**Analysis Of Hotel Room Pricing in Indian Market**

**By**

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## 1.Introduction

The purpose of this project is to analyse the pricing strategy of hotels in the Indian hotel industry. Analysis is about the hotel room pricing in Indian market and how the factors affect the price of room rent in a hotel.

The data used was collected from www.hotels.in in October 2016. Data collected investigates pricing of hotel rooms in 42 cities. It includes various attributes such as FreeWifi, FreeBreakfast, HasSwimmingPool, HotelCapacity, IsTouristDestination, HotelName, RoomRent etc which we will be find out as to how do they affect the hotel room rent. We evaluate what factors affect the price of room the most and which factors affects the price least.

In this analysis we will take insights from different graphs, histograms and plots drawn between the room rent of hotel versus different other factors such as whether the hotel has facilities like swimming pool, free Wi-Fi, free breakfast or not, whether the hotel capacity has an impact on the price of room etc.

We also evaluate by how much supply of rooms in hotels affects prices for hotel rooms, i.e., hotels with high capacity charges less as compared to the one with low capacity.

In this process we will look for various correlation amongst the variable in our dataset. We estimate it using the Restricted Maximum Likelihood (REML) methodology. Our analysis reveals a significant “price of ratings, swimming pool and capacity” embedded in hotel room rent among hotels in different cities of India.

## 2. Overview

Our dataset reveals the pricing of different hotels room rent within the city and on a given date. The dataset is collected from www.hotels.in. We try to use the boxplots, histograms, boruta test, T test, regression and different graphs to take insights about the data. We also evaluate the prices of hotels are higher in metro cities as compared to the no metro city. We estimate a regression of hotel room prices in a mixed model framework. Our analysis reveals that attributes such as swimming pool, hotel capacity, metro city or non metro city, free breakfast, star rating etc does affect the price of room. Whereas attributes such as Weekend, Date and New year eve does not affect the analysis.

## 3. An Empirical field Study of Hotel Pricing Strategy in India

**3.1 HYPOTHESIS**

We did study how the price of a room at a hotel is affected by external and internal factors. Boruta test gave us the result that factor such as Weekend, Date and New Year Eve have least effect on the room rent hence they can be rejected. Whereas out of 18 factors the 3 most influencing factors are StarRating, availability of swimming pool and Hotel capacity. These factors have strong correlation with room rent. We will create our hypothesis based on these factors and other secondary factors which affect hotel room rent. Therefore the Hypothesis were:

H1: Average RoomRent in hotels having swimming pool is more than that which don't have.

H2: Average RoomRent in hotels having more hotel capacity is more compared to one with less capacity.

H3: Average RoomRent in hotels with high star rating is high as compared to one which has less star rating.

H4: Average RoomRent in metro cities hotels is more than that of non metro cities.

H5: Average RoomRent in hotels providing Free Breakfast is more than that which don't provide.

H6: Average RoomRent in hotels in Tourist Destination is more than than others.

H7: Average RoomRent in hotels providing FreeWifi is more than that which don't provide.

**3.2 Data**

Data collected for this analysis was from the www.hotels.in. It provided data of the 44 hotels located in cities of Mumbai, Delhi, Bangalore, Chennai, Hyderabad, Ahmedabad, Kolkata, Surat,Pune, Jaipur, Thrissur, Lucknow, Kanpur, Amritsar, Indore, Kanyakumari, Agra,Madurai, Goa, Rajkot, Varanasi, Srinagar, Jodhpur, Chandigarh, Thiruvathipuram,Guwahati, Mysore, Bhubaneswar, Kochi, Mangalore, Udaipur, Pondicherry,Haridwar, Puri, Shimla, Panchkula, Darjeeling, Rishikesh, Gangtok, Ooty,Jaisalmer, Bodh Gaya, Nainital, Munnar, Manali. Data shows various prizes of hotel room rents on different dates in these cities.

The dataset provided does show various factors that affect the Room Rent but on analysis it is seen that hotel's star rating, hotel's capacity and whether hotel has swimming pool or not affects the room rent most.

**Star Ratings**: Hotel star ratings constitute a system of ranking quality, to help consumers evaluate a hotel's amenities, luxury and overall hospitality. Such systems typically rate hotels on a five-star scale, with five indicating the best, and one (or zero) representing the worst.

**Swimming Pool:** Amenities and facilities provided by hotel does affect largely influence the perception of the customer. Hence we took Swimming Pool as an amenity that can influence the hotel room rent. A variable named HasSwimmingPool was used which had values of **"1"** if the hotel had swimming pool otherwise **"0"**

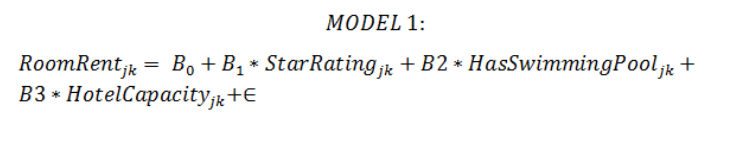
**Hotel Capacity:** It was denoted by the number of rooms available at any given hotel on the given day. Hence total numbers of rooms in hotel x in city y was denoted as HotelCapacity. It was also used as a control variable to detect that room price may depend on availability of rooms.

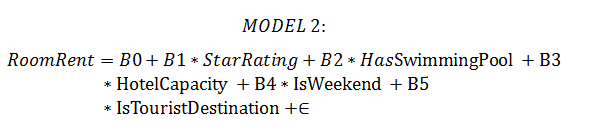
**3.3 Regression Models**

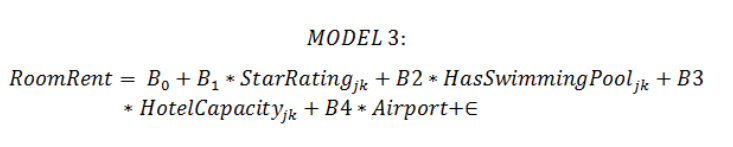
We analyzed the research question using one model.

We established the effect of Star Rating, Hotel Capacity and availability of Swimming Pool on the price of a room in a hotel with the simplest model we could come up with.

We regressed the room rent on the variables Star Rating, Hotel Capacity and whether hotel had a swimming pool, in our second model the previous three variables remained and we added IsTouristDestination and IsWeekend as factors and lastly we added Airport distance from the hotel in the basic three variable of the beginning to propose a better model, they are as follows.







We estimated three different Models , described above using linear least squares.

The benefit of having the three regressors outlined in Model was that it helped us rule out some alternate explanations for the variation in hotel room rent.

For example, it is well-known that five-star hotels are more expensive than four-star hotels. Including the star rating as a regressor, permitted us to investigate the effect of other variables on hotel room rent, after controlling for price variation due to the star rating. We expected to find the coefficient for StarRating to be positive (B1>0). Similarly, having a dummy variable has Swimming Pool or not for each hotel, permitted us to control effect of availability of swimming pool on rent of hotel rooms and the same way about Hotel capacity, whether the place is a tourist destination, what is the distance of hotel from the airport.

## 4.1 Results Output

**Model:** The analysis of Model also yielded statistical support for our hypotheses H1s. Recall that Model includes three to six independent variables, as shown in equations above. We found that the average room prices with higher ratings and having swimming pool were higher than the prices with low ratings and no swimming pool. This regression analysis yielded B1 >0,B2 >0, with p <0.05, as shown in Table 2. As expected, we additionally observed a negative relationship between the average hotel room prices and the hotel capacity, B3>0, with p < 0.05. But, we found that the Model that we have taken doesn’t have very good R², so there may existing models better than the model we have taken with other variables, in explaining the relationship between hotel pricing strategies.

The coefficients and linear model of the above three models mentioned are as follows:-

Model1: salary = b0 + b1\*StarRating + b2\*HasSwimmingPool+ b3\*HotelCapacity  
 *b0 = -1(assumption), b1 = 1396.874562, b2=3719.6943, b3= -7.659814*  
 *Model: salary = -1 + 1396.874562\*StarRating + 3719.6943\*HasSwimmingPool -7.659814\*HotelCapacity*

Model2: salary = b0 + b1\*StarRating + b2\*HasSwimmingPool+ b3\*HotelCapacity +b4\*IsWeekend+ b5\*IsTouristDestination  
  *b0 = -1(assumption), b1 =* 1258.9558 *, b2=*3670.2511 *, b3=* -6.1769 *, b4=*-509.6479 *, b5=*1053.0394   
  *# Model: salary = -1 +* 1258.955786*\*StarRating +* 3670.251057*\*HasSwimmingPool -*6.176913*\*HotelCapacity*  
 *#* -509.647863*\*IsWeekend +* 1053.039364*\*IsTouristDestination*

Model3: salary = b0 + b1\*StarRating + b2\*HasSwimmingPool+ b3\*HotelCapacity +b4\*Airport + b5\*Date  
  *b0 = -1(assumption), b1 = 1248.426988 , b2=3903.736921, b3= -6.743354, b4= 18.869726*  
  *Model: salary = -1 + 1248.426988\*StarRating + 3903.736921\*HasSwimmingPool -6.743354\*HotelCapacity + 18.869726\*Aiport*

## 4.2 Results Inferred

The coefficients of Model 1 did give us information:

* With increase of Star Rating by 1, Hotel Room Rent increased by ~1396.8 INR
* With the availability of Swimming Pool room rent increased by ~3719.9 INR
* With increase in Hotel Capacity by 1 room, room rent decreased by ~7.65 INR

Model 2 included other factors and the coefficients of Model 2 did give us information:

* With increase of Star Rating by 1, Hotel Room Rent increased by ~1258 INR
* With the availability of Swimming Pool room rent increased by ~3670.2 INR
* With increase in Hotel Capacity by 1 room, room rent decreased by ~6.71 INR
* On weekend days the room rent decreases by ~509.6 INR
* If the city is a tourist Destination hotel room rent increases by ~1053 INR

Model 3 added the factor of airport availability from the hotel and its effects hence the coefficients of Model 3 gives us the information:

* With increase of Star Rating by 1, Hotel Room Rent increased by ~1248.8 INR
* With the availability of Swimming Pool room rent increased by ~3903 INR
* With increase in Hotel Capacity by 1 room, room rent decreased by ~6.75 INR
* When distance of airport increased by 1 Km, room rent increased by ~18.86 INR

## 5. Conclusions

The paper was generated to understand the affect of various internal and external factors on the pricing of Hotel Room.

Through the dataset provided we did analyse how the price premium was charged by hotel with the facilities they provide and also according to the city in which they are located.

It has serious managerial applications as it helps in showing what factors matters the most and what correlations exits. For example a hotel with a good star rating and better amenities increases quality perception and willingness to pay for the services. Thus that hotel can make a pricy listing and still be successful in selling of rooms and attracting more customers.

## 6. Closing Note

1: From our data, the costliest hotel among all was Taj Rambagh Palace with a room rent of up to Rs 3 lakh per day

(See: <https://taj.tajhotels.com/en-in/taj-rambagh-palace-jaipur/>)



2: From our given data, the cheapest hotel was the backpacker panda in Agra with a minimum room rent of Rs 299 per day

(See: <https://www.backpackerpanda.com/hostels/india/hostels-in-agra/>)

