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Tourism for the 21st Century

The Management School of the Polytechnic Institute of Cávado and Ave, located in Barcelos, Portugal, in cooperation with the Municipality of Guimarães and the Porto and North Tourism Entity (Guimarães delegation), is promoting the fourth edition of International Congress on Tourism. The congress will be held on the 3rd, 4th, and 5th of December 2015 under the main theme **"Tourism for the 21st Century"**.

The congress will take place in the city of Guimarães (UNESCO World Heritage Site), a city with tourism potential and heritage references at the regional, national, and international levels. The venue for this event is the Plataforma das Artes e Criatividade, located in the historic center of Guimarães. The Plataforma das Artes e Criatividade is reflective of this city where culture is open to all audiences.

CIT 2015 addresses several issues related to the future of tourism in the 21st century with a "back to basics" approach to new challenges and trends. Tourism can be the "fuel" for the economy, creating new societies and contributing to a new paradigm of a democratic system of governance. In addition to its importance to the global economy and job creation, tourism can contribute to peace and intercultural communication. This "happiness industry" can contribute to the trade balance as well as environmental and socio-economic sustainability.

This forum involves the core trilateral for planning and development success in the industry, including researchers, business community, policy makers and engineers who, directly and indirectly, influence the future of this sector.

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Índice

EFFECTS OF HOTEL CHARACTERISTICS ON ROOM RATES IN LISBON: A HEDONIC PRICE APPROACH
(ID193)

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Abstract

Portuguese tourism has had a strong growth in the last few years, being Lisbon one of the cities that contributed to that boom. Indeed, Lisbon was one of the European cities that experienced a greater increase in international arrivals lately.

According to the hedonic price method, a price of a good is related with the characteristics or the services it provides. Within this framework, the aim of this study, is to examine the effect of different hotel services and room attributes on hotel room rates in the city of Lisbon.

Using the hedonic pricing method, hotel characteristics are decomposed and analyzed, giving us the perception of the impact of each hotel service and attributes on the room rates and the people's willingness to pay for this. The independent variables were selected based on the literature review, between physical characteristics, services and location for 124 hotels in Lisbon city, from 3 to 5 stars. Moreover, consumer rating and value for money were considered.

The results suggest that consumers rating, star rating, room size, business centre and free internet are significant variables to explain differences in predicted prices in Lisbon city. Another influential factor on Lisbon room rates is the distance from the hotel to the city centre, Rossio, and to the airport.

The results enable to identify the attributes that are important to consumers and hoteliers and to which extent. This information can be used by hotel managers to define a price strategy, which attributes and services need to be upgraded and therefore be helpful in new investment decisions.

Keywords: Hotels, room rates, hotel characteristics, hedonic pricing, Lisbon.

1. Introduction

The price that consumers are willing to pay for a hotel room depends on its attributes or characteristics. Besides location, other variables are decisive in choosing the hotel and, therefore, the price consumers are willing to pay, as star rating, size, services offered, room and service quality, among others. One method for assessing the importance of each of the attributes or characteristics embodied in a good or service is the hedonic price method. From this method, in which the price of a good or service is the sum of unobserved prices (since they are not traded individually on the market) of the set of its attributes or characteristics, it is possible to estimate the implicit price of each of those attributes or characteristics through its influence on the price of the good or service.

The objective of this paper is to analyze the effect of different hotel services and room attributes on room rates of hotels in Lisbon, the capital of Portugal. The region has the particularity to be able to give a variety of characteristics in a relatively small area, which is especially useful to cover a larger number of visitors with different type of objectives and budgets. From countryside, to mountain and beaches everything is close to the city and easily accessible. The city itself has a lot of history, mainly linked to the Discovery Ages (present in Manuelino architectural style) but without forgetting the ancestral Moorish influences. Furthermore, the city has developed its own culture, modern and cosmopolitan, culminating in a unique lifestyle considered warm and fascinating to all those who come into contact with it. These characteristics make Lisbon an ideal place to tourism.

Since the many cultural and mega sport events hosted by the city mainly in the late 90´s (like *Expo 98* and *Euro 2004*, among others hosted or at least passing through Lisbon) and the increasing popularity as a conference destination, Lisbon has become a desirable destination. Due to that, the city has won countless awards and recognitions which provoke the attention of more visitants as well as investors (*World Travel Awards - Europe's Leading City Break Destination* 2009, 2010 and 2013).

The hotel industry is part of this and depends on it for their survival since these activities and recognitions are critical to the success of the hotel establishments installed in the region and should be coordinated to their benefit, taking into account their main strengths.

The number of guests in Lisbon in tourist accommodation amounted to 4,928,376, in 2014, and represents 31% of total market in Portugal. Between 2004 and 2014 there was an increase by an average of 4% per year for total guests and 5% for foreign guests. On average, foreign guests represented 64% of total guests in Lisbon in the period 2004-2014.

3, 4 and 5-star hotels accommodated 79% of total guests in 2014, and if considered only 4 and 5-star hotels they represent 61% of hotel establishments (hotels, apartment hotels, *Pousadas*, tourist villages, tourist apartments and others). The room occupancy rate in hotel establishments was 67,7% in 2014, the highest of Portuguese NUTS II regions.

It is therefore important to evaluate the characteristics most valued by consumers, which can be an important tool for decision making on new investments and to determinate price strategy.

This method has been applied in several studies but, to our knowledge, in Portugal there are few studies applied only to hotel room rates (Castro and Ferreira, 2015).

The aim of this study is to identify the attributes of hotels that are important to consumers and hoteliers in Lisbon, the capital of Portugal.

2. Theorical framework and prior researche

Price hedonic theory is attributed to a seminal work of Rosen (1974) and derived from Lancaster's consumer theory (Lancaster, 1966). Previously there were already applications of hedonic pricing models, but without a clear theoretical basis. Rosen (1974: 34) considers that "goods are valued by for their utility-bearing attributes or characteristics". These attributes or characteristics have implicit or hedonic prices which can be determined from the observed or explicit price of the good or service. For attributes that are evaluated positively by consumers, it is expected to increase the price. The method of hedonic pricing breakdown the good or service offered on its various attributes and allows to estimate how each attribute or characteristic contributes to the product price formation.

Since one of the fundamental assumptions of the price hedonic theory is that goods are valued for the utility of the embodied attributes or characteristics, the price of touristic services can be determined by the value that consumers attach to their characteristics or attributes. Although this theory has been applied primarily to real estate prices, more recently there are studies in the tourism and hospitality areas and, particularly, the room rates charged in hotels (Carvell and Herrin, 1990; Sinclair et al., 1990; Clewer et al., 1992; Jaime-Pastor, 1999; Espinet et al., 2003; Thrane, 2007; Chen and Rothschild, 2010; Abrate et al., 2011; Zhang et al., 2011; Schamel, 2012; Herrmann and Herrmann, 2014; Kafela, 2014; Castro and Ferreira, 2015; among others).

There are several hotel attributes or characteristics, identified in literature, that may affect hotel room rates as:

- Reputational attributes as star rating (Carvell e Herrin, 1990; Sinclair et al., 1990; Clewer et al., 1992; Jaime-Pastor, 1999; Aguiló et al., 2001, 2003; Coenders et al., 2003; Espinet et al., 2003; Thrane, 2005; Andersson, 2008; Chen and Rothschild, 2010; Abrate et al., 2011; Zhang et al., 2011; Abrate et al., 2011, 2012; Schamel, 2012; Herrmann and Herrmann, 2014); chain affiliation (Thrane, 2007; Chen and Rothschild, 2010; Hung et al., 2010; Abrate et al., 2011); consumer rating (Schamel, 2012; Herrmann and Herrmann, 2014);
- Location attributes, as distance from city centers (Carvell and Herrin, 1990; Espinet et al., 2003; Fleischer and Tchetchik, 2005; Andersson, 2010; Chen and Rothschild, 2010; Hung et al., 2010; Abrate et al., 2011; Zhang et al., 2011; Schamel, 2012; Herrmann and Herrmann, 2014);
- Accessibilities as distance to subway or railway stations (Thrane, 2007; Abrate et al., 2011; Zhang et al., 2011; Herrmann and Herrmann, 2014) or to the airport (Herrmann and Herrmann, 2014);
- Facilities and amenities of the hotel: swimming pool (Espinet et et al., 2003; Thrane, 2007; Andersson, 2010; Chen and Rothschild, 2010); fitness centre (Andersson, 2008; Chen and Rothschild, 2010) or sport facilities (Espinet et al., 2003); business or conference centre (Chen and Rothschild, 2010; Schamel, 2012); restaurant (Thrane, 2007); bar (Chen and Rothschild, 2010; Schamel, 2012); garden or terrace (Espinet et al., 2003); internet access (Chen and Rothschild, 2010; Schamel, 2012); shuttle (Chen and Rothschild, 2010); parking place (Espinet et al., 2003; Thrane, 2007);

- Facilities and amenities in the room: mini-bar (Thrane, 2007; Abrate et al., 2011; Schamel, 2012); hairdryer (Thrane, 2007); safe (Andersson, 2010; Schamel, 2012); iron (Schamel, 2012); air conditioning (Abrate et al., 2011); room service (Thrane, 2007; Schamel, 2012);
- Hotel size (Jaime-Pastor, 1999; White and Mulligan, 2002; Thrane, 2007; Abrate et al., 2011; Abrate et al., 2012; Espinet, et al., 2003; Hung et al., 2010; Zhang et al., 2011) and room size (Chen and Rothschild, 2010; Monty and Skidmore, 2003; Kafela, 2014).

For hotels in the city of San Francisco (USA), Carvell and Herrin (1990), besides location, include a set of attributes most valued by business and leisure travelers. The authors conclude that amenities such as concierge and dry cleaning services, rating and distance to Fisherman's Warf (a place of local attraction) have a significant influence on price. Jaime-Pastor (1999) analyzes the influence of attributes in a global sample of 345 hotels in Spain, divided into city and sun and beach hotels. For all the hotels in the sample, there is a positive and significant relationship between room rate and star rating and hotel services, but negative with the dimension (number of rooms). The results suggest that the differentiating factor between hotel prices is the star rating, both for hotels in capital cities and sun and beach segment. Thrane (2007) shows evidence that the difference between hotel room rates, in the city of Oslo, is mainly due to the existence of minibar and hairdryer, and with less impact, free parking and the distance to downtown (Oslo Central Station). However, the results suggest that the existence of pool, restaurant and the size of the hotel do not influence prices. Using the same approach, Chen and Rothschild (2010) show that characteristics such as belong to a chain, room size, location in the center, LED TV and internet access in the room, bar/cafe, shuttle, fitness center and conference facilities have significant effects on hotel room rates in the city of Taipei, China. However, when performing the analysis separately for weekdays and weekend room they conclude that the locational effect, the existence of LED TV in the room and conference facilities remain relevant for both models. In weekday room rate model the internet access in the room and the existence of the fitness center are also significant and the size of the room in case of weekend room rate model. Also in China, to the city of Beijing, Zhang et al. (2011) suggest that the variables with the greatest influence on hotel room prices are the category, size, age of the property (years since property was built or last refurbished). Abrate et al. (2011) conclude for hotels in the city of Turin, that category, quality certification and location have a significant impact on the price per night, while total services (swimming pool, bike rentals, etc.) have only an indirect impact, via ranking. Kafela (2014) for 49 hotels in and around Stockholm suggests that both weekend and weekday room rates are influenced by distance to the center, breakfast, minibar, room and hotel size, star rating and possibility of free cancellation, while room service only is significant in the weekday model.

3. Methodology

3.1. Hedonic Pricing Model

Usually, the hedonic price model is developed in two stages. In the first stage, it is analyzed the information of the physical and qualitative characteristics of the hotel to discover the implicit prices of them (Bateman et al., 2002; Champ and Boyle, 2003; Rosen, 1974). In the second stage, it is used the information of the

first stage to estimate demand functions for the characteristics of the hotel, which needs more data, and due to the complexity of this stage, it is less used in economic literature.

The product/service of one hotel (H_i) can be described by the set of its attributes or characteristics: $H_i = (q_{1i}, q_{2i}, ..., q_{ki}, ..., q_{mi})$, where i=1, 2,…, n represents the hotel and q_{ki} (k=1, …, m) each of its attributes.

The hotel room rate ($Room\_rate_i$) is a function of these attributes. It is assumed that the functional relationship (f) is constant in time and cross hotels, although the influence of each attribute may differ from hotel to hotel (Espinet et al., 2003). The hedonic price function (f) is: $Room\_rate_i = f(q_{1i}, q_{2i}, ..., q_{ki}, ..., q_{mi})$.

Kafela (2014), as Court (1939, in Goodman, 1998) and Rosen (1974), advises semilog (or log-linear) specification for the pricing function instead of the linear specification. This is mainly because semilog specification gives "more nearly linear and higher sample correlations" (Court, 1939:110 in Goodman, 1998). Following this advice, previous hedonic studies have used semilog or what is also called "left-side semilog" or "log-lin functional form". This type of semilog function is mostly used to express functions in situations where the dependent variable adjusts in percentage terms to a unit change in an independent variable (Studenmund, 2011). In our case, the price of a hotel room adjusts in percentage terms to a unit change in an independent variable such as room size.

3.2. Data

Data were gathered from website Mais Turismo – Portugal Hotel and Travel Guide (www.maisturismo.pt), Booking (www.booking.pt) and the site of each hotel during April, 2015. In this date there were 124 hotels with three or more stars in Lisbon.

Hedonic models analyse the price of a good as a function of different characteristics, and so, the dependent variable is the hotel room rate. Almost all the independent variables were selected based on the literature review, and included physical and qualitative characteristics. It was collected data of 38 independent variables, in a total of 4712 observations.

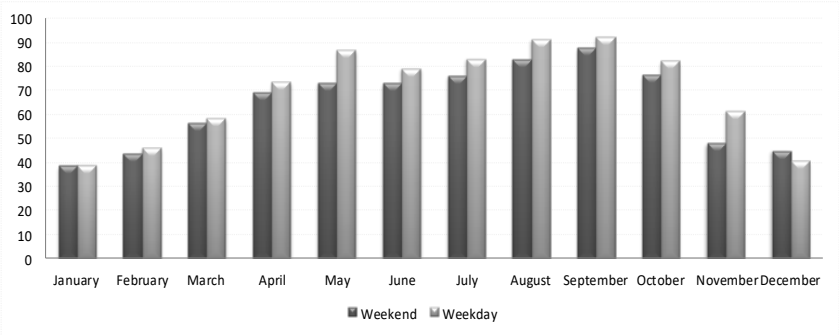
3.3. Selection and measurement of variables

On what room rates are concerned, some of the hotels had the possibility of free cancellation; some had breakfast included and others presented separately the rate without breakfast and the price of breakfast. In cases which breakfast was solely paid separately was added two breakfasts to final rate. To allow comparison between room rates we consider the room rate for a one night stay in a standard double room with breakfast included and free cancellation.

The data for room rates were collected via online reservation for a one-night stay in a double room. The booking was made four months in advance.

Usually prices are different according to whether the stay is on a weekday or a weekend and the month. Nevertheless, the occupancy rate in Lisbon hotels isn't very different in weekends and weekdays, as shown in graphic 1, neither the prices.

Graphic 1 – Occupancy rate, 2014, %



Source: Turismo de Portugal

In this way, it were collected prices in different months: August 19 (Wednesday) and 21 (Friday); October 21 (Wednesday) and 23 (Friday); December 30 (Wednesday), 2015 (Table 1).

Table 1 – Room rates mean (€)

	August 19	August 21	October 21	October 23	December 30
Room rate mean of total sample	129,78	130,18	141,52	144,01	147,31
Room rate mean of 5 star hotels	206,45	195,32	232,25	226,61	217,88
Room rate mean of 4 star hotels	126,58	129,05	139,07	144,27	149,59
Room rate mean of 3 star hotels	91,97	95,21	94,41	96,68	103,18

From the room rates collected it was verified that fluctuations of prices, although different between hotels, the results of the estimations were similar. The option was the best R square, which was obtained from prices of August 19.

Regarding reliability and validity of all variables used in studies, the best method is to follow the prior work done by other researchers, who had collected the data. Therefore the variables used in this study were revised and examined in accordance with works of Chen and Rothschid, (2010); Espinet et al. (2003); Thrane (2005; 2007); Zhang et al. (2011).

The selection of the most hotel characteristics as the independent variables was based on various studies (Espinet et al., 2003; Thrane, 2005; 2007; Andersson, 2008; Chen and Rothschid, 2010; Abrate et al., 2011; Zhang et al., 2011; Schamel, 2012; Herrmann and Herrmann, 2014), and others, like bicycle rent, that were mentioned in internet hotel reservation websites.

Several independent variables were collected and analysed: official attributes (star rating), hotel association or affiliation (chain); hotel size (number of rooms); consumer rating; value for money[146]; hotel location

[146] Value for money is an interesting variable alone as it give us a quality/price ratio.

attributes and accessibilities (distance to the center, distance to subway, distance to railway stations, distance to the airport, distance to bus station); facilities and amenities of the hotel (restaurant, bar, terrace, indoor and outdoor swimming pool, Spa, sauna, fitness centre, shuttle, free shuttle, bike rental, car parking, free car parking, free internet in public areas, swimming pool, meeting rooms, business centre, air conditioning, disable facilities, babysitting, pet allowed); and room characteristics and facilities (size, free internet).

Nevertheless, only some of these variables were considered, over others, due to the strong correlation between them, as Consumer Rating and Value for Money; distance to Rossio and distance to subway; distance to subway and distance to the airport; distance to the airport and having free shuttle; sauna and indoor swimming pool and Spa; Spa and indoor swimming pool.

Other variables weren't also considered because they were widely available in most of the analysed hotels (in more than 85% of the sample): in and out swimming pool; Spa; free internet in public areas; pets not allowed; no free car parking; bar; and air conditioning.

Therefore, the independent variables considered in the model of investigation include room size, consumer rating, distances to Rossio and to Airport (quantitative characteristics), free internet in the room, business centre and star rating (qualitative).

The room size (*Room_size*) is the size in square meters of a standard double room, and we expect that value to have a positive effect on price (Chen and Rothschild, 2010; Monty and Skidmore, 2003; Kafela, 2014).

The consumer rating (*Cons_rating*) is created by client's opinions and represents their perception for the characteristics of the services offered as well as the quality given, and was collected from the web site of *Booking*. It includes the quality of wifi, facilities, staff, comfort, location, cleanliness and value for money. This indicator is often used by consumers in addition to the hotel star rating. It is expected that better opinions of clients will influence positively room rates (Schamel, 2012; Herrmann and Herrmann, 2014).

D_Rossio is the distance to Rossio (in meters), that corresponds to *Praça de D. Pedro IV*, an iconic place in Lisbon which attracts tourists. Hotels located near to Rossio will be able to attract more tourists and so it is expected that room rates increase as the distance to the city center decrease (Carvell and Herrin, 1990; Hung, Shang and Wang, 2010; Schamel, 2012).

D_airport is the distance to Portela Airport (in meters), and it is expected that higher distances have a negative contribution to the price (Herrmann and Herrmann, 2014).

FI_room is a *dummy* variable to the hotels which offer free internet to customers in their rooms. Some hotels only offer this service for a fee, or only have internet on public areas. It takes the value of "0" or "1" in the absence or presence of the characteristic, respectively. It is expected to have a positive influence on prices (Chen and Rothschild, 2010).

Business_centre is about having a business centre. This variable seems to have some correlation with the number of rooms of the hotel. This takes us to think that bigger hotels are better able to maintain a business centre. It is also a dummy variable and takes the value "1" when the hotel has a business centre and "0" in the absence. The results for the sign of this variable are not conclusive in literature. Chen and Rothschild (2010) expected a positive signal but although the positive result obtained in their study it was not

statistically significant. As Shamel (2012: 1117) refers that "In an age of mobile technology and laptop computers, business centres may became obsolete", which may justify its negative result.

Lastly the hotels star rating, *5_stars* and *4_Stars* are about star rating used, and it is an official indicator of the hotel quality. Since we only had three different hotel's category (three, four and five stars hotels), it were created two dummy variables (5_star and 4_star) defined as: 5_star= "1" if the hotel has a five star rating, "0" otherwise; 4_star= "1" if the hotel has a four star rating, "0" otherwise. A great number of stars create the perception of a greater hotel quality or luxury and so it is expected to have a positive sign (Carvell e Herrin, 1990; Espinet et al., 2003; Andersson, 2008; Abrate et al., 2011).

3.4. Model specification

Kafela (2014), as did Court (1939, in Goodman, 1998), Zang et al. (2011), among others, advise semilog (or log-linear) specification for the pricing function instead of linear specification. This is mainly because semilog specification gives "more nearly linear and higher sample correlations" (Court, 1939:110 in Goodman, 1998). Following this advice, previous hedonic studies have used semilog or what is also called "left-side semilog" or "log-lin functional form". This type of semilog function is mostly used to express functions in situations where the dependent variable adjusts in percentage terms to a unit change in an independent variable.

This multivariate log-linear hedonic regression model shows that the natural log of room rate (price) is a function of the unlogged values of the independent hotel characteristics. As Studenmund (2011) noted, such models have neither a constant slope nor a constant elasticity, but the coefficients do have a very useful interpretation. The interpretation of the coefficients will be discussed in the Results section.

The model can be expressed as follows:

$$\log(\text{Room\_rate}_i) = \beta_0 + \beta_1(Room\_size_i) + \beta_2(Cons\_rating_i) + \beta_3(5\_stars_i) + \beta_4(4\_stars_i) + \\ + \beta_5(D\_Rossio_i) + \beta_6(D\_airport_i) + \beta_7(FI\_room_i) + \beta_8(Business\_centre_i) + \varepsilon_i, \quad [1]$$

$i = 1, 2, ..., 124$.

The following table (Table 2) presents details for dependent and independent variables.

Table 2 - Descriptive Statistics for hotel characteristics variables (N=124)

Variable	Description	Mean (b)	Std. Deviation	Minimum	Maximum
log (Room-rate)	Price, logged	4.79	0.38	4.00	6.00
Room_size	Hotal room size in sqare meters	20.03	6.13	9.00	42.00
Cons_rating	Consumer rating	8.27	0.61	6.60	9.40
D_Rossio	Distance to Rossio, in meters	2499.00	2068.23	0.00	9600.00
D_airport	Distance to airport, in meters	6447.58	2524.72	100.00	17000.00
5_stars (a)	5-star hotel	16.90%			
4_stars (a)	4-star hotel	53.20%			
FI_room (a)	Free internet in the room	83.10%			
Business_centre (a)	Business Centre	58.90%			

(a) Dummy variable

(b) In case of categorical variables, it is reported the percentage of frequency of observation with specified characteristics

3.5. Estimation and misspecification diagnostics

It is important to detect the seriousness of multicollinearity using the Variance Inflation Factor (VIF). Peter Kennedy (1985, in Chen and Rothschild, 2010) suggests that multicollinearity is a serious problem if there is a VIF value greater than 10. Table 3 shows that the VIF values of the independent variables are all less than 3, which suggest that multicollinearity is not a serious problem in the present study. It was also not detected outliers, so there aren't problems with heteroscedasticity.

Log-linear regression coefficients are usually interpreted as the percentage change in the dependent variable for every unit increase in the independent variable. This means for every unit that q_{ki} increases, Room_rate will change $\left(\exp(\beta_i)-1\right)\times 100$, in percentage terms, holding the other variables constant. In others words, it represents the marginal or implicit value of the kth characteristic and indicates the variation that occurs in the hotel room price when there is a change in the k characteristic or attribute, *ceteris paribus*.

The value of Durbin-Watson is 1.71, approximately equal to 2, which indicates that the residuals from OLS regression are not autocorrelated (see Table 3).

4. Results and discussion

We run OLS regression on the data collected. Based on the regression results (Table 3), the estimated equation for the model [1], after transforming the estimated coefficients, can be presented as follows:

$$\log(\text{Room\_rate}) = 529.65 + 1.11(Room\_size) + 37.30(Cons\_rating) + 49.93(5\_stars) + 11.52(4\_stars) - 0.20(D\_Rossio) + 0.30(D\_airport) - 10.51(FI\_room) - 11.40(Business\_centre) \quad [2]$$

Table 3 – Hedonic price function for hotel room in Lisbon; dependent variable: natural logarithm of one-night rate in euros

	Unstandardized Coefficients		t	Collinearity Statistics	
	B	Std. Error		Tolerance	VIF
Constant	1.840***	0,28	6,566		
Room_size	0.011***	0,003	3,387	0,682	1,466
Cons_rating	0.317***	0,034	9,277	0,674	1,484
FI_room	-0.111* ł	0,046	-2,401	0,945	1,058
Business_centre	-0.121**	0,039	-3,139	0,793	1,262
5_stars	0.405***	0,073	5,579	0,387	2,587
4_stars	0.109*	0,046	2,375	0,55	1,817
D_airport	0.003*** ł	0,001	3,861	0,826	1,210
D_Rossio	-0.002***	0,001	-2,021	0,783	1,278
R^2	0,772				
Durbin-Watson	1,71				
Test F	48,638				

Remarks: *** p<0.001; ** p<0.005; *p<0,05
ł opposite of the expected sign

The model, as measured by the adjusted R-squared, shows that 77,2% of the variations in room rates are explained by the variables included in the analysis. By transforming the estimated coefficients of the independent variables we can now analyse the results. The star rating dummies are significant and the transformed estimated coefficients evaluate the average price premium that consumers are willing to pay with respect to a three stars hotel. Accordingly, predicted room rates for hotels with four stars are 11,5% higher than those with three stars, and, similarly, five star hotels charge 49,9% higher room rates than those with three stars, *ceteris paribus*. We can see the increase in predict room rates as the number of stars increase, mainly hotels of 5 stars.

The online consumer rating is highly significant and an increase of one point in consumer score will rise price in 37,3%.

The distance to the city center suggests that it is also a significant variable to explain differences in hotel room rates, although it has little influence on hotel prices in Lisbon.

The result for the estimated coefficient of the distance to airport is significant, although positive. This result may be explained by the short distance to the city center and also by the good accessibilities.

The results also suggest that hotels with free internet in the room are about 10,5% cheaper than those that do not include, holding constant the influence of other variables in our equation. Although the sign was opposite to the expected, it can be justified by the mobile internet package that exists nowadays.

Hotels charge 1,1% higher for every square meter increase in room size and is highly significate.

5. Conclusion

This article, based on the hedonic theory, is consistent with some previous studies for capital cities (Thrane, 2007; Chen and Rothschild, 2010; Zhang et al., 2011; Kafela, 2014).

Using the hedonic pricing method, the characteristics of the hotel's services are decomposed and analyzed, giving us the perception of the impact of each hotel service and attributes on the rates and the willingness to people to pay for this. Our results suggest that a number of characteristics have significant effects on hotel room rates in Lisbon, as star rating, consumer rating, business centre, free internet in the room, and room size. An overall interpretation of the results shows that hotels with 5 stars and high consumers rating charge higher prices, about 50% of prices of 3 stars hotels.

The possibility of using the Internet for travel planning, and its rapid growth, has a great impact in the hotel's strategies since it allows greater analysis of prices and characteristics. On the other hand, hotel managers can easily adjust room prices faster as they have that information faster than ever (Abrate et al., 2012).

Using the hedonic price functions to quantify the effect of each characteristic on room rates, manager's decisions can be effectively better knowing which services need to be upgraded, or which rates should be practiced.

To further study it is important to include the seasonality, as an explanatory variable, in Portuguese cities or regions where tourism is affected by this phenomenon, which was not very notably in Lisbon.

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