**Analysis of Hotel Room Pricing In the Indian Market**

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**1.ABSTRACT**

**The ultimate aim of this project is to analysis the hotel room rent pricing in the Indian market considering many factors and how they are affecting them.**

**In this project the analysis is done with 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. which we will be find 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.**

**The data is collected from** [**www.hotels.in**](http://www.hotels.in/) **in October 2016, which empirically investigates the pricing of hotel rooms located in 42 different cities of India during the time period of December 2016 to January 2016. 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 estimate a regression of hotel room prices in a mixed-model framework. Our model accounts for both fixed-effects and random-effects, controlled for unobserved heterogeneity. Our analysis reveals a significant “price of ratings, swimming pool and capacity” embedded in hotel room rent among hotels in different cities of India.**

**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.**

**2. OVERVIEW**

**Our dataset reveals the pricing of different hotels room rent within the city and on a given date. 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 CORRELATION  
   
 we had done correlation to test room rent with variables and found the most three important variables. They are as follows**

1. **Star ratings**
2. **Hotel capacity**
3. **Has swimming pool**

**We found the independent variables which room rent does not depend upon. They are as follows:**

1. **Population**
2. **ismetrocity**
3. **freebreakfast**

**3.2 Hypothesis**

**We study how the price of a room at a hotel is affected by external and internal factors. We assume out of 18 factors the 3 most influencing factors are Star Rating, availability of swimming pool and Hotel capacity. We are taking these three factors on the basis of their strong correlation with 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.**

**3.3 Data**

**The purpose of this project is to analyze the pricing strategy of hotels in the Indian hotel industry. Many factors drive hotel room prices. The objective of this project is to identify the factors that matter the most. The dataset tracks hotel prices on 8 different dates at different hotels across different cities.**

**This project, our dataset is based on hotels located in forty two Indian cities (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) India. We collected data from the well-known website** [**www.hotels.in**](http://www.hotels.in/) **that aggregates the hotel prices on 8 different dates at different hotels across different cities.**

**It is indeed probable that many factors govern the rent of hotel rooms. Any meaningful empirical analysis will need to control for factors. For example, factors such as whether the hotel is rated as a five star hotel, how many rooms does it have, has swimming pool are all likely to influence hotel prices.**

**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: The amenities and facilities provided within a hotel can also potentially influence the price of a room. The greater the amenities, the higher should be the price of the hotel room. To partially control for such factors, we recorded whether a hotel had a Swimming Pool or not. 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.**

**3.4 Model**

**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.**

**Model-1:**

**Model-1: salary = b0 + b1\*StarRating + b2\*HasSwimmingPool+ b3\*HotelCapacity**

**Model-2:**

**Model-2: salary = b0 + b1\*StarRating + b2\*HasSwimmingPool+ b3\*HotelCapacity +b4\*IsWeekend+ b5\*IsTouristDestination**

**Model1:**

**Model-3: salary = b0 + b1\*StarRating + b2\*HasSwimmingPool+ b3\*HotelCapacity +b4\*Airport + b5\*Date**

**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**

**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.**

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

**Model-1: 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***

**Model-2: 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***

**Model-3: 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***

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

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**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.**

## **4.2 Results Obtained**

**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**

1. **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**

**This paper was motivated by the need for research that could improve our understanding of how different external and internal factors influences the pricing strategies in the hotel industry of India. The unique contribution of this paper is that we investigated the price premium charged by hotels according to the facilities they provide and also where it is situated.**

**This research has some important managerial implications. We found that not only supply affects prices but also there many other factors which can influence our pricing strategy. When consumer sees good ratings and reviews about hotel and gets better amenities, it prompts an increase in quality perceptions, purchase intentions and willingness-to-pay.**

## **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**

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