

THE INFLUENCE OF HOTEL ATTRIBUTES ON ROOM RATES. THE CASE OF BUCHAREST

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ABSTRACT. Located in the southeast of Romania, Bucharest is the capital and the largest city in the country. Economically, Bucharest is the most prosperous city in Romania. During the last years, this city faced one of the highest growths in the number of hotels. Nowadays, due to the development of Internet-based technologies, the reservation process has changed; travelers can easily get information about the experience of other guests and also compare prices. The aim of the present paper is to analyze how prices for a hotel stay, in the city of Bucharest, can be influenced by some quality signaling factors, as star rating, online consumer's ratings and the number of consumer's comments. By using a multiple regression model for 3 to 5-star hotels in Bucharest, we identify, on one hand, the factors that have a positive influence on hotel room rates and, on the other hand, the factors that have a negative impact on the consumer's willingness to pay. Our main results supply signals to hoteliers concerning the attributes most valuable for consumers which can lead to a higher room rate premium.

Keywords: Bucharest hotels, online hotel ratings, consumers reviews

JEL Classification: M15, M10, L83, L86.

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Recommended citation: Ferreira, F.A., Bode, O.R., Rus, R.V., Toader, V., The Influence of Hotel Attributes on Room Rates. The Case of Bucharest, *Studia UBB Negotia*, vol. 63, issue 2 (June), 2018, pp. 5-21, doi:10.24193/subbnegotia.2018.2.01.

1. Introduction and Literature Review

Bucharest, the capital and the largest city of Romania, is one of the European cities that faced, in the last years, the global extension of the hotel industry and an increased mobility of international travelers. We can say for sure that Bucharest (which in the 1900s earned its nickname of "Little Paris"), is an excellent place for tourism, due to the fact that is a city that combines the old with the new: tourists might come across a communist-style, a centuries-old building and a modern high rise building, all in the same block. Not to be missed in Bucharest is the largest Parliament building in the world with 3,100 rooms and 12 floors high. Another important touristic attraction in Bucharest is the old city center with its narrow cobblestone streets and old buildings, including medieval churches. From ancestry monuments, natural parks, cafes, terraces, traditional gastronomy, luxury hotels, important business points, the city has raised the attention of more investors as well as tourists.

In Bucharest, for the next few years, several hotels to be affiliated with international chains are scheduled to open, recalling here the Courtyard by Marriott, Ibis Styles, Hotel Indigo, Corinthia (Grand Hotel du Boulevard), Moxy by Marriott or Autograph Collection. This is a result of the fact that the positive results recorded by hotels in Bucharest have attracted both developers' and investors attention who were looking for higher performances over the past few years compared to Western markets. While in cities such as Prague, Budapest or Vienna, it is now more difficult to find land or buildings that can be converted into hotels, in Bucharest the accommodation capacity will continue to increase in the coming years, with an average annual rate of 3.9% (Central and Eastern Europe Hospitality Snapshot 2018 report published by the Cushman & Wakefield real estate consultancy).

The Central and Eastern Europe hotel industry market is showing a positive evolution, with all performance indicators higher than in the previous year. Bucharest is noticed by an average increase in the number of overnight stays of 10.1% per year between 2013 and 2017, the highest in the region. The average hotel rates in Bucharest were 78.1 euro/night during the year 2017, higher than in Sofia (76.1 euro/night), Warsaw (75.4 euro/night) and Bratislava (63.6 euro/night), but below Vienna (96.9 euros/night), Prague (87.5 euros/night) and Budapest (84.3 euros/night). Thus, as a dynamic, Bucharest overcomes the main Central and Eastern Europe capitals, namely Vienna, Prague, Budapest, Warsaw, Bratislava, and Sofia, creating the basis for a sustainable development of accommodation capacity. However, with 3.2 million overnight stays in 2017, Bucharest is still a considerable distance from Prague (18 million overnights), Vienna (15 million), Budapest (10 million) and Warsaw (6 million) surpassing only Bratislava (2.7 million) and Sofia (2 million) (Central and Eastern Europe Hospitality Snapshot 2018 report published by the Cushman & Wakefield real estate consultancy).

By adjusting the average rate with the occupancy rate (quoted by the Cushman & Wakefield at 73.6% for Bucharest in 2017), it is obvious that Bucharest hotels booked an average of 57.5 euro/night for each room available, rising by 6.4% compared to 2016, and continued to grow in the first half of this year, by 4.7%, to 60.2 euro/night.

According to the data released by the National Institute of Statistics in the first semester of 2018, arrivals in tourist accommodation facilities reached to 3.51 million (+ 5.1 % compared to the first semester of 2017), most of them (76.1 %) belonging to Romanian tourists. Also, the share of foreign tourists was of 23.9%, close to data recorded in the first semester of 2016.

By considering the tourists, we know that nowadays accommodation is a vital component in the tourism industry. Most hoteliers claim that highly satisfied guests are much more likely to return to the property and spend more time during future stays than guests who are indifferent or displeased. Hotels have the difficult assignment to provide quality for clients that are more quality conscious but also practice reasonable prices at a time when travelers have greater price-sensibility (Smith & Spencer, 2011).

In the hospitality industry, there are several hotel attributes identified in literature that may affect hotel room rates namely location, star rating, online reviews, services offered, room and service quality (Abrate, Capriello & Fraquelli, 2011; Andersson, 2010; Espinet et al., 2003; Chen & Rothschild, 2010; Castro & Ferreira, 2015; Castro, Ferreira & Vasconcelos, 2016).

There are many studies conducted on pricing in the hospitality literature, but only a few of them focused on the relationship between hotel attributes and hotel room pricing from a customer's perspective. These studies tried to explain the key hotel attributes in the pricing process. For example, Collins and Parsa (2006) emphasized many factors affecting pricing decisions, such as star rating, management type, location, size, and amenities.

One of the most widely applied models for hotel room pricing studies is the hedonic pricing model. Developed by Rosen (1974), the hedonic price model attempts to analyze the relationship between the attributes of a product/service and its price. Therefore, this model is useful to understand the relationship between the hotel attributes and hotel room rates.

Many studies have applied a hedonic pricing model in order to examine the relationship between hotel attribute and price. For example, Chen and Rothschild (2010) examined the impact of a variety of attributes on hotel room rates in Taipei. Their study revealed that hotel location, the availability of LED TV and the presence of conference facilities have significant effects on both weekday and weekend room rates. Monty and Skidmore (2003), using data on price and amenities collected from bed and breakfast accommodations in Southeast Wisconsin, found that location, the day of week and time of year are important determinants of hotel price, but room service is not a significant determinant.

The aim of the present paper is to investigate how the quality of a variety of hotel attributes, measured by several consumer online ratings, star rating, and the availability of rooms, influence the room rates of hotels in Bucharest, as a whole and for different hotel categories (3, 4 and 5 stars).

The results of this study may help hoteliers to improve their strategy on prices based on guest satisfaction of a variety of attributes.

2. Material and methods

In order to attain our research objective, we selected one of the most important online hotels booking platforms with global reach: Booking.com. The data used in this study covers 96 hotels in Bucharest city, from 3 to 5 stars, gathered from Booking.com. We collected the room rate for a one-night stay in a standard double room with breakfast included and free cancellation (the booking was made four months in advance), the customers reviews scores about Cleanliness, Location, Staff, Comfort, Facilities and Value for money, the Number of comments from each hotel and the number of available rooms in the moment of booking.

The collected data were processed further using two statistical software – SPSS and SmartPLS. We used a log-linear (or “semi-log”) model for the pricing function instead of the linear specification. The log-linear specification gives “more nearly linear and higher sample correlations” (Court, 1939: 110 in Goodman, 1998).

The hedonic price model is the following:

$$\ln(\text{Room rate}) = \beta_0 + \beta_{1i} \sum_{i=1}^n X_i + \beta_{2j} \sum_{j=1}^p Y_j + \varepsilon, \quad [1]$$

where:

X_i is the vector of quality signals and includes:

- guest ratings - the hotel online guest ratings, which captures the electronic word of mouth gathered from the travel review website, Booking.com (on a scale from 1.0 to 10.0) which are disaggregated in the following scores: Staff, Location, Facilities, Comfort, Cleanliness and Value for money;
- and star rating - an official indicator of the hotel quality, which ranges from one to five. Since we only selected three different hotel’s categories (three, four and five star hotels), two dummy variables were created (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.

Y_j is a vector of other variables, from the literature review:

- room availability – the selected number of rooms available at the moment of booking;
- and number of comments – the number of online reviews posted by guest on the Booking.com website for the chosen date;
- β_0 , β_{1i} and β_{2j} are the regression parameters and ε is a random error.

Starting from the literature, the purpose of the previous model will be to validate the following research hypothesis:

H1. A better evaluation of the establishment's characteristics (hotel) will determine a higher the room rate.

Some of the accommodation's characteristics grant to the units a market power, allowing them to charge higher prices. Usually, a better category (higher the number of stars), a better location, a bigger hotel (number of rooms) and the membership to a hotel chain (brand awareness), will determine a higher room price.

In this paper, the customers' rating regarding location were used for evaluation. The purpose of the visit and the location of the activities that will be performed in the destination will influence the choice of the hotel. If a customer evaluates the location with a higher score, it means that the access from the hotel and the surroundings of the location were appropriate for its interests.

H2. The quantity of the tourism services provided to customers will determine a higher room rate.

"More is better" may describe this hypothesis. If a hotel will provide to its customers more free /included services, the price of accommodation will be higher. To evaluate this assumption, it was studied the impact of different services available and included free of charge: sauna, spa, indoor pool, outdoor pool, fitness, free Wi-Fi, free parking and terrace.

H3. Good reviews of tourism services will allow hotels to charge higher room rates.

The better the reviews, the higher the perceived quality of the services. In this case, the hotels may have the opportunity to capitalize on the good perceptions of its customers into slightly higher prices than their competitors.

H4. Better room characteristics will determine higher room rates.

The size of the room represents one of the first aspects which influences the customers' perception about the services provided and may determine the customers' willingness to pay, allowing hotels to charge higher prices for bigger rooms. Also, better reviews regarding the room's cleanliness and comfort, create opportunities for charging slightly higher room rates.

H5. The higher the customer value perceived by customers, the higher will be the room rates.

The values the customers perceive was evaluated using the number of reviews, the general score of the reviews and value for money item. Good value for money and good reviews determine in general a higher willingness to pay, an opportunity the hotels may capitalize through higher room rates.

3. Results and discussions

Table 1 reports the descriptive statistics of the variables used in the empirical analysis. We analyzed 98 hotels, 10.2% of which had 5 stars, 51.0% had 4 stars and 38.8% had 3 stars. We did not consider two hotels, a 3 stars hotel and another hotel of 4 stars, because they did not have available rooms for the selected period of time and the value of the room (room rate) was not available on booking.com.

For the total sample, the average price was 74.89€ with a standard deviation of 25.56€. The minimum price was 34.00€ and the maximum 162.00€. It can be noticed also, a lag between the minimum (16) and the maximum (2,535) in the number of reviews from clients. The ratings for the indexes of satisfaction are all higher than 6.4 (in a scale of 1 to 10) and the coefficients of variation for the mean are low. The lowest coefficient of variation on the consumer's ratings is 0.063 and concerns the variable *Value for Money*. Among all the variables, the highest coefficient of variation is 0.97 and concerns the variable *Number of reviews*.

According to the results of the bivariate *Pearson* correlation coefficients among the various Booking.com ratings of hotels (the *Room*

availability, Number of reviews, and Room rates), we can conclude that the variable *Cleanliness* is strongly and positively correlated with *Value for money, Staff, Facilities, and Comfort*; the variable *Comfort* is strongly and positively correlated with *Staff, Facilities* and *Value for money*; the variable *Facilities* is strongly and positively correlated with *Staff* and *Value for money*; and also the variable *Staff* is strongly and positively correlated with *Value for money*. We also observed the correlation between hotel room rates and all the other variables. With the exception of the variable *Availability*, all the others are statistically significant at 2%.

Table 1. The variables used in the empirical analysis

Variable	Minimum	Maximum	Mean	Median	Std. Deviation	Coefficient of variation
<i>Cleanliness</i>	6.5	9.6	8.498	8.600	0.6420	0.0755
<i>Comfort</i>	6.5	9.5	8.205	8.300	0.6719	0.0819
<i>Location</i>	6.7	9.7	8.346	8.300	0.6876	0.0824
<i>Facilities</i>	6.4	9.3	7.955	8.000	0.6162	0.0775
<i>Staff</i>	7.1	9.6	8.448	8.500	0.5574	0.0660
<i>Value for Money</i>	6.9	9.1	8.077	8.100	0.5088	0.0630
<i>Free Wi-Fi</i>	5.6	10.0	8.334	8.400	0.6425	0.0771
<i>No. of reviews</i>	16	2,535	569.19	461.00	552.661	0.9710
<i>Room rate</i>	34	162	74.89	69.00	25.556	0.3412
<i>Availability</i>	1	10	5.34	5.00	3.012	0.5640

Source: authors' calculation using SPSS

In the next step, we run OLS regression on the data collected. The hedonic price model equation [1] can be expressed as follows:

$$\begin{aligned} \ln(\text{Roomrate}) = & \beta_0 + \beta_1 \text{Cleanliness} + \beta_2 \text{Comfort} + \beta_3 \text{Location} + \beta_4 \text{Facilities} + \beta_5 \text{Staff} + \beta_6 \text{Value for money} \quad [2] \\ & + \beta_7 5_Stars + \beta_8 4_Stars + \beta_9 \text{Roomavailability} + \beta_{10} \ln(\text{No of reviews}) + \varepsilon \end{aligned}$$

The results based on the regression are reported in Table 2. The first model (Model 1) includes all tested variables. On this model, some of the variables of quality signals – *Facilities, Staff, Cleanliness,* and

Comfort are not statistically significant. Also, the *ln_reviews* is not statistically significant. So, the second model is the result of the use of the Backward method, where all the variables are significant at or better than 0.10 confidence level.

Table 2. Measuring the impact of travels satisfaction on hotel room rates
Dependent variable: Logarithm of hotel room rates

Variables	Model 1		Model 2	
	Coefficient	VIF	Coefficient	VIF
<i>Constant</i>	2.586**** (8.915)		2.530**** (9.261)	
<i>Ln_No reviews</i>	-0.019 (-0.922)	1.947	-0.032* (-1.671)	1.641
<i>Location</i>	0.168**** (5.432)	1.876	0.183**** (6.163)	1.686
<i>Facilities</i>	0.149 (1.431)	17.038	0.306**** (4.844)	6.118
<i>Value for money</i>	-0.258*** (-2.789)	9.201	-0.170** (-2.252)	5.951
<i>Staff</i>	-0.092 (-1.492)	4.912	-0.101* (-1.785)	4.034
<i>Cleanliness</i>	0.101 (1.224)	11.709		
<i>Comfort</i>	0.124 (1.077)	24.856		
<i>Room availability</i>	0.005 (0.936)	1.135		
<i>5_stars</i>	0.499**** (6.458)	2.343	0.573**** (8.317)	1.812
<i>4_Stars</i>	0.217**** (5.051)	1.942	0.254**** (6.635)	1.501
Adjusted R-square	0.780		0.774	
F test	34.761****		47.568****	
DW	2.197		2.133	
Number of observations	96		96	

Notes: *Student t*-values in parentheses; **** Statistically significant at 0.1%; *** Statistically significant at 1%; ** statistically significant at 5%; * statistically significant at 10%

Source: authors' calculation using SPSS

Log-linear regression coefficients can be transformed in order to be interpreted as the percentage change in the dependent variable for every unit increase in the independent variable. This means that for every unit the independent variable increases with, *Room_rate* will change $(\exp(\beta_i)-1) \times 100$, in percentage, holding constant the other variables.

In other words, it represents the marginal or implicit value of the k^{th} 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*.

Based on the regression results (*Table 2*), the estimated equation for *Model 2*, after transforming the estimated coefficients, can be presented as follows:

$$\begin{aligned} \text{Ln}(\text{Room rate}) = & 2.53 + 0.201\text{Location} + 0.358\text{Facilities} - 1.486\text{Value for money} - 0.096\text{Staff} + \\ & + 0.774\text{5_Stars} + 0.289\text{4_Stars} - 0.031\text{Ln(No of reviews)} \end{aligned}$$

Model 2, as measured by the adjusted R-squared, shows that 77.4% of the variance in *Ln Room rates* are explained by the variables included in the analysis. The F-ratio is significant at the 0.00 level. This provides evidence of the existence of a linear relationship between the *Ln Room rates* and the explanatory variables. All VIF values are below the cut-off point of 5, so multicollinearity does not seem to be a problem in our model. The t-statistic test was used for testing whether the independent variables contribute to the predictor of the dependent variable.

A second approach using structural equations modeling was conducted to emphasize the relationships between the room rate and the factors mentioned in the research hypothesis. The initial model included all five categories of factors discussed in the literature (the establishment, the quality of services, the number of services, the room characteristics and the customer value), but like in the case of the regression model, the factors which were not relevant from the statistical point of view were removed.

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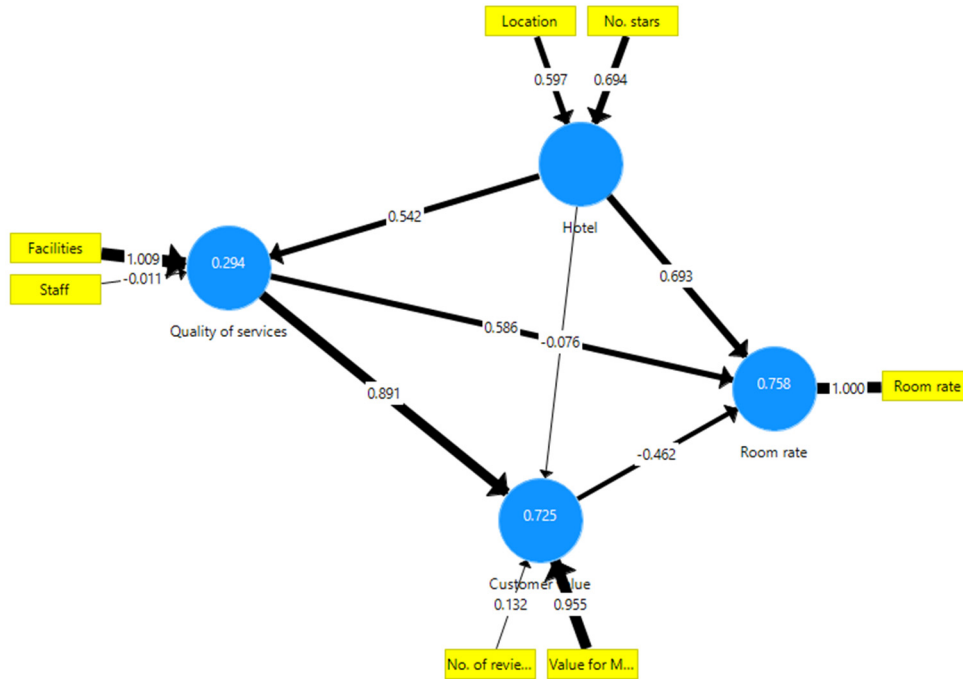


Figure 1. Proposed research model and the hypothesis

Source: authors' construction using SmartPLS 3

Note: inner model values represent path coefficients, outer model values represent outer weights and the values from the constructs are R squared values

Both methods implemented lead to the same results. First of all, the research hypothesis H1 was validated: the hotels establish the level of prices in accordance with the establishments' characteristics. More precisely, the higher the hotel category (the number of stars), the higher will be the room rates. 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-star hotel. Accordingly, predicted room rates for hotels with four stars are 28.9% higher than those with three stars, and, similarly, five-star hotels charge

77.4% 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 in hotels of five stars.

Also, a better perception of the customers regarding the location (one additional point in the evaluation scale), will lead to a 20.1% increase in the room rate. This proves the fact that hotel' managers are aware of the location's importance in the choice of their customers and about their willingness to pay more for being accommodated in a better location.

The effects of the hotel's size and of the membership to an international hotel chain are not representative from a statistical point of view. One explanation could be the fact that customers are price sensitive and the size of the hotel and the awareness of a brand do not represent significant incentives for customers to be willing to pay more for these aspects.

The relationship between hotels' characteristics and the room price was analyzed through the perspective of general customer ratings using a multi-group analysis. Starting from the mean of the overall customer ratings (8.26), the hotels were divided into two groups: low customer ratings (maximum ratings of 8.2) and high customer ratings (8.3 or higher ratings). Even if the difference between the impact of hotel characteristics on establishing the room rate is not statistically significant (p values is 0.924, lower than 0.95 – the threshold which allows to consider it as being statistically representative), this relationship is worth to be discussed and to be studied deeply in further researches. The assumption is: the managers of the low customer rating hotels rely more on the hotel characteristics when they establish the room rate (the path coefficient in the case of low rating hotels is higher with 0.184 on average). One reason could be the fact that they try to use location criteria to compensate the lack of other aspects that may have an impact on the room rate, as the quality of services, for example (the impact of quality of services on room rate is lower in the case of low rating hotels).

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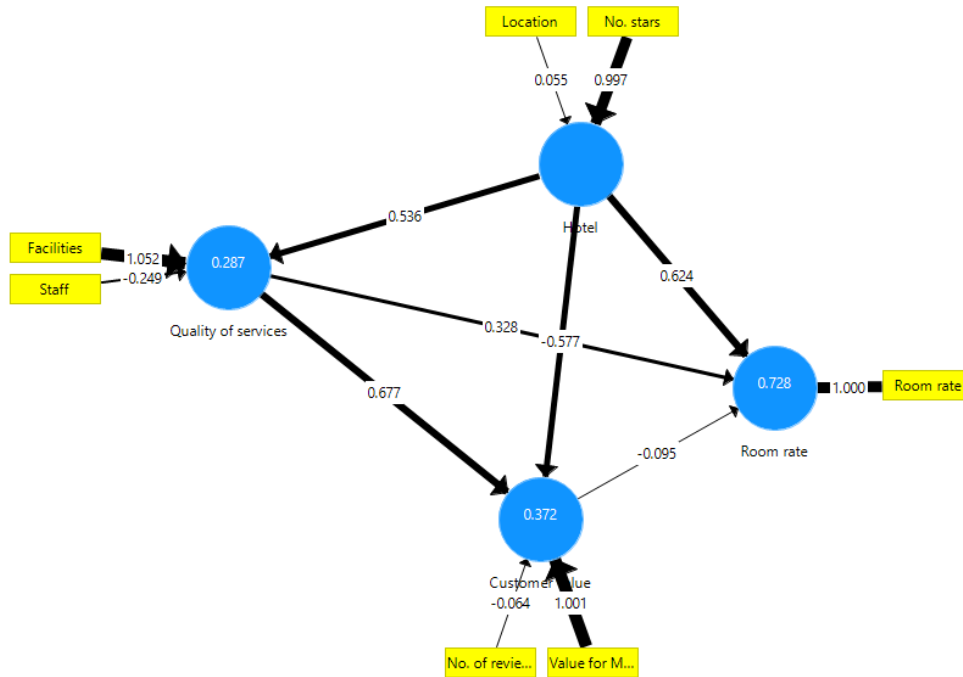


Figure 2. Proposed model in the case of high overall customer ratings
 Source: authors' construction using SmartPLS 3

The second hypothesis, regarding the impact of the number of services on the room rate, was not validated. The effects of this category of factors were not relevant from the statistical point of view, the reason why it was removed from the model. One possible explanation for this aspect is that some of the complementary services considered in this analysis represent mandatory requirements to certificate the accommodation unit at a specific category. As a result, the hotel managers don't see the availability of these services as a strength of their units, so they are not using them as a diversification criterion in establishing the room rate.

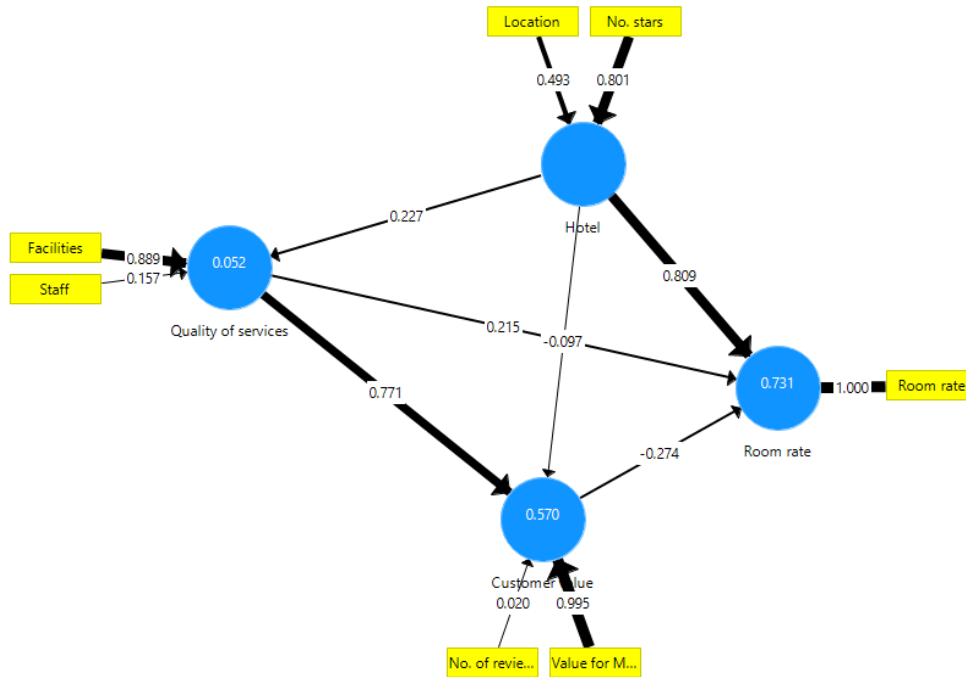


Figure 3. Proposed model in the case of low overall customer ratings
 Source: authors' construction using SmartPLS 3

Another criterion used in establishing the room rates is the perception of customers regarding the quality of services - the H3 hypothesis being validated. The online quality signaling factor - *Facilities* - is significant and positive. An incremental point in the *Facilities* score is associated with the hotel's price premium of 35.8%. Usually, when the customers perceive a good quality of the services provided, they are willing to pay more. This aspect is capitalized by hotel managers into higher room rates. A special attention they should give to Staff evaluation because the impact of this item on the quality of services is negative. The negative relationship between these two items may be the result of the fact that customers tend to evaluate the front desk employees through the perspective of the room rate: the review may be lower if the customers perceive the room rate high and the activity of employees only satisfactory.

The fourth hypothesis could not be validated. As in the case of the second hypothesis, since the minimum size of the room is established through the certification criteria, hotel managers do not consider appropriate to take it into consideration when they establish the room rates. Regarding the customers' perceptions on the cleanliness and comfort, we noticed these two aspects were highly correlated with the value for money item, resulting in high VIF coefficients when we included this variable into the model. Since the customers "include" these two aspects into their evaluation regarding the perceived value, it was decided to remove the items from the analysis. Further analysis may be developed in order to study the relationship between these items.

As opposite to our expectations, *Value for money* ratings have a negative and significant impact on room rates – the H5 hypothesis was not validated. Value for money, in tourism, is a concept that "captures both price and quality in one construct" (Smith & Spencer, 2011, p. 96) and measures the trade-off between the price paid and the hotel stay experience. Also, it is the result of the interaction between the customers' expectations (determined by the hotel characteristics, for example) and the satisfaction experienced when they consume the services. Since the hotels are charging higher room rates due to location and number of stars (H1 was validated) and the staff item has a negative impact on the quality of services, an increase in the room rates may have a negative impact on the customers' value.

The results also suggest that the number of online customer reviews per hotel room has a direct but negative impact on room rates.

4. Conclusions

This study investigated which attributes of satisfaction (expressed online) are more associated with room rates of the hotels in the city of Bucharest. We analyzed the influence of different quality attributes found on booking.com website on the room rates charged by hotels. Based on these results it was found that the satisfaction with the online quality signaling factors – *Facilities* and *Location* – were able to influence the hotels' room rates on booking.com website. *Value for money* and *Staff*

ratings has a negative and significant impact on room rates. These main results supply signals to hoteliers to take corrective actions towards the attributes most valuable for consumers which provide a higher room rate premium.

The establishment's characteristics represent the main aspects used in establishing room rates. But, most of these aspects are established during the construction phase, the reason why it is important for the future investors in the hotel industry to be aware of these aspects and decide in advance what will be the category of hotel and which location will be the most appropriate for its customers. Unfortunately, location is not always a controllable factor, the reason why, when the investor has not the possibility to choose the location, it will be good to identify and target the market segment which will consider the hotel location as being the most appropriate for their needs.

The time span for which the data were collected may represent a limit of this study. It is well-known that accommodation units have different price strategies for different seasons, a reason why the current study may be developed taking into consideration the evaluation of factors affecting room rates during the peak season and offseason. Also, due to different types of tourists visiting the destination during the weekdays and weekends, a possible development of the study would be to evaluate the room rates along the entire week.

Further topics of research emerged as a result of this study. The relevance of hotel characteristics in establishing the room rates can be influenced by other factors, the overall evaluation of customers may represent one of these factors. Also, the factors influencing the value for money customers' evaluation, since they influence the customers' willingness to pay may play a significant role in the strategies used to establish the room rates.

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