1 # Algarve hotel price determinants: a hedonic pricing model

2 ## Abstract

3 This study sought to assess customers' willingness to pay for a wide variety of
4 characteristics and attributes of hotels in Portugal's Algarve region. After collecting
5 nearly all the information available on TripAdvisor for hotels in this region, a hedonic
6 pricing model was developed using a database of 9,992 cases. The results suggest that –
7 after standardisation – the most important variable shaping Algarve hotel room rates is
8 the previous day's prices. When associated with a family-friendly hotel, star category
9 and services have a greater value than beaches or golf courses do. Customers also
10 appreciate some types of hotels, such as boutique, quaint or trendy hotels, but view
11 others negatively, such as family-friendly or business hotels. Only the specific location
12 of Falesia Beach adds value, although the Algarve is a desirable destination overall.
13 Both destination and hotel managers can use the proposed method to analyse data for
14 their region on customers' propensity to pay.

15 **Keywords**: The Algarve, hotel, pricing management, hedonic, brand image
16 management

17 **Article classification**: Research paper

18 ## 1. Introduction

19 Hedonic pricing models have been widely applied both in the tourism and hospitality
20 industries to measure the influence of certain factors in destinations and hotels on room
21 rates. Ever since Lancaster (1966) and Rosen (1974) provided the theoretical
22 foundation for the hedonic pricing method based on the revealed preference approach,
23 this field of research has produced a large amount of literature. This volume is due to
24 how hedonic pricing models need to concentrate on unique markets (Palmquist, 2005)
25 defined as geographic areas with a distinct image (Buhalis, 2000). In addition, real
26 market data must be used instead of surveys (Fleischer, 2012).

27 These requirements have meant that hedonic research has been conducted by different
28 researchers in a variety of destinations and with various objectives. However, since
29 hedonic pricing models focus on areas that have some internal spatial homogeneity,
30 results may differ across regions (Soler, Gémar & Sánchez-Ollero, 2016). Thus, the

31   findings from one region cannot always be extrapolated to others as they could cause

32   destination managers and hotels to make erroneous decisions about which products to

33   offer and how to differentiate their offer from that of their competitors.

34   Given this context, destination managers, especially hotel managers, need to ask what

35   are the best, most favourable configurations of attributes in terms of customers'

36   propensity to pay. Once managers known this information, they can compare the

37   potential benefits of adding features with their implementation costs and develop a

38   strategy that maximises the use of companies' limited resources (Albayrak & Caber,

39   2015). To identify which services are worth developing, hotel managers can analyse

40   each services' impact on overall customer satisfaction, but this would require carrying

41   out surveys. Managers can more easily focus on understanding their customers'

42   willingness to pay for facilities and services, thereby allowing hotels to compare the

43   implicit prices of each of their amenities and attributes with their associated cost (Soler

44   & Gemar, 2018).

45   Therefore, the present research sought to evaluate the impact on hotel room prices in the

46   Algarve of nearly all the elements relevant to customers' decision-making processes

47   that are available on the TripAdvisor website. To this end, this study used a hedonic

48   pricing model to emulate the decision-making process of potential consumers. All the

49   relevant information was collected from a single source from which customers can

50   gather plentiful information (i.e. TripAdvisor) and thus make their choices at a quite

51   low cost. This approach helped shed light on special features clients are willing to pay

52   for in the destination in question, revealing the key elements that hoteliers must

53   consider when making pricing decisions. These decisions may or may not be aligned

54   with those made in other destinations.

55   The following paper is organised into seven sections. After this introduction, a brief

56   description of the destiny studied is provided in order to contextualise the study. Section

57   three then details a review of the literature on hedonic pricing in hotels. In section four,

58   the model's theoretical framework is explained, as well as the method used to create the

59   database and the variables examined. This section also presents the sample's descriptive

60   statistics. The main results are described in section five and discussed in section six.

61   The conclusions appear in the final section.

2. Study area

The Algarve region – located along the southern coast of Portugal – is one of the most popular tourist destinations in Europe (Correia & Kozak, 2012) and the most important in Portugal (do Valle, Pintassilgo, Matias & André, 2012). With 5,412 square kilometres and approximately 450,000 inhabitants, this region is the country's main tourist attraction, accounting for 43.8% of total overnight stays (Andraz & Rodrigues, 2016). The Algarve received about 2.7 million international visitors in 2015 (Instituto Nacional de Estadística, 2016), having experienced a continuous growth of mass tourism since 1965 after the construction of the Faro airport (Costa, 2005).

The region has historically contained the most concentrated spaces in terms of Portugal's tourism (Guedes & Jiménez, 2015). In addition, the Algarve is positioned as one of the main regions for counterfeit shopping (Correia & Kozac, 2016). However, the main tourist attraction is typical sun and beach offers (do Valle et al., 2012), which are traditionally the most valued attribute of the Algarve for tourists (Barreira, Cesário & de Noronha, 2017). Thus, this destination attracts a large amount of domestic tourism, as well as tourists from other European countries, especially because of its beaches and golf courses (Oliveira, Pedro & Marques, 2013a, 2013b).

According to Barreira et al. (2017), however, first-time tourists from northern European countries are less impressed with the Algarve's attributes, and more educated tourists value the sun and beach offer as a complement to other attributes. This and the need to generate higher profits may explain recent changes in the region's brand positioning. Barros, Butler and Correia (2010) report that the Algarve has focused exclusively on golf tourism since the 1990s, and its range of golf courses and facilities has expanded extensively. This destination's particularities have thus given the Algarve a competitive advantage due the unique conditions it offers golfers, making this type of tourism one of the best counterbalances to the region's strong seasonality (Pereira, Correia & Schutz, 2015).

The Algarve's destination managers have focused on attracting foreign tourists, expediting over the years the development of a large offer of diversified hotel units, from the most basic hostels and guest houses to luxury hotels and resorts (Lopes, Soares & Silva, 2017). Therefore, this is a destination in transition, moving away from a classic sun and beach tourism model leading to overcrowded venues and a tourist profile of

visitors with low purchasing power who seek to round out their holidays with counterfeit shopping. The Algarve is refocusing on attracting tourists with high purchasing power, who give sun and beach offers second priority and visit the region looking for other attributes such as golf courses.

This transition could compromise the Algarve's brand positioning in both market segments, combining to make it an inadequately defined destination. Therefore, an assessment is needed of which attributes Algarve tourists truly value. In addition to offering significant implications for destination managers and hoteliers, this study's findings advance the current understanding of how destination profiles can decide the price of hotel rooms and, by extension, future tourism planning. Figure 1 shows the location of the Algarve.

Figure 1. Location of Algarve generated by the QGIS programme.
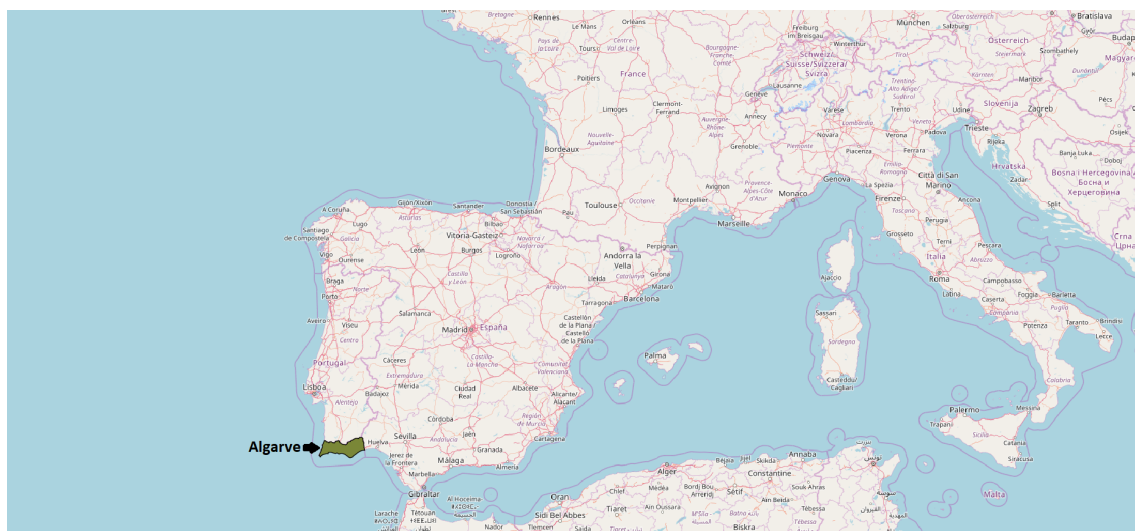
Source: Open Street Map (n.d.)

3. **Hedonic Pricing Models**

The hedonic pricing method facilitates the disaggregation of the prices of heterogeneous goods or services into the sum of what each attribute contributes to these prices (Rosen, 1974). This method allows researchers to assess the relationship between the market value of a composite good and each attribute alone by generating a bundle of implicit prices for all the attributes (Latinopoulos, 2018). In this way, the observed price of a good or service can be separated into the prices of its attributes (Schamel, 2012). The

115   hedonic pricing method has also been widely used as a way to compare different
116   destinations' prices and their structure (Alegre & Sard, 2015).

117   The literature reveals a general agreement within hedonic research that the most
118   significant factors shaping guests' willingness to pay for hotel rooms are hotel category
119   and location factors (Abrate, Capriello & Fraquelli, 2011). Several studies have
120   highlighted category as the key factor in the composition of hotel prices (e.g. Israeli,
121   2002; Schamel, 2012; Soler & Gemar, 2016). However, according to Zhang, Zhang, Lu,
122   Cheng and Zhang (2011), location is the only generally accepted attribute of the lodging
123   industry with substantial proof that it affects prices, and Fleischer (2012) found that
124   location can affect the price of hotel rooms depending on whether they have sea views.
125   Concurrently, research on other variables has produced no consensus and has even
126   produced contrary results depending on the destination under study.

127   These findings represent only the first stage of the research model as, in the method's
128   second stage, the demand function can be estimated for each characteristic of a product
129   (Agmapisarn, 2014). However, as the cited author observes, this second stage is much
130   more complex as it requires more data and provides uncertain outcomes, thereby
131   causing most hedonic studies to focus just on the first stage.

132   A hedonic pricing model is based on hypotheses about a commercial market and the
133   known market-clearing price (Bull, 1998) in a perfectly competitive market with no
134   significant transaction costs (Falk, 2008). When these costs are insignificant, the model
135   can be extended beyond perfect competition (Rosen, 1974). Some authors such as
136   Schamel (2012) have already used metasearch engines to address this issue. In addition,
137   as stated above, hedonic pricing models vary enormously depending on the destination
138   to which the results are linked. In this way, each hedonic overview is created through
139   the specific sum of specific destinations' results.

140   The hedonic pricing method's strength is that it is based on market data (Fleischer,
141   2012). Therefore, this type of model can be applied to cover an extremely wide range of
142   objectives and destinations, which has resulted in an extensive amount of hedonic
143   research. Some studies have sought to assess the importance of certain services or
144   facilities in the final prices of hotel rooms, such as Agmapisarn's (2014) research on
145   Bangkok hotels or Chen and Rothschild's (2010) study of Taipei hotels. Espinet, Saez,

146   Coenders and Fluvià (2003) similarly deconstructed the price effect of different

147   attributes of holiday hotels south of the Costa Brava in Spain, while Falk (2008) sought

148   to measure the influence of specific factors on the price of ski resorts in Austria.

149   Another group of authors has focused on analysing the impact of factors external to

150   hotels, such as Hamilton (2007), who estimated the effect of a coast and other landscape

151   features on accommodation prices. Rigall-I-Torrent and Fluvià (2011) measured the

152   impact of public goods on the final price of hotel rooms. Rigall-I-Torrent et al. (2011),

153   in turn, assessed the importance of beaches to these prices. Coenders, Espinet and Saez

154   (2003) measured the effect of climate, and Fleisher (2012) assessed increases in prices

155   for rooms overlooking the Mediterranean Sea compared to rooms without these views.

156   Potential customers usually use online travel agents (OTAs) to search for better prices

157   (Kimes, 2016), forcing hotels to pay for the visibility that these platforms offer

158   accommodation firms (Guo, Zheng, Ling & Yang, 2014; Ling, Dong, Guo & Liang,

159   2015). This is especially true for hotels with lower occupancy rates (Ling, Guo & Yang,

160   2014). These platforms have allowed travellers to reduce information costs significantly

161   and increase competition between hotels (Raguseo, Neirotti & Paolucci, 2017).

162   However, room rates are the main competitive difference between OTAs' websites (Ye,

163   Fu & Law, 2016), so, from time to time, price wars start between OTAs (Ni, Wen &

164   Bin, 2012). To avoid the collateral damage these price wars cause and OTAs' high fees,

165   hoteliers seek to induce customers to book through the hotels' own direct channels

166   rather than through OTAs (Toh, Raven & DeKay, 2011; Tso & Law, 2005), thereby

167   reducing coopetition between hotel companies and OTAs (Guo et al., 2014). Various

168   authors have already used the hedonic pricing method to compare the effect of different

169   OTAs on hotel room prices (Pawlicz & Napierala, 2017).

170   Still other researchers have studied the imbalance between supply and demand

171   conditions (Chen & Chiu, 2014) or market accessibility (Yang, Mueller & Croes, 2016)

172   to evaluate the impact of seasonality on prices (Monty & Skidmore, 2003). Some

173   studies have further focused on whether hotels belong to a hotel chain (Thrane, 2007) or

174   whether they are a family business (Soler & Gémar, 2016). Research has also been done

175   on the difference of prices during the week or at weekends (Schamel, 2012) and the

176   effects of an innovative attitude in Cuban hotels (de la Peña, Núñez-Serrano, Turrión &

177   Velázquez, 2016). Additional studies have been conducted on the significance of

178   important events in destinations, such as the April Fair in Seville, Spain (Soler &

179   Gémar, 2017a) or the Oktoberfest in Munich, Germany (Herrmann & Herrmann, 2014).

180   In addition, hedonic pricing models have included environmental considerations, such

181   as Alexandrakis, Manasakis and Kampanis's (2015) research measuring the effect of

182   environmental costs and Sánchez-Ollero, García-Pozo and Marchante-Mera's (2014)

183   assessment of the impact of environmental initiatives implemented by hotels. Kuminoff,

184   Zhang and Rudi (2010) measured the impact on prices of whether hotels have an

185   environmental certification. García-Pozo, Sánchez-Ollero and Marchante-Mera (2013)

186   analysed the impact of certificates and the involvement of managers in environmental

187   initiatives, while Soler et al. (2016) examined the effects of being an environmental

188   hotel in large cities such as Madrid and Barcelona.

189   Hedonic pricing models are based on the idea that observed prices are the sum of the

190   implicit prices of the rates' component characteristics, and, for this reason, prices will

191   vary depending on the attributes that make up the final product (Schamel, 2012). Given

192   the hypotheses mentioned above, hedonic pricing models assume that the buyers' utility

193   function for the good's characteristics and the sellers' production function for these

194   same attributes 'kiss' each other. Thus, the common gradient at that point is given by

195   the gradient of the market, constituting in turn the generating structure of the

196   observations (Rosen, 1974). Both buyers' marginal willingness to pay and sellers'

197   acceptance of this are converted into hedonic functions based on changes in attributes,

198   which are given by the partial derivative of each hedonic function with respect to each

199   attribute (Fleischer, 2012; Schamel, 2012).

200   The model's general specifications were given as Equation (1):

201    $$P_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + u_i \qquad (1)$$

202   in which P_i is the room price, α is a constant, X_{ki} is the hotel room attributes or

203   characteristics and β_k is the associated coefficients. However, some authors such as

204   Rosen (1974) and Wooldridge (2009) recommend using the Napierian logarithm of the

205   price to improve the model's explanatory power, as shown in Equation (2).

206    $$Ln\, P_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + u_i \qquad (2)$$

207   The latter was the system used in the present research, following the example of most

208   authors (e.g. Agmapisarn, 2014; Schamel, 2012). The model was estimated using

209   ordinary least squares (OLS) regression.

210   **4. Material and Methods**

211   *4.1 Database*

212   All the data were collected from the TripAdvisor website in its English version (i.e.

213   https://tripadvisor.co.uk). The hedonic pricing method is extremely sensitive to time

214   (Palmquist, 2005) as price patterns may vary between seasons (Monty & Skidmore,

215   2003) and even between weekdays and weekends (Schamel, 2012). Therefore,

216   researchers must make sure that the prices correspond to a stretch of time in which the

217   characteristics' value is relatively stable (Palmquist, 2005). Currently, price stability is

218   compromised, and hotel room rates are rarely fixed, so the use of revenue management

219   strategies is becoming increasingly importance for hotel managers (Lopes et al., 2017).

220   Hotel prices were collected for all hotels with rooms available, using a margin of

221   reserve (i.e. the difference between the day of search and the hypothetical day of check-

222   in) of between 0 and 14 days. For the aforementioned reasons – as well as the selected

223   destination's positioning as sun and beach (do Valle et al., 2012) and its strong

224   seasonality (Pereira et al., 2015) – the data were gathered from 9 to 29 August 2016, for

225   a double room. This produced a final sample of 9,992 prices used to conduct OLS

226   regression. The number of observations is quite high, and the timeframe is wide enough

227   so that no event or perturbation could condition the results – yet low enough to ensure

228   the structural stability of the period involved.

229   The fundamental importance of space is unquestioned in all regional scientific research

230   (Anselin, 1988). Thus, another issue associated with hedonic models is spatial effect,

231   namely, spatial heterogeneity, spatial autocorrelation and spatial spill-over. Spatial

232   econometrics has moved from the margins to the mainstream of applied econometrics

233   and social science methodology over the past 30 years (Anselin, 2010). However, until

234   quite recently, empirical studies using the hedonic pricing method did not usually take

235   these effects into account. To control for the presence of these factors in the results, the

236   usual approach has been to assume that the destination in question behaves in a

237   homogeneous manner – as a single market. Other researchers, such as Kuminoff et al.

238 (2010) have, nonetheless, considered a thorough treatment of spatial variables
239 important.

240 Thus, some scholars have gone further and deepened their analysis of the three most
241 significant spatial aspects, that is, spatial-temporal lag on dependent variables, spatial
242 error and spatially lagged independent variables (see, for example, Pandit, Polyakov and
243 Sadler [2014]). More recently, price research in the hotel sector has combined hedonic
244 modelling with geographically weighted regression (e.g. Latinopoulos, 2018; Soler &
245 Gemar, 2018; Zhang et al., 2011) in order to compare the results obtained with the
246 assumption – or not – of spatial effects within specific destinations.

247 The present study's main objective was to compare the results of the proposed hedonic
248 model with the results previously obtained for other destinations. Prior hedonic research
249 on hotel pricing has either assumed that spatial effects are negligible or that they can be
250 controlled if enough spatial measurements are incorporated. In the current study, the
251 assumption was also made that the region under study behaves as a single market,
252 collecting all the spatial information available on the Algarve from TripAdvisor.

253 *4.2 Variables and measures*

254 Although the literature on hedonic pricing involves many destinations and objectives,
255 researchers have, in general, reported that hotel room prices are fundamentally based on
256 tangible factors such as category, geographic location, type of accommodation and
257 membership in hotel chains (Costa, 2013). Therefore, the first group of factors compiled
258 for the present study from TripAdvisor was establishment variables, namely, those
259 variables fixed at the time of hotels' creation, which are thereafter rarely altered. This
260 group included variables such as hotel star category (e.g. Abrate et al., 2011; Espinet et
261 al., 2003; Israeli, 2002; Schamel, 2012), which, along with hotel location, is one of the
262 most important variables affecting hotel room prices (Abrate et al., 2011).

263 Regarding star category, Israeli (2002), for example, found that hotel category is the
264 most important variable determining the price of hotel rooms in Israeli hotels. In
265 previous research on location factors, Lee and Jang (2011) evaluated the influence of
266 proximity to airports or business centres for airport hotels in the United States. Bull
267 (1998) also carried out an exhaustive study on the importance of this variable to room
268 prices.

269   In line with Kuminoff et al.'s (2010) work, the present research paid special attention to

270   controlling spatial variables, and thus hotel location was included using the two most

271   common approaches in the literature. These are distance from a set point (e.g.

272   Agmapisarn, 2014; Herrmann & Herrmann, 2014; Monty & Skidmore, 2003; Saló,

273   Garriga, Rigall-I-Torrent, Vila & Fluvià, 2014; Schamel, 2012) and dichotomous

274   variables with the tag of hotels in or not in specific locations (e.g. Bull, 1994; Chen &

275   Rothschild, 2010; Sánchez-Ollero et al., 2014; Shoval, McKercher, Ng & Birenboim,

276   2011). The assumption was made that the Algarve, which behaves as a single market,

277   comprises different areas. These locations are another attribute included in the price of

278   hotels, entailing spatial variations that could affect prices.

279   Each region can also specialise in specific types of hotels, so some circumstances

280   typical of the relevant kinds of hotels could concentrate mainly in a particular area, or

281   some circumstances specific to a neighbourhood can have a spatial effect on its prices.

282   For this reason, we decided to include both distance measures and specific areas. Using

283   several location measures is another technique employed in previous research (e.g.

284   Abrate et al., 2011; Aguiló, Alegre & Sard, 2003; Alegre, Cladera & Sard, 2013).

285   In addition, data on hotel size, measured by number of rooms, were also collected

286   (Zhang et al., 2011) even though this approach has produced a wide variety of results

287   for the destinations investigated: from positive significance (e.g. de la Peña et al., 2016;

288   Israeli, 2002) to negative significance (e.g. Saló et al., 2014; Soler & Gémar, 2016;

289   Zhang et al., 2011) – and even no correlation with room prices (Agmapisarn, 2014).

290   These conflicting results highlight the variability in destination factors' effects on

291   guests' willingness to pay, which is the reason why results cannot be extrapolated from

292   one destination to another without great caution. Finally, hotels' membership in a chain

293   versus status as an independent hotel was also used (e.g. Aguiló et al., 2003; Lee &

294   Jang, 2011; Thrane, 2007).

295   The second group of variables comprised reputational variables including consumer

296   ratings and number of reviews (Andersson, 2010; de la Peña et al., 2016; Herrmann &

297   Herrmann, 2014; Li, Ghose & Ipeirotis, 2008; O'Connor, 2010; Schamel, 2012) as a

298   proxy of hotels' online reputations (Soler & Gémar, 2017b). The TripAdvisor

299   Travellers' Choice award was used as a simile of quality certification, as it has been

300   employed in other studies (e.g. Abrate et al., 2011; Alegre et al., 2013; García-Pozo et

al., 2013; Rigall-I-Torrent et al., 2011; Sánchez-Ollero et al., 2014). However, this award may be more of a measure of consumer perception than a normal quality certificate. In this category, the data also incorporated the number of photos hotels have on their TripAdvisor profile. Moreover, online labels regarding hotel style that show how hotels present themselves to consumers were added to the variables analysed (de la Peña et al., 2016).

Finally, all the services and facilities by which travellers on TripAdvisor can filter their search, such as decomposition by services and facilities (Agmapisarn, 2014; Chen & Rothschild, 2010; de la Peña et al., 2016; Falk, 2008; Kuminoff et al., 2010), were incorporated. In the contextual variables group, weekday and weekend prices were separated using a dichotomous variable (Schamel, 2012), and another variable measured the difference between the day of search and the hypothetical day of check-in (Abrate, Fraquelli & Viglia, 2012). Table 1 presents a more complete list of all the variables with a brief description and their descriptive statistics, mean or percentage and standard deviation.

Table 1. Variables, brief descriptions and descriptive values

Type of Variable	Variable	Description	Mean or %	Standard Deviation
Prices	LNPRICE	Ln Price Form	54.006	0.56960
	LNLAGPRICE	Ln Price Form for Previous Day	53.817	.57284
Establishment Variables	Stars	Category Stars	3.81	0.834
	Number of Rooms	Number of Rooms	138.44	103.012
	Distance	Distance in km to Algarve Centre	23.406	128.138
	Independent Hotels	Independent Hotel (No = 0; Yes = 1)	87.5%	0.3312
Reputational Variable	Overall Value	Overall rating in TripAdvisor	4.01	0.497
	N Opinion	Number of reviews	577.92	521.837
	Travel Choice Award	Travel Choice Award (No = 0; Yes = 1)	11.3%	0.3172
	Photos	Number of photos	465.07	377.772
	Algarve Ranking	Hotel's position on TripAdvisor's list	169.98	129.492
	Specific Ranking	Hotel's position on TripAdvisor's list for its specific town	24.93	35.475

Location Tags	City Centre	City Centre (No = 0; Yes = 1)	26.2%	0.4400
	Centro Historico de Albufeira	Historico de Albufeira (No = 0; Yes = 1)	2.5%	0.1550
	Ponta da Piedade	Ponta da Piedade (No = 0; Yes = 1)	3.2%	0.1750
	Praia Da Rocha	Praia Da Rocha (No = 0; Yes = 1)	3.8%	0.1901
	Zoomarine Algarve	Zoomarine Algarve (No = 0; Yes = 1)	3.8%	0.1903
	Vilamoura Marina	Vilamoura Marina (No = 0; Yes = 1)	3.9%	0.1946
	Falesia Beach	Falesia Beach (No = 0; Yes = 1)	2.7%	0.1619
Style	All inclusive	All inclusive (No = 0; Yes = 1)	13.4%	0.3404
	Best Value	Best Value (No = 0; Yes = 1)	77.3%	0.4189
	Boutique	Boutique (No = 0; Yes = 1)	3.0%	0.1696
	Budget	Budget (No = 0; Yes = 1)	14.0%	0.3468
	Business	Business (No = 0; Yes = 1)	32.7%	0.4691
	Charming	Charming (No = 0; Yes = 1)	33.9%	0.4735
	Classic	Classic (No = 0; Yes = 1)	13.9%	0.3458
	Family-friendly	Family-friendly (No = 0; Yes = 1)	77.0%	0.4211
	Green	Green (No = 0; Yes = 1)	13.2%	0.3388
	Luxury	Luxury (No = 0; Yes = 1)	40.4%	0.4907
	Mid-range	Mid-range (No = 0; Yes = 1)	45.6%	0.4981
	Quaint	Quaint (No = 0; Yes = 1)	1.1%	0.1043
	Quiet	Quiet (No = 0; Yes = 1)	71.4%	0.4520
	Resort Hotel	Resort Hotel (No = 0; Yes = 1)	10.3%	0.3045
	Romantic	Romantic (No = 0; Yes = 1)	23.8%	0.4256
	Trendy	Trendy (No = 0; Yes = 1)	18.0%	0.3842
Amenities	Air Conditioning	Air Conditioning (No = 0; Yes = 1)	75.5%	0.4300
	Airport Transportation	Airport Transportation (No = 0; Yes = 1)	46.0%	0.4984

	Bar/Lounge	Bar/Lounge (No = 0; Yes = 1)	92.1%	0.2695
	Beach	Beach (No = 0; Yes = 1)	45.6%	0.4981
	Business Services	Business Services (No = 0; Yes = 1)	48.5%	0.4998
	Casino	Casino (No = 0; Yes = 1)	0.8%	0.0863
	Concierge	Concierge (No = 0; Yes = 1)	53.3%	0.4989
	Fitness Centre	Fitness Centre (No = 0; Yes = 1)	49.9%	0.5000
	Free Breakfast	Free Breakfast (No = 0; Yes = 1)	50.1%	0.5000
	Free Parking	Free Parking (No = 0; Yes = 1)	76.9%	0.4214
	Free Wifi	Free Wifi (No = 0; Yes = 1)	53.7%	0.4987
	Golf course	Golf course (No = 0; Yes = 1)	12.0%	0.3256
	Internet	Internet (No = 0; Yes = 1)	97.8%	0.1451
	Kitchenette	Kitchenette (No = 0; Yes = 1)	39.3%	0.4884
	Meeting Room	Meeting Room (No = 0; Yes = 1)	50.2%	0.5000
	Non-Smoking Hotel	Non-smoking Hotel (No = 0; Yes = 1)	22.8%	0.4197
	Pets Allowed	Pets Allowed (No = 0; Yes = 1)	4.1%	0.1974
	Pool	Pool (No = 0; Yes = 1)	93.7%	0.2427
	Reduced Mobility Rooms	Reduced Mobility Rooms (No = 0; Yes = 1)	28.1%	0.4494
	Restaurant	Restaurant (No = 0; Yes = 1)	81.3%	0.3896
	Room Service	Room Service (No = 0; Yes = 1)	63.7%	0.4808
	Spa	Spa (No = 0; Yes = 1)	44.6%	0.4971
	Suites	Suites (No = 0; Yes = 1)	56.7%	0.4956
	Wheelchair Access	Wheelchair Access (No = 0; Yes = 1)	67.8%	0.4673
Contextual Attributes	Weekend	Book day (Weekday = 0; Weekend day = 1)	0,45	0.497
	Margin	Difference in days between search day and booking day	8.52	4.010

318 Source: Authors

319

320 As stated previously, the hedonic pricing method's strength is that it is based on market

321 data (Fleischer, 2012). However, its main weaknesses are the challenge of defining the

322 market and this method's sensitivity to choice of functional form (Haab & McConnel,

323 2002). Thus, keeping in mind the objective of producing results that would facilitate

324 comparisons with findings for other locations, the variables included in the present

325 model were kept extremely close to those used in many other studies. The model also

326 employed nearly all the elements relevant to consumers' decision-making available on

327 TripAdvisor.

328 *4.3 Descriptive analysis*

329 The results of the descriptive analysis facilitate a fuller understanding of the hotel

330 services and image configurations most often offered in the Algarve. For example,

331 many hotels use the best-value labels (77.3%), family-friendly (77%) or quiet (71.4%),

332 as well as bar/lounge (92.1%), restaurant (81.3%), pool (93.7%), Internet (97.8%) or

333 free parking (76.9%). Hotels with a beach represent 45.6% of the sample, while those

334 with a golf course make up 12%. Other services are much more exclusive such as

335 having a casino (0.8%), being labelled a boutique hotel (3%) or allowing pets (4.1%).

336 The results also highlight the high average value of consumers' ratings: four out of five.

337 **5. Results**

338 The OLS regression results are presented in Table 2. The prices associated with each

339 attribute were calculated using Halvorsen and Palmquist's (1980) procedure. This

340 procedure estimates and correctly interprets the price effect for a log-linear model,

341 including for each variable based on its continuous or dichotomous nature. Halvorsen

342 and Palmquist (1980) point out that continuous variables and dummies variables must

343 be discriminated starting with Equation (2). A continuous variable's associated

344 coefficient – multiplied by 100 – is the percentage effect on prices of a small change in

345 that variable, but this is not true for a dichotomous variable. In this case, Halvorsen and

346 Palmquist (1980) suggest that, if a single dummy variable is assumed for simplicity,

347 Equation (2) can be rewritten as:

$$348 \qquad\qquad P = (1 + g)^D exp(\alpha + \textstyle\sum_k \beta_k X_k) \qquad\qquad (3)$$

349   in which X_k is the continuous variable. D in turn represents the dummy variable, and g
350   is the relative effect on price when the dichotomous variable has a value of 1,
351   corresponding to the percentage effect on prices of a continuous variable's coefficient.
352   Thus, the assumption cannot be made that, in the case of dichotomous variables, the
353   coefficient (i.e. c) is equal to g. Instead, g is equal to $exp(c) - 1$.

354   According to other authors such as Schamel (2012) or Soler et al. (2016), the euro-value
355   of prices can be calculated based on the average price of hotel rooms, which for the
356   present sample was €221.54. This value facilitated the monetary interpretation of the
357   marginal increase of quantitative variables, as well as the value of dichotomous
358   variables' presence in reference to their absence. The results of the OLS regression and
359   euro-values calculations are shown in Table 2.

Table 2. Estimated regression and euro values

Type of variable	Variable	Coefficient	Beta Standard	t-Stat.	Sig.	%	€-Value	VIF
Prices	Constant	1.710***		16.385	0.000			
	LNLAGPRICE	0.597***	0.600	72123	0.000		132.20	1.985
Establishment Variables	Stars	0.098***	0.143	9.072	0.000		21.70	7.169
	Number of Rooms	0.000***	0.042	4.126	0.000		0.05	2.993
	Distance	-0.001***	-0.032	-4.011	0.000		-0.31	1.798
	Independent Hotels	0.033**	0.019	2.054	0.040	3.40%	7.54	2.572
Reputational Variable	Overall Value	0.043**	0.038	2.552	0.011		9.62	6.324
	N Opinion	0.000**	-0.040	-2.843	0.004		-0.01	5.777
	Travel Choice Award	0.060***	0.033	4.050	0.000	6.18%	13.69	1.949
	Photos	0.000	0.003	.237	0.813		0.00	5.108
	Algarve Ranking	0.000***	-0.063	-3.817	0.000		-0.06	7.853
	Specific Ranking	0.001***	0.035	3.321	0.001		0.12	3.124
Location Tags	City Centre	-0.016	-0.012	-1.582	0.114	-1.54%	-3.42	1.652
	Centro Historico de Albufeira	-0.063**	-0.017	-2.243	0.025	-6.06%	-13.43	1.649
	Ponta da Piedade	-0.021	-0.007	-.942	0.346	-2.11%	-4.68	1.394
	Praia Da Rocha	-0.016	-0.005	-.622	0.534	-1.60%	-3.55	2.160
	Zoomarine Algarve	-0.023	-0.008	-.948	0.343	-2.26%	-5.00	1.854
	Vilamoura Marina	0.001	0.000	.066	0.947	0.14%	0.30	1.423
	Falesia Beach	0.050*	0.014	1.859	0.063	5.12%	11.35	1.672
Style	All inclusive	0.088***	0.053	6.007	0.000	9.24%	20.46	2.214
	Best Value	0.052***	0.039	3.453	0.001	5.39%	11.94	3.584
	Boutique	0.076**	0.023	2.865	0.004	7.90%	17.50	1.789
	Budget	0.007	0.005	.406	0.685	0.74%	1.64	3.523

	Business	-0.014	-0.011	-1.148	0.251	-1.34%	-2.98	2.703
	Charming	0.020	0.017	1.638	0.101	2.07%	4.59	3.099
	Classic	0.015	0.009	1.012	0.311	1.53%	3.40	2.391
	Family-friendly	-0.073***	-0.054	-6.121	0.000	-7.00%	-15.51	2.203
	Green	0.018	0.011	1.127	0.260	1.79%	3.97	2.520
	Luxury							
	Mid-range	-0.062***	-0.055	-5.119	0.000	-6.05%	-13.40	3.256
	Quaint	0.069*	0.013	1.666	0.096	7.14%	15.81	1.648
	Quiet	-0.020*	-0.016	-1.813	0.070	-2.01%	-4.46	2.270
	Resort Hotel	0.031*	0.016	1.846	0.065	3.11%	6.89	2.255
	Romantic	0.011	0.008	.856	0.392	1.11%	2.46	2.667
	Trendy	0.028**	0.019	2.081	0.037	2.82%	6.25	2.330
Amenities	Air Conditioning	-0.019*	-0.014	-1.847	0.065	-1.88%	-4.17	1.729
	Airport Transportation	0.060***	0.052	7.020	0.000	6.18%	13.69	1.601
	Bar/Lounge	0.018	0.008	1.087	0.277	1.79%	3.96	1.707
	Beach	0.060***	0.052	6.860	0.000	6.14%	13.61	1.656
	Business services	0.059***	0.052	5.194	0.000	6.09%	13.50	2.861
	Casino	0.091	0.014	1.530	0.126	9.58%	21.22	2.354
	Concierge	0.013	0.012	1.354	0.176	1.34%	2.98	2.139
	Fitness centre	-0.009	-0.008	-.802	0.423	-0.85%	-1.89	2.511
	Free Breakfast	0.012	0.010	1.146	0.252	1.17%	2.60	2.288
	Free Parking	-0.024**	-0.017	-2.144	0.032	-2.33%	-5.17	1.901
	Free Wifi	-0.012	-0.011	-1.278	0.201	-1.23%	-2.73	2.065
	Golf course	0.030*	0.017	1.956	0.051	3.03%	6.70	2.177
	Internet	-0.035	-0.009	-1.292	0.196	-3.46%	-7.67	1.384
	Kitchenette	0.057***	0.049	5.594	0.000	5.86%	12.98	2.185
	Meeting room	-0.050***	-0.044	-3.750	0.000	-4.90%	-10.86	3.966
	Non-Smoking Hotel	-0.016	-0.012	-1.513	0.130	-1.56%	-3.45	1.676
	Pets Allowed	-0.085***	-0.030	-4.159	0.000	-8.18%	-18.13	1.451
	Pool	0.017	0.007	.904	0.366	1.76%	3.89	1.931

	Reduced mobility rooms	-0.014	-0.011	-1.370	0.171	-1.41%	-3.12	1.916
	Restaurant	0.019	0.013	1.456	0.145	1.90%	4.20	2.237
	Room Service	0.023*	0.019	1.960	0.050	2.33%	5.17	2.826
	Spa	-0.027**	-0.023	-2.274	0.023	-2.62%	-5.81	2.978
	Suites	-0.021	-0.019	-1.644	0.100	-2.13%	-4.71	3.711
	Wheelchair access	-0.013	-0.011	-1.360	0.174	-1.33%	-2.95	1.874
Contextual Attributes	Weekend	0.011*	0.010	1.654	0.098		2.49	1.011
	Margin	-0.007***	-0.049	-7.884	0.000		-1.53	1.098

$\bar{R}^2$

d   1.818

           0.652

F   317.603***

Dependent variable: LNPPRICE

Note: *Statistical significance at the 95% level; **statistical significance at the 99% level; ***statistical significance at the 99.9% level

$\bar{R}^2$

d = Durbin-Watson coefficient;

 = corrected coefficient of determination; F = F-value

362

Source: Authors

364   The coefficients of the continuous variables represent the influence of each variable on
365   the price, while the euro-value of prices shows the variation in euros of the average
366   price. The percentage column shows the variations of the dichotomous variables. These
367   percentages were applied again with respect to the average room price of the hotel
368   sample.

369   The main problems usually associated with applying hedonic pricing models are related
370   to multicollinearity and autocorrelation. One example of autocorrelation is spatial
371   autocorrelation. Although tests exist that can be used to evaluate spatial dependence in
372   OLS models (e.g. Anselin, Bera, Florax & Yoon, 1996), some researchers such as Soler
373   and Gemar (2018) have found proof of spatial autocorrelation's implications for
374   hedonic models. These studies highlight the need to include other models such as the
375   geographically weighted regression model to control the effects of this autocorrelation,
376   especially in hotel research.

377   However, given that the present study's objective was to compare tourists' willingness
378   to pay in the Algarve region with the findings for other destinations, the choice was
379   made not to use these more complex models. The first problem mentioned above can
380   normally be solved by reducing the number of variables or grouping them together
381   (Aguiló et al., 2003; Anderson, 2010). To address the second issue, an autoregressive
382   (*AR (1)*) variable needs to be introduced, as suggested by Herrmann and Herrmann
383   (2014) or Soler and Gémar (2017a), which, in the present study, reduced the sample
384   from the 16,126 prices collected to the 9,992 used in the database analyses.

385   Following the example of other authors such as Schamel (2012) and Soler et al. (2016),
386   variance inflation factors (VIFs) were also calculated. The value of these, with the
387   exception of the 'luxury' variable, was below the critical values suggested by Kutner,
388   Nachtsheim and Neter (2004) as indicating a problem of multicollinearity. The cited
389   authors observed that a VIF value above 10 designates a severe multicollinearity
390   problem, while a value less than 5 indicates the absence of multicollinearity. These
391   values were later confirmed by Kennedy (2008). The present study, therefore, only had
392   to eliminate the 'luxury' label.

393   **6. Discussion**

394   The most important variable, in standardised terms, in the configuration of prices for

395   hotel rooms in the Algarve is the price of the previous day, as proved to be the case for

396   Seville's April Fair (Soler & Gémar, 2017a). The significance of this temporal lag

397   suggests that, in the Algarve region – as is true for Seville during its April fair – prices

398   are relatively stable, unlike the now common instability in room rates in other

399   destinations. Thus, the previous day's price conditions the room price that hotels offer

400   each day. In other words, room prices are historically conditioned perhaps because hotel

401   managers consider prices to be a strategic variable. Each hotel is positioned in a high- or

402   low-price segment for the offered services, and room prices are kept consistent with this

403   strategy. The stable prices could also be due to the perception of the Algarve as an

404   expensive destination (Pereira et al., 2015). This could be especially true in high season,

405   during which the hotels' bargaining power is much higher.

406   This appears to be a logical strategy since hotels may be investing in a brand or making

407   the most of that brand's advantages to put room prices above what they should be if the

408   brand's power was not taken into account. This strategy also seems to be consistent with

409   the definition of brand value based on price (Sweeney, Soutar & Johnson, 1999; Tsai,

410   2005; Woodruff, 1997) so that the brand value is the difference between the perceived

411   utility and the price of the product or service. Hotels' increased negotiator power due to

412   greater demand in high season further allows hotel managers to develop an offer based

413   on destination prices and a particular reputation. The present finding could, therefore, be

414   in line with Monty and Skidmore's (2003) conclusion that the season can have a

415   significant impact on prices.

416   The second most significant variable is hotel category measured by number of stars.

417   This confirms, in general, the results reported in the literature on hedonic pricing studies

418   of hotels (e.g. Abrate et al., 2011; Israeli, 2002; Schamel, 2012). The present finding

419   shows that hotel category represents a reliable and thus highly valued reference to

420   hotels' hypothetical quality in the Algarve region. In the specific case of hotels in this

421   region, an increase of one star represents an additional price of €21.70.

422   This result, nonetheless, appears to contrast with other studies that have found a

423   significant weakening of hotel category as a measure of quality, as was the case in

424   Abrate and Viglia (2016) or Torres, Adler and Behnke (2014) research. The cited

425   authors state that customers are starting to follow other patterns in terms of the

426   importance they give to that variable. De la Peña et al. (2016), in turn, suggest that hotel

427   category's importance in price may be conditioned by the presence or absence of other
428   quality signals such as offers' quality, diversification and customisation or membership
429   in an international chain. These signals increase guests' willingness to pay for hotel
430   rooms. More research is needed to know in which destinations hotel category is still a
431   marker of good quality. This could be related, for example, to destinations' type or life
432   cycle or to category systems' control measures and standardisation, among other
433   possible causes.

434   The above-cited findings seem to be aligned with that for Algarve hotels. The variable
435   of overall value of customer ratings has an important impact on the average price
436   (€9.62), while the TripAdvisor Travellers' Choice award's effect is even stronger
437   (€13.69). Similarly, the Algarve hotels' ranking by their appearance on the TripAdvisor
438   website has a significant negative impact on prices (€0.06). These results are aligned
439   with Yang and Leung's (2018) findings, providing proof that a better online reputation
440   implies lower discounts. This indicates that a good strategy to increase room rates is to
441   pay attention to and manage online comments, as well as pursuing customer satisfaction
442   and greater visibility on TripAdvisor. This result is also aligned with the existing
443   literature regarding the highest prices at weekends (Schamel, 2012) and a lower price as
444   more time elapses between booking and check-in days (Abrate et al., 2012).

445   After hotel category, the variable with the greatest impact on the configuration of room
446   prices in the Algarve is the all inclusive label, with a value added over the average price
447   of €20.46. This could have important implications for both hotel managers and tourists
448   visiting the area. When looking for services with a big impact on hotel prices, managers
449   could consider the option of inclusion as long as the cost to their hotel is less than what
450   customers are willing to pay. Tourists, in turn, can assess whether this service label
451   compensates for a higher price based on their consumption patterns and the
452   destination's price level, thereby deciding whether they should pay more for this
453   service.

454   The same decision-making process needs to happen with the variable of airport
455   transportation, whose impact on the average price is €13.69. Hotels should consider,
456   once again, the cost-benefit ratio of including this service in their complementary
457   services. For both the all inclusive and airport transportation variables, the results show
458   that customers are willing to pay more for these services, although the all inclusive label

459 is more directly related to customer satisfaction than to the possibility of greater
460 profitability. In the case of airport transportation, hotel managers need to use a price
461 guide to find out how much they can spend on airport transfers and still keep a
462 reasonable profit margin.

463 The variable of beach is an option that depends more on hotel location. The presence of
464 a beach has an average impact on the price of rooms in the region of €13.61, which is
465 similar with that found by other studies on the effect of beaches (Rigall-I-Torrent et al.,
466 2011), sea views (Fleischer, 2012), and other public goods (Rigall-I-Torrent & Fluvià,
467 2011) on hotel room prices. The business services variable is also quite close to this
468 value, with an average impact of €13.50. For this reason, hotels should not neglect to
469 appeal to business tourists and need to provide at least basic services. Even in cases in
470 which hotels are used for business purposes, these hotels' image must be aligned with a
471 holiday profile.

472 However, hotels' positioning as business-related does not have a significant impact on
473 prices, and services such as meeting rooms have a significant negative impact of -
474 €10.86 on the average price. This shows that the core market of Algarve hotels is
475 holiday customers. While hotel managers need to continue offering basic business
476 services, these administrators should not lose sight of holiday tourists' preferences since
477 hotels excessively focused on business could lose their charm for these tourists and
478 cause a misalignment with the Algarve's overall holiday focus.

479 Location is one of the most important variables in the literature on hotel hedonic
480 pricing, with notable findings on the significance and negative effect of distance in other
481 studies, such as Schamel (2012) and Zhang et al. (2011). The significant and negative
482 relationship between the hotel room rate and the distance to the centre of the Algarve
483 found may be cause to the location of Albufeira, which according to do Valle et al.
484 (2012) is by far the most important county in terms of tourism accommodation and
485 attractions. In contrast, hotel size, measured by number of rooms has a small impact
486 (€0.05), although it is significant and positive. This result differs from that of other
487 studies including, among others, Abrate et al. (2012), Agmapisarn (2014), Becerra,
488 Santaló and Silva (2013) and Zhang et al. (2011), for whom the relationship between
489 size and prices was null. This indicates that, in the Algarve, customers prefer larger
490 hotels such as resorts – a label with a significant positive relationship to price. Larger

491 hotels may inspire more confidence in consumers in terms of offering quality because of

492 the distance from other lodgings such as hostels, aparthotels or bed and breakfast

493 accommodations.

494 The results also show a significant positive relationship with regard to independent

495 hotels, but Thrane (2007) found the opposite relationship to be true. Likewise, other

496 studies such as Agmapisarn's (2014) of Bangkok hotels or Chen and Rothschild's

497 (2010) work in Taipei have shown traditional services to be related to room prices, but

498 these offers do not necessarily have an impact on prices in the Algarve region. Thus, the

499 availability of a pool, Internet or free Wi-Fi in the Algarve region does not have a

500 significant relationship with prices, and other services show an inverse relationship.

501 This is the case with air conditioning (-€4.17), free parking (-€5.17), spa (-€5.81) or pets

502 allowed (-€18.13), among others. In contrast, the presence of a golf course has a

503 significant positive value and a comparatively strong impact (€6.70).

504 These findings reveal the variability in services' importance according to the destination

505 investigated and the profile of tourists who visit it. The results may also highlight that

506 some services have lost value over time and no longer are sources of differentiation.

507 However, caution is needed regarding these results for traditional services, since, even if

508 a service's presence is not profitable, according to Albayrak and Caber (2015), its

509 absence could drastically affect customer satisfaction if it is perceived to be a basic

510 good.

511 Regarding hotels' positioning based on a brand image, the results show that being green

512 does not have a significant impact on prices. These results are similar to those found by

513 Soler et al. (2016) for Madrid, but the present findings differ from the results of the

514 cited authors' research on Barcelona and Kuminoff et al.'s (2010) study of Virginia

515 hotels and Garcia-Pozo et al.'s (2013) investigation of Andalusian hotels. The current

516 results show that, in the case of the Algarve, being environmentally responsible does not

517 imply an increase in room costs, and thus this label does not affect prices or it is not a

518 condition valued by tourists visiting the region. The promotion of this destination as a

519 sun and beach or golf destination may lead Algarve tourists not to value hotels'

520 environmental friendliness, even though a green image can be strongly appreciated in

521 other destinations.

In contrast, other brand image positions are quite interesting in terms of their impact on prices. The strongest effect of all is the introduction of a boutique label, with a weight of €17.50, followed by the quaint label with €15.81. The impact of the best value label is also notable, which paradoxically has a significant positive impact of €11.94 on the average price. This value may represent customers' willingness to pay for reducing or minimising cognitive dissonance. The next most important variable is the trendy label with €6.25, but the label of romantic or business has a notable lack of significance. The tourist profile of the Algarve thus is largely orientated towards a beach or urban vacation.

Therefore, unless hotel managers can implement a clear niche strategy, they should refrain from devoting extra resources to positioning themselves in the above markets as customers will not value them in the Algarve. The validity of this conclusion may be reinforced, first, by the negative impact of the quiet label, whose effect on the average price is -€4.46 and, second, by the positive impact of a location in Falesia Beach and the negative significance of the historical centre of Albufeira. In this context, the mid-range label's negative impact seems logical, as is hotels' positioning as family-friendly, whose impact is -€15.51.

Notably, the latter label is one of the most commonly employed in the region (i.e. 77% of hotels). However, hotels should probably not be linked, at least directly, to tourists travelling as families with children as this can have a negative impact on prices for both these tourists and other types as well. The family-friendly condition needs to be applied only in the case of a specific niche strategy in which other customers are a negligible factor.

Finally, the significance of specific location tags needs to be noted. Only the Falesia Beach label has a significant positive effect, while Ponta da Piedade, Praia da Rocha, Zoomarine Algarve and Vilamoura Marina do not have a significant impact on prices. Furthermore, the impact on the price of hotels' location in the historical centre of Albufeira is negative. This last statistically significant, negative relationship merits special attention given the importance of the distance variables for and concentration of tourists in Albufeira.

In terms of life cycle, the Algarve is a stagnant or mature destination (Vargas-Sánchez

553 et al., 2015). Thus, the historical centre of Albufeira has an oversized offer caused by an
554 earlier stage and this location's current decline. The negative environmental
555 externalities of Albufeira may also derive from the period of Fordism mass tourism's
556 more palpable effects. The Algarve brand is apparently much more valued as a
557 destination than its sub-brands individually since only the Falesia Beach label adds
558 value to the region's hotels.

559 Based on these results, the Algarve's managers obviously need to analyse and
560 reformulate their destination strategy for these places given that, at best, they show no
561 signs of differentiation and, at the worst, they make matters worse. Instead, this
562 destination should continue investing in the promotion of the Algarve brand. First, it has
563 managed to acquire a reputation as a destination in and of itself, and, second, the results
564 seem to indicate that allocating resources to its promotion is more efficient than
565 promoting the region's sub-destinations – with the exception of Falesia Beach.

566 **7. Conclusion**

567 This research examined the repercussions of different attributes for hotel room prices in
568 the Algarve region. This study is the first to focus on this region and shed light on
569 certain peculiarities that, until now, have been obscured and that may have led
570 destination and hotel managers in the region to make decisions that are less than optimal
571 or even erroneous.

572 The findings of this research are linked – as is true for all hedonic studies – to the
573 specific destination from which the results were obtained, so they cannot be
574 extrapolated directly to other destinations. The general understanding reported in the
575 literature on hedonic prices in the lodging industry is thus necessarily the result of the
576 sum of all individual investigations. Despite the difficulty of generalising the present
577 findings to other regions, the method used – a relatively easier and cheaper approach
578 utilising nearly all the information available on TripAdvisor – can be replicated in other
579 destinations. In addition, the model applied has a functional form similar to those
580 developed for other destinations.

581 This efficient approach allows researchers to control most of the variables that have
582 been confirmed as relevant in the literature on hedonic prices. The standardisation of the
583 development of models permits more direct comparisons of destinations, allowing

584 researchers to identified shared patterns without having to worry about the hedonic

585 method's sensitivity to the model's functional form. We encourage researchers to carry

586 out similar studies in other destinations and seasons in order to expand the overall

587 understanding of hotel pricing in the hedonic literature. Further research is needed to

588 examine changes in particular variables' impacts for the different sub-destinations under

589 study. Additional studies should focus on detecting whether shared patterns exist among

590 destinations that configure their hotel room prices similarly. These patterns could

591 correspond closely to the type of destination (e.g. urban, beach or rural) or to the life

592 cycle of the destinations in question.

593 The present study's findings primarily offer practical implications. First, it joins with

594 other research in identifying hotel category and reputational variables as key factors in

595 customers' greater propensity to pay. Therefore, hotel managers should pay special

596 attention to online user ratings and online reputation management. Second, the present

597 findings can help hotel managers to redesign the way they appear on TripAdvisor by

598 showing them which labels add to and detract from value – measured as implicit prices

599 – from the clients' perspective. Managers of Algarve hotels can improve their brand

600 image on TripAdvisor through the use of labels aligned with guests' greater willingness

601 to pay and can avoid using, at least in differentiation strategies, those tags with a

602 negative relationship with price.

603 However, the redesigning of brand image does not end with TripAdvisor, as this

604 strategy can be extrapolated to hotels' direct booking tools, namely, the hotels'

605 websites. In these channels, the use of positive positioning values can provide better

606 results while offering the best margins by not having to pay fees to OTAs. Hotel

607 websites also give hoteliers greater control of communication, a greater volume of

608 information to reinforce the desired image and clients with a stronger predisposition to

609 receive this information.

610 This study showed that, at least in the Algarve region, hotel positioning as

611 environmentally responsible has no impact on prices, while other positions do influence

612 room prices. They should be taken into account in development strategies by both hotel

613 managers and agents in charge of promoting and managing the destination brand. If the

614 relevant stakeholders want to reverse the region's environmental deterioration and its

615 future implications, these agents will need to take measures that encourage this type of

practices and attract or raise greater customer awareness of the importance of this positioning. This research's findings include proof that the latter must rethink their place marketing strategy since only the area of Falesia Beach adds value to Algarve hotels. Further analyses of these circumstances, as well as possible lines of improvement, could be a quite interesting future line of research. For example, future research in the region could produce valuable results by analysing the impact of spatial effects more comprehensively, including, among other options, using geographically weighted regression. Studies using this technique could expand the present results by investigating various areas, even while taking into account possible spatial autocorrelation.

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