibiza, Alicante, Valencia and some areas in Basque Country, La Rioja, Huesca, Zaragoza, Soria, Zamora, Palencia, Caceres and Murcia.

Subjective quality is the antecedent whose significant effect on customer satisfaction is less widespread, but its range is the highest. Thus, in the east of the country, Andalusia, Ceuta, Melilla Castellon and some areas in Tarragona, the effect associated with subjective quality is negative on customer satisfaction whereas in Canary Islands it shows a significantly positive effect.

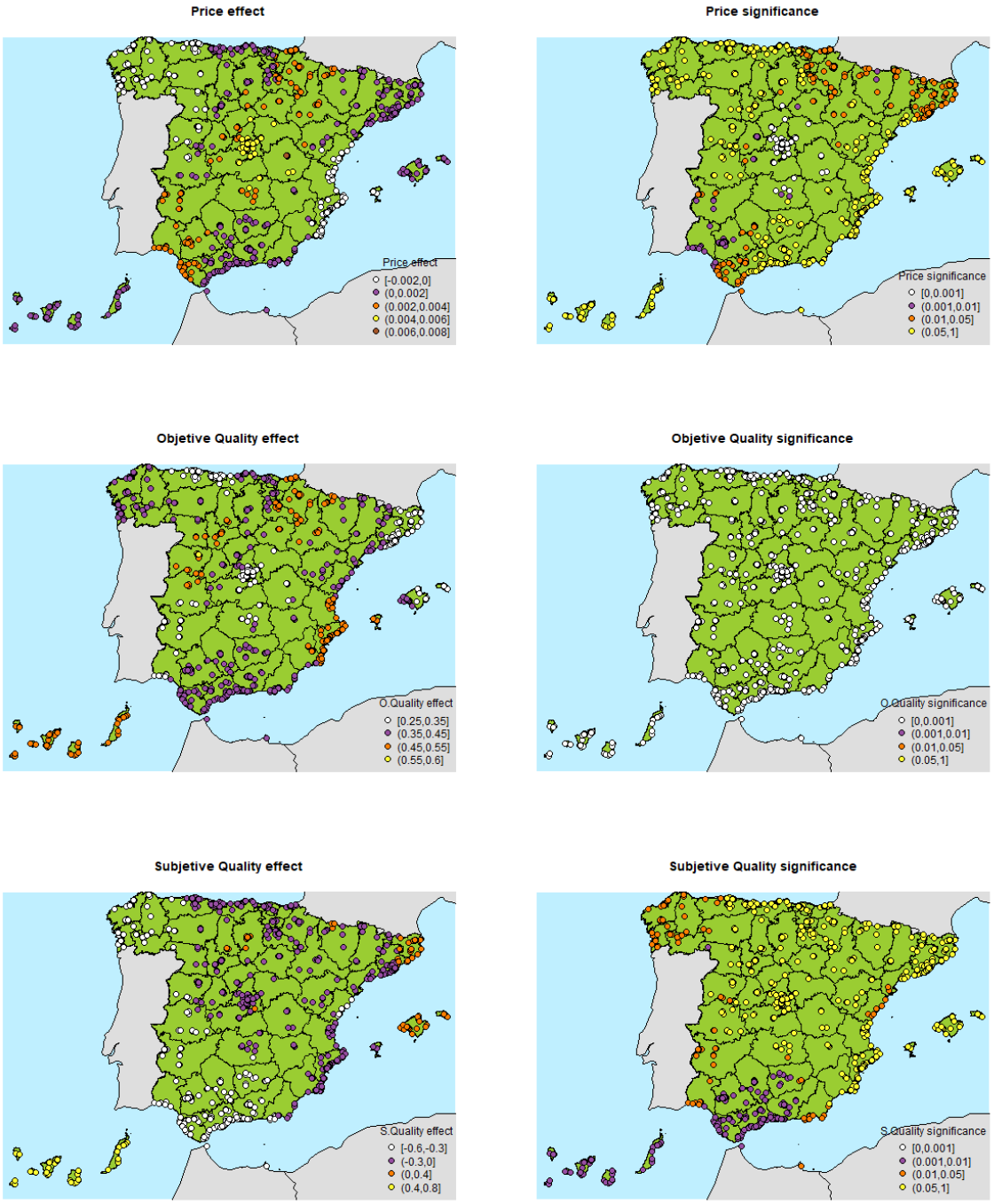

Figure 2: Spatial distribution for antecedents' effect and antecedents' significance

Conclusions

From our work, several theoretical and practical contributions can be established. From theoretical contributions, firstly our work shows the usefulness of spatial analysis for a better understanding of CX and particularly the usefulness of GWR to model the impact of CX antecedents on customer satisfaction and shows that the relation of price, objective quality and subjective quality with customer satisfaction is not static. In fact, there are geographic areas where the proposed model has

less explanatory power (lower value of R^2), which may be due to the fact that in areas such as Asturias, Catalonia, Cantabria, Galicia or the Balearic Islands, the regional legislation regarding the official hotel category does not capture as much effectively the objective quality of hotels as in other geographical areas (Núñez-Serrano et al., 2014). Additionally, previous research has found that other factors not considered in our study such as interaction with the hotel staff, the hotel location and country of origin of customers can affect customer satisfaction in Asturias (Vega et al., 2015), Catalonia (De Carlos et al., 2019; Leon, 2019; Alvarez Leon et al., 2021), Galicia (De Carlos Villamarín et al., 2018; Santos-Rodrigues & Caridade, 2021) or the Balearic Islands (Kozak, 2001).

Secondly, our work highlights the role of geolocation to reconcile contradictory results from previous studies (Abrate et al., 2021; Cao et al., 2003; Martin Fuentes, 2016; Ye et al., 2014), and unlike Abrate et al. (2021), it links the confrontation of Expectancy-disconfirmation versus placebo effect to geolocation.

Thirdly, our result showed that the objective quality is the antecedent of CX whose effect is geographically more widespread in the Spanish hotel industry, and it can bring more satisfactory experiences, in accordance with Martin Fuentes (2016) and Radojevic et al. (2017), while the effect of subjective quality shows two contradictory effects linked to geographic location, expanding previous studies on subjective quality (Li & Hitt, 2008).

Regarding the practical implications, our work provides a thematic map (Zhai et al., 2015) of the Spanish hotel industry. Thus, hotel managers are provided with critical references for choosing better pricing strategies and better service offer and it can help the unpopular hotels improve their service. Hoteliers must link premium pricing decisions to geolocation in order to provide more satisfying experiences. Also, the map shows how the heterogeneity of the regional regulation of the hotel category in Spain (Núñez-Serrano et al., 2014) originates a shifting positive effect of the objective quality. Finally, there are areas where the horizontal differentiation does not match the product fit of customers, while in other areas, the hotels provide satisfactory experiences to customers through a differentiated services offer.

Among the limitations, firstly we can mention the incorporation of others customer antecedents of CX in the modeling through GWR of customer satisfaction. Secondly, future works can consider the spatial analysis of other outcomes of CX and its relationship with customer satisfaction. Also, future works can consider alternative measures for CX, and customer satisfaction related with user generated content through computerized text analysis (Robertson et al., 2021). Finally, in order to incorporate properly the situational component of CX, future works can consider mixed spatial models (Latinopoulos, 2018) for better modeling of customer satisfaction.

Glossary

Customer experience: It is a broader concept than customer satisfaction. It encompasses the totality of cognitive, affective, sensory, and conative responses evoked by all stimuli encountered in pre, during, and post phases of consumption, affected by situational and brand-related factors filtered through personal differences of consumers, eventually resulting in differential outcomes related to consumers and brands

electronic Word-of-Mouth: any consumer-generated statement, made available to other actual or potential consumers through any media supported by the Internet.

Geocompetition: It is the competitor analysis based on location characteristics, such as socio-demographic characteristics of the local population, store characteristics, or the level of competition in the trading area.

Geolocalization: Also called geopositioning, geolocating or geotracking, it is the process of determining or estimating the geographic position of an object (i.e., a company, a point of sale, a consumer).

Geographic information system: any manual or computer-based set of procedures used to store and manipulate geographically referenced data. However, nowadays all contemporary information systems are computer based.

Geomarketing: Also called marketing geography, it is the use of information based on location for planning and implementing marketing activities. Most of social media tools and applications include location as part of the information provided.

Online review: consumer-generated content oriented to share consumers' experiences for other consumers. However, it can be considered a synonymous term for eWOM.

Spatial analysis: It is a type of geographical analysis that consist of the process of analyzing a phenomena using their topological, geometric, or geographic information.

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References

Abrate, G., Quinton, S., & Pera, R. (2021). The relationship between price paid and hotel review ratings: Expectancy-disconfirmation or placebo effect?. *Tourism Management*, *85*, 104314.

Adhikari, A., & Bhattacharya, S. (2016). Appraisal of literature on customer experience in tourism sector: Review and framework. *Current Issues in Tourism*, *19*(4), 296-321.

Ali, F., Kim, W. G., Li, J., & Jeon, H. M. (2018). Make it delightful: Customers' experience, satisfaction and loyalty in Malaysian theme parks. *Journal of Destination Marketing & Management*, *7,* 1-11.

Alvarez Leon, I., Cavallin, A. & Louzao, N. (2021). City or beach hotel? Location as a determinant of customer satisfaction and room rate. *International Journal of Tourism Cities*, 7(2), 278-293.

Anderson, E. W., & Mittal, V. (2000). Strengthening the satisfaction-profit chain. *Journal of Service Research*, *3*(2), 107-120.

Anderson, E. W., & Sullivan, M. W. (1993). The antecedents and consequences of customer satisfaction for firms. *Marketing Science*, *12*(2), 125-143.

Balducci, B., & Marinova, D. (2018). Unstructured data in marketing. *Journal of the Academy of Marketing Science*, *46*(4), 557-590.

Bapat, D. (2018). Exploring advertising as an antecedent to brand experience dimensions: an experimental study. *Journal of Financial Services Marketing*, *23*(3), 210-217.

Bolton, R. N., McColl-Kennedy, J. R., Cheung, L., Gallan, A., Orsingher, C., Witell, L., & Zaki, M. (2018). Customer experience challenges: bringing together digital, physical and social realms. *Journal of Service Management*, *29*(5), 776-808.

Bueno, E. V., Weber, T. B. B., Bomfim, E. L., & Kato, H. T. (2019). Measuring customer experience in service: A systematic review. *The Service Industries Journal*, *39*(11-12), 779-798.

Cao, Y., Gruca, T. S., & Klemz, B. R. (2003). Internet pricing, price satisfaction, and customer satisfaction. *International Journal of Electronic Commerce*, *8*(2), 31-50.

Cetin, G., & Dincer, F. I. (2014). Influence of customer experience on loyalty and word-of-mouth in hospitality operations. *Anatolia*, *25*(2), 181-194.

Chen, C. F., & Chen, F. S. (2010). Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tourism Management*, *31*(1), 29-35.

Chen, Y., & Xie, J. (2008). Online consumer review: Word-of-mouth as a new element of marketing communication mix. *Management Science*, *54*(3), 477-491.

Chen, C. M., Yang, H. W., Li, E. Y., & Liu, C. C. (2015). How does hotel pricing influence guest satisfaction by the moderating influence of room occupancy?. *International Journal of Hospitality Management*, *49*, 136-138.

Chisholm, D. C., McMillan, M. S., & Norman, G. (2010). Product differentiation and film-programming choice: do first-run movie theatres show the same films?. *Journal of Cultural Economics*, *34*(2), 131-145.

Cohen, E. (1979). A phenomenology of tourist experiences. *Sociology*, *13*(2), 179-201.

Cremer, H., & Thisse, J. F. (1991). Location models of horizontal differentiation: a special case of vertical differentiation models. *The Journal of Industrial Economics*, *39*(4), 383-390.

Cui, G., Lui, H. K., & Guo, X. (2012). The effect of online consumer reviews on new product sales. *International Journal of Electronic Commerce*, *17*(1), 39-58.

De Carlos, P., Alén, E., Pérez-González, A., & Figueroa, B. (2019). Cultural differences, language attitudes and tourist satisfaction: a study in the Barcelona hotel sector. *Journal of Multilingual and Multicultural Development*, *40*(2), 133-147.

De Carlos Villamarín, P., Vila, N. A., & Brea, J. A. F. (2018). Patrones valorativos en establecimientos hoteleros de Galicia, España. *Revista Venezolana de Gerencia*, *23*(84).

Dimoka, A., Hong, Y., & Pavlou, P. A. (2012). On product uncertainty in online markets: Theory and evidence. *MIS Quarterly*, *36*(2), 395-426.

Engler, T. H., Winter, P., & Schulz, M. (2015). Understanding online product ratings: A customer satisfaction model. *Journal of Retailing and Consumer Services*, *27*, 113-120.

Fang, L., Li, H., & Li, M. (2019). Does hotel location tell a true story? Evidence from geographically weighted regression analysis of hotels in Hong Kong. *Tourism Management*, *72*, 78-91.

Fornell, C. (1992). A national customer satisfaction barometer: The Swedish experience. *Journal of Marketing*, *56*(1), 6-21.

Fotheringham, A. S., Brunsdon, C., & Charlton, M. (2003). *Geographically weighted regression: the analysis of spatially varying relationships*. John Wiley & Sons.

Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust, and commitment in customer relationships. *Journal of Marketing*, *63*(2), 70-87.

García-Palomares, J. C., Gutiérrez, J., & Mínguez, C. (2015). Identification of tourist hot spots based on social networks: A comparative analysis of European metropolises using photo-sharing services and GIS. *Applied Geography*, *63*, 408-417.

Godovykh, M., & Tasci, A. D. (2020). Customer experience in tourism: A review of definitions, components, and measurements. *Tourism Management Perspectives*, *35*, 100694.

Gollini, I., Lu, B., Charlton, M., Brunsdon, C., & Harris, P. (2015). Gwmodel: An R package for exploring spatial heterogeneity using geographically weighted models. *Journal of Statistical Software, 63*(17), 1-50.

González-Ramiro, A., Gonçalves, G., Sánchez-Ríos, A., & Jeong, J. S. (2016). Using a VGI and GIS-based multicriteria approach for assessing the potential of rural tourism in Extremadura (Spain). *Sustainability*, *8*(11), 1144.

Han, H., & Ryu, K. (2009). The roles of the physical environment, price perception, and customer satisfaction in determining customer loyalty in the restaurant industry. *Journal of Hospitality & Tourism Research*, *33*(4), 487-510.

Hong, Y., & Pavlou, P. A. (2014). Product fit uncertainty in online markets: Nature, effects, and antecedents. *Information Systems Research*, *25*(2), 328-344.

Hong, S., & Pittman, M. (2020). eWOM anatomy of online product reviews: interaction effects of review number, valence, and star ratings on perceived credibility. *International Journal of Advertising*, *39*(7), 892-920.

Hurvich, C. M., Simonoff, J. S., & Tsai, C. L. (1998). Smoothing parameter selection in nonparametric regression using an improved Akaike information criterion. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, *60*(2), 271-293.

Iacobucci, D., Ostrom, A., & Grayson, K. (1995). Distinguishing service quality and customer satisfaction: the voice of the consumer. *Journal of Consumer Psychology*, *4*(3), 277-303.

Illescas-Manzano, M. D., Martínez-Puertas, S., & Sánchez-Pérez, M. (2021). The use of geolocation for competition analysis of destinations: Application to the hotel supply in Barcelona. In V. Bevanda & S. Štetić (Eds.), *5th International thematic monograph Modern management tools and economy of tourism sector in present era* (pp. 585-599). Association of Economists and Managers of the Balkans.

Jaziri, D. (2019). The advent of customer experiential knowledge management approach (CEKM): The integration of offline & online experiential knowledge. *Journal of Business Research*, *94*, 241-256.

Khalil, S., & Fakir, M. (2017). RCrawler: An R package for parallel web crawling and scraping. *SoftwareX*, *6*, 98-106.

Khan, I., Garg, R. J., & Rahman, Z. (2015). Customer service experience in hotel operations: An empirical analysis. *Procedia-Social and Behavioral Sciences*, *189*, 266-274.

Kim, D., & Jang, S. S. (2013). Price placebo effect in hedonic consumption. *International Journal of Hospitality Management*, *35*, 306-315.

Klaus, P., & Maklan, S. (2012). EXQ: a multiple-item scale for assessing service experience. *Journal of Service Management*, *23*(1), 5–33.

Kozak, M. (2001). Comparative assessment of tourist satisfaction with destinations across two nationalities. *Tourism management*, *22*(4), 391-401.

Kwark, Y., Chen, J., & Raghunathan, S. (2014). Online product reviews: Implications for retailers and competing manufacturers. *Information Systems Research*, *25*(1), 93-110.

Latinopoulos, D. (2018). Using a spatial hedonic analysis to evaluate the effect of sea view on hotel prices. *Tourism Management*, 65, 87-99.

Latinopoulos, D. (2020). Analysing the role of urban hotel location in guests' satisfaction. *Anatolia*, *31*(4), 636-650.

Leon, R. D. (2019). Hotel's online reviews and ratings: a cross-cultural approach. *International Journal of Contemporary Hospitality Management*, *31*(5), 2054-2073.

Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, *80*(6), 69-96.

Li, X., & Hitt, L. M. (2008). Self-selection and information role of online product reviews. *Information Systems Research*, *19*(4), 456-474.

Manes, E., & Tchetchik, A. (2018). The role of electronic word of mouth in reducing information asymmetry: An empirical investigation of online hotel booking. *Journal of Business Research*, *85*, 185-196.

Martin-Fuentes, E. (2016). Are guests of the same opinion as the hotel star-rate classification system?. *Journal of Hospitality and Tourism Management*, *29*, 126-134.

McColl-Kennedy, J. R., Gustafsson, A., Jaakkola, E., Klaus, P., Radnor, Z. J., Perks, H., & Friman, M. (2015). Fresh perspectives on customer experience. *Journal of Services Marketing*, *29*(6-7), 430-435.

Melón, M. P. A., Fandos-Herrera, C., & Sarasa, R. G. (2021). Analysis of antecedents and consequences of memorable tourist experiences (MTEs): A Spanish case study. *Journal of Vacation Marketing*, *27*(3), 346-360.

Moran, G., Muzellec, L., & Nolan, E. (2014). Consumer moments of truth in the digital context: How "search" and "e-word of mouth" can fuel consumer decision making. *Journal of Advertising Research*, *54*(2), 200-204.

Nara A., Tsou MH., Yang JA., & Huang CC. (2018) The Opportunities and Challenges with Social Media and Big Data for Research in Human Dynamics. In S.L. Shaw & D. Sui (Eds.), *Human Dynamics Research in Smart and Connected Communities* (pp 223-234). Human Dynamics in Smart Cities. Springer, Cham.

Nicholls, S., & Kim, J. (2019). Spatial is special: The need to consider spatial effects in leisure research. *Leisure Sciences*, 1-21.

Núñez-Serrano, J. A., Turrion, J., & Velázquez, F. J. (2014). Are stars a good indicator of hotel quality? Assymetric information and regulatory heterogeneity in Spain. *Tourism Management*, *42*, 77-87.

Pareigis, J., Edvardsson, B., & Enquist, B. (2011). Exploring the role of the service environment in forming customer's service experience. *International Journal of Quality and Service Sciences*, *3*(1), 110-124.

Pebesma, E. J. (2018). Simple features for R: Standardized support for spatial vector data. *The R Journal*, *10*(1), 439-446.

Pizam, A. (2010). Creating memorable experiences. *International Journal of Hospitality Management*, *29*(3), 343.

Pizam, A., Neumann, Y., & Reichel, A. (1978). Dimentions of tourist satisfaction with a destination area. *Annals of Tourism Research*, *5*(3), 314-322.

Prebensen, N. K., Woo, E., & Uysal, M. S. (2014). Experience value: Antecedents and consequences. *Current Issues in Tourism*, *17*(10), 910-928.

Raab, C., Mayer, K., Kim, Y. S., & Shoemaker, S. (2009). Price-sensitivity measurement: a tool for restaurant menu pricing. *Journal of Hospitality & Tourism Research*, *33*(1), 93-105.

Radojevic, T., Stanisic, N., & Stanic, N. (2017). Inside the rating scores: a multilevel analysis of the factors influencing customer satisfaction in the hotel industry. *Cornell Hospitality Quarterly*, *58*(2), 134-164.

Rather, R. A. (2020). Customer experience and engagement in tourism destinations: the experiential marketing perspective. *Journal of Travel & Tourism Marketing*, *37*(1), 15-32.

Robertson J, Ferreira C, & Paschen J. (2021). Reading Between the Lines: Understanding Customer Experience with disruptive technology through online reviews. *Australasian Marketing Journal*, 1-10.

Santos-Rodrigues, H., & Caridade, H. (2021, May). Galician Hotel Client Satisfaction Drivers. In *International Conference on Tourism Research* (pp. 631-XVII). Academic Conferences International Limited.

Shoval, N., McKercher, B., Ng, E., & Birenboim, A. (2011). Hotel location and tourist activity in cities. *Annals of Tourism Research*, *38*(4), 1594-1612.

Silva, R. (2015). Multimarket contact, differentiation, and prices of chain hotels. *Tourism Management*, *48*, 305-315.

Smith, S. L. (1994). The tourism product. *Annals of Tourism Research*, *21*(3), 582-595.

Tapar, A. V., Dhaigude, A. S., & Jawed, M. S. (2017). Customer experience-based satisfaction and behavioural intention in adventure tourism: exploring the mediating role of commitment. *Tourism Recreation Research*, *42*(3), 344-355.

Team R Core, 2021. R: A language and environment for statistical computing and graphics. The R Foundation for Statistical Computing, Vienna, Austria. Available at: http://www.R-project.org/

UNWTO. (2018). UNWTO tourism highligths. 2018 ed. Available at: https://marketintelligence.unwto.org/publication/unwto-tourism-highlights-2018

Urtasun, A., & Gutierrez, I. (2017). Clustering benefits for upscale urban hotels. *International Journal of Contemporary Hospitality Management*, *29*(5), 1426-1446.

Van Esch, P., Arli, D., Castner, J., Talukdar, N., & Northey, G. (2018). Consumer attitudes towards bloggers and paid blog advertisements: what's new?. *Marketing Intelligence & Planning, 36*(7), 778–793.

Varki, S., & Colgate, M. (2001). The role of price perceptions in an integrated model of behavioral intentions. *Journal of Service Research*, *3*(3), 232-240.

Vega, A. V. R., Casielles, R. V., & Martín, A. M. D. (2015). La calidad percibida del servicio en establecimientos hoteleros de turismo rural. *Papers de Turisme*, (19), 17-33.

Verhoef, P. C., Lemon, K. N., Parasuraman, A., Roggeveen, A., Tsiros, M., & Schlesinger, L. A. (2009). Customer experience creation: Determinants, dynamics and management strategies. *Journal of Retailing*, *85*(1), 31-41.

Völckner, F., & Hofmann, J. (2007). The price-perceived quality relationship: A meta-analytic review and assessment of its determinants. *Marketing Letters*, *18*(3), 181-196.

Westbrook, R. A., & Oliver, R. L. (1991). The dimensionality of consumption emotion patterns and consumer satisfaction. *Journal of Consumer Research*, *18*(1), 84-91.

Ye, Q., Li, H., Wang, Z., & Law, R. (2014). The influence of hotel price on perceived service quality and value in e-tourism: An empirical investigation based on online traveler reviews. *Journal of Hospitality & Tourism Research*, *38*(1), 23-39.

Ye, B. H., Luo, J. M., & Vu, H. Q. (2018). Spatial and temporal analysis of accommodation preference based on online reviews. *Journal of Destination Marketing & Management*, *9*, 288-299.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of Marketing*, *52*(3), 2-22.

Zhai, S., Xu, X., Yang, L., Zhou, M., Zhang, L., & Qiu, B. (2015). Mapping the popularity of urban restaurants using social media data. *Applied Geography*, *63*, 113-120.