**A Study of Hotel Room Rents across different cities of India**

**1. Introduction**

The Indian Hotel Industry is booming with the number of Hotels being setup in different cities. There are multiple agencies who own many of these Hotels and are constantly updating their pricing strategy to attract more customers. This paper addresses the following issue concerning the “price of Hotel rooms” and understand what are the factors that relate the most towards an increase or decrease of room rent for any given Hotel.

**2. Data**

Our study empirically investigates the hotel room prices across different hotels from 42 Indian cities. These hotels have been chosen from a wide diversity of Hotels located across the country. The data was collected from www.hotels.in in October 2016. The dataset tracks the hotel prices on 8 different dates including weekends and special holidays.

It is indeed probable that many factors might be influential in increase or decrease of hotel room rent. A meaningful analysis will explain which are the most crucial and important variables to look for to understand or predict the room rent for any given hotel.

Some important variables being used in this dataset are:

**City:** It is likely that the city in which a hotel is located will strongly influence the hotel room prices. In this analysis, 42 different cities have been compared ranging from Metro cities to tourist destinations.

**Weekend:** Some of the dates chosen are from weekends to understand if the room prices increase over the weekends for some hotels.

**New Year’s Eve:** This dataset also includes the room prices of hotels on the New Year’s Eve to understand how much the prices are increased comparatively on this specific day.

**Metro City:** The room rents can also change for the metro and non-metro cities. This variable will help in determining how much difference does a Metro city make for any hotel room rent.

**Tourist Destination:** Some cities being considered as tourist locations. There are large number of hotels present in these areas but still the number of people visiting every year are huge. A shortage of rooms tends the prices to increase heftily on some days.

Apart from the location of any Hotel, there are certain facilities being offered by any Hotel which can be influential in the price tag of their rooms. It is important to consider such variables to predict the room prices. Some of those internal facilities are:

**Star Rating:** In India, the Ministry of Tourism has formulated a scheme for classification of operational hotels using a “Star” rating. Hotels are rated as either 5 Star, 4 Star, 3 Star, 2 Star or 1 Star. Accordingly, we classified the hotels in our dataset using their star rating. The reason for doing this is that the star rating of a hotel has a direct, strongly positive correlation with the price of its hotel rooms. Therefore, it is important to control for price variation because of the star rating.

**Airport:** Distance to the Airport can impact the Hotel prices

**Free Wi-Fi, Free Breakfast & Swimming pools:** These facilities are available in many hotels but their price gets included with the overall rent. Hence, it is important to consider them while performing the analysis.

**3. Hypothesis**

We study the price of Hotel room rents across 42 different cities and try to identify the factors responsible for an increase in room rent. We are aware that the Star Rating does positive influence the price of any Hotel. So, it shall be a part of our final model. To identify remaining factors, we put forward 3 different Hypothesis such as:

H1 – The Hotel prices are mainly dependent on specific days in the year. This includes all weekends and public holidays such as New Year’s Eve.

H2 – The Hotel prices are mainly dependent on its location such as in metro city or rather at a tourist destination.

H3 – The Hotel prices are mainly dependent on the kind of facilities it provides to the customers.

To prove each of the above Hypothesis, we propose the required models and run linear least squares regression to obtain the relationship with Hotel room rent.

**Models**

We analyzed the Hotel data using 3 nested models:

**Model 1:** We already know that hotel prices highly depend on their Star Rating. So, along with the Star Rating we would like to understand how do the rents change on different days like weekends or New Year’s Eve. We regressed the Hotel room rent on these variables as follows:

We estimated the Model 1 using linear least squares. We obtained the following equation to predict room rent based on these variables:

Room Rent = -6935.3 + 3581.4\*Star Rating -145.2\*IsWeekend + 898.2\*IsNewYearEve + Error

**Results** – Only Star Rating and New Year’s Eve actually are responsible for difference in room rent and have a p value <0.05.

**Model 2:** We now analyze the room rent based on the Hotel’s demographics. This includes which city the hotel is in and whether it is a metro city or tourist destination. The model can be mathematically represented as:

We estimated the Model 2 using linear least squares. We obtained the following equation to predict room rent based on these variables:

Room Rent = -8663.16 + 3738.85\*Star Rating – 2032.55\*IsMetroCity + 2556.45\*IsTouristDestination + Error

**Results:** It was observed that all the variables being used are significant in the increase or decrease of Hotel room rents. All the variables have p value <0.05

**Model 3:** Our final model predicts room rent based on the kind of facilities that the Hotel provides. These factors can be responsible for the variation in prices. The model can be mathematically represented as:

We estimated the Model 3 using linear least squares. We obtained the following equation to predict room rent based on these variables:

Room Rent = -5702.037 + 2730.75\*Star Rating + 275.174\*FreeWifi + 73.93\*FreeBreakfast + 2308.17\*HasSwimmingPool + 28.666\*Airport

**Results**: Among the variables used in this model, only Star Rating, Swimming Pool and Distance to Airport seem to be statistically significant and responsible for variation in prices.

**Final Model:** Based on our 3 nested models, we have identified the variables that contribute most towards the increase in any Hotel’s room rent. We can now use all these variables as our final model and compare with all 3 nested models. This model can be written as:

Exactly as expected, all the variables are statistically significant in predicting Hotel room rent and have p-value <0.05

**Conclusion:**

This paper was motivated by the need for research that could improve our understanding of what factors are responsible for the pricing strategy of hotels in the Indian Hotel Industry. So, based on our final results, the following factors are responsible for an increase in Hotel room rents in decreasing order of priority:

1. Star Rating of the Hotel (Generally 4 star and 5 star hotels are expensive)
2. It is a special day such as New Year’s Eve
3. The Hotel has a swimming pool
4. The Hotel is located at a tourist destination
5. The Hotel is near to Airport
6. The Hotel is situated in a Metro city