**A Study of Hotels in India**

**1. Introduction**

Hotels include business hotels, suite hotels, resort hotels, airport hotels, extended stay hotels, apartment hotels, timeshare hotels, casino hotels, convention centers and conference centers. In this regard, suitably pricing hotel rooms and related services for customers becomes a crucial issue. This is because a hotel’s price reflects an assessment of the pleasures that customers enjoy and their willingness-to-pay for the hotel’s rooms and services..

This paper addresses the following issues concerning the “room rent” in the hotel industry in India. The first issue concerns the pricing strategies employed by hotels. In this paper, we investigate whether the hotel industry charges a price premium on new year eve. We evaluate whether hotels extract a price premium by charging higher prices for hotel rooms on new year eve, compared to other days?

The second issue concerns consumer perceptions and willingness-to-pay for hotel rooms in different settings. In this paper, we also investigate whether customers have greater quality perceptions, purchase intentions and willingness-to-pay for hotel rooms?

**2. Overview of the Study**

Our field study empirically investigates the pricing of hotel rooms in hotels located in the Indian states. RoomRent in Indian hotels varies greatly starting from hundreds to lakhs so that people from all classes can afford. The vast variation in the price is because of presence of many factors that affect the roomrent. We empirically analyze the hotel prices set by different hotels on eight different dates in India. 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. We estimate it using the Linear Regression Model. Our analysis reveals that some factors have significant impact on the hotel room rent in India.

**3. An empirical field study of hotel prices in India**

**3.1 Hypothesis**

We study how the price of a room at a hotel in India during newyear eve differs from the price at other times of the year. If there is a “price of newyear eve”, we expect that, the hotel room rate at newyear eve will be more than that at other times of the year, holding all else constant. We believe that consumers are asked to pay a price-premium for the stay in a hotel during newyear eve which is a time of celebration across the world. Therefore, we make the following hypothesis.

**H1: The prices of Indian Hotel rooms during newyear eve are higher than the prices at other times of the year.**

**3.2 Data**

India is well known to attract tourists from all over the world every year with its beauty, history and culture. This paves way for development of many industries in which Hotel is one. Apart from tourism, many other factors like business conferences, convention centers, resorts lead to the growth of hotel industry in the country.

The industry being very vast, the price of a hotel room also varies accordingly .Many factors govern the prices of hotel rooms. Any meaningful empirical analysis will need to control for factors. For example, factors such as the city the hotel is located in, whether the hotel is rated as a five star hotel, how many rooms does it have, how far is it from the airport and train station are all likely to influence hotel prices.

For this project, the dataset is based on hotels located in various cities across India. The cities have hotels located in traditional, heritage sites, as well as conventional modern hotels. The data is collected from the well-known website www.Hotels.in that aggregates hotel availability, room prices and features. Before reviewing data in detail, it is helpful to look at an illustration.

In the dataset, the lowest price was 299 rupees in a 2 star hotel located in Agra which is 8.5 km away from airport and has free wifi but no swimming pool. Whereas the highest was 3,22,500 rupees in a 5 star hotel in Jaipur which is 7.7 km away from airport and has free wifi and swimming pool. It is important to note that both the places are tourist destinations.





**City:** It is likely that the city in which a hotel is located in will strongly influence the hotel room prices. The data is collected from various Indian cities. Specifically, a variable ‘CityName’ is used to describe the cities.

**Population:** Populous cities show large variation in prices due to the presence of business centers, convention centers and resorts. The population of the city in which the hotel is located in 2011 is given by the variable ‘Population’ and the dummy variable ‘CityRank’ denotes the rank order of city by population

**Metro city:** People are dragged and attracted to metro cities as a result of sophistication. The dummy variable ‘IsMetroCity’=1 or 0 denotes whether the city in which the hotel is located is a metro city or not. It is 1 for{Mumbai, Delhi, Kolkatta, Chennai} and 0 otherwise.

**Tourist destination:** In cities which are tourist destinations, there may be high demand for hotels (with respect to quality especially during some seasons). The dummy variable ‘IsTouristDestination’=1 or 0 denotes whether the city in which the hotel is located is a tourist destination or not.

**Weekends:** People plan to go out on weekends to relax and take break from the daily routine. This leads to more demand for hotels on weekends. To account for this, the dummy variable ‘IsWeekend’=1 or 0 denotes whether the date under consideration is weekend (Saturday and Sunday) or not.

**New year:** New year is a time of celebration around the world. People go on winter vacation which creates the demand for hotels. To account for this, the dummy variable ‘IsNewYearEve’=1 or 0 denotes whether the date under consideration is new year eve (Dec 31) or not

**Date:** Often, hotel room rent gets affected by the time of the year. So, in the dataset, eight different dates are considered including Christmas, Christmas eve, New year eve and random dates from December and January. The variable ‘Date’ is used to denote.

**Hotel:** The name, address, pincode and description of the hotel are given by the variables ‘HotelName’, ‘HotelAddress’, ‘HotelPincode’ and ‘HotelDescription’ respectively.

**Price:** The data is collected in October 2016. The variable ‘RoomRent’ is used to denote the price of the cheapest double occupancy room at a hotel in Indian rupees.

**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, the hotels in the dataset are classified 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. The variable ‘StarRating’ is used to denote the star rating of hotel.

**Rooms:** The total number or rooms in a hotel is recorded as ‘HotelCapacity’. Ultimately, the number of rooms in a hotel denotes the available supply and it is expected that this will keenly influence the price that a hotel will set. Accordingly, ‘HotelCapaccity’ is used as control variable to account for the possibility that the room price set by a hotel may depend upon the supply of available rooms.

**Distance from the Airport:** It is possible that hotels located close to the airport are able to charge a price premium for the greater convenience and easy access. In order to control for this alternate explanation, the distance between a given hotel and the closest major airport is recorded. The variable ‘Airport’ denotes the distance between hotel and the closest major airport in km.

**Wifi, Breakfast and 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, it was recorded whether a hotel had free wifi, breakfast and whether it had a swimming pool. The dummy variables ‘FreeWifi’=1 or 0, ‘FreeBreakfast’=1 or 0 and ‘HasSwimmingPool’=1 or 0 are used to denote the presence or absence of free wifi, free breakfast and swimming pool respectively at the hotel. The following table shows the summary statistics.

vars n mean sd median

CityName\* 1 13232 18.07 11.72 16

Population 2 13232 4416836.87 4258386.00 3046163

CityRank 3 13232 14.83 13.51 9

IsMetroCity 4 13232 0.28 0.45 0

IsTouristDestination 5 13232 0.70 0.46 1

IsWeekend 6 13232 0.62 0.48 1

IsNewYearEve 7 13232 0.12 0.33 0

Date\* 8 13232 14.30 2.69 14

HotelName\* 9 13232 841.19 488.16 827

RoomRent 10 13232 5473.99 7333.12 4000

StarRating 11 13232 3.46 0.76 3

Airport 12 13232 21.16 22.76 15

HotelAddress\* 13 13232 1202.53 582.17 1261

HotelPincode 14 13232 397430.26 259837.50 395003

HotelDescription\* 15 13224 581.34 363.26 567

FreeWifi 16 13232 0.93 0.26 1

FreeBreakfast 17 13232 0.65 0.48 1

HotelCapacity 18 13232 62.51 76.66 34

HasSwimmingPool 19 13232 0.36 0.48 0

**3.3 Model**

The research question is analyzed using three nested models.

**Model 1:**  First, the effect of new year eve on the price of a room in a hotel is established with the simplest model. The room rent is regressed on the dummy variable for whether the date was new year eve, as follows.

RoomRent = b0 + b1\*IsNewYearEve + e (1)

Model 1 is estimated using linear regression analysis. If the date is new year eve, it is expected to find b1>0 in support of hypothesis H1.

**Model 2:** Next, a model which accounts for new year, weekend and star rating is defined as follows

RoomRent = b0 + b1\*IsNewYearEve +b2\*IsWeekend+b3\*StarRating (2)

Model2 is estimated using linear regression analysis. This is an extension of model1. Once again, if the date is new year eve, it is expected to find b1>0 in support of hypothesis H1.It is expected that rerunning the regression with the two additional independent variables would fit the data better.

Another benefit of having the two additional regressors outlined in Model 2 is that it helped us rule out some alternate explanations for the variation in hotel prices. 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 to investigate the effect of other variables on hotel pricing, after controlling for price variation due to the star rating. It is expected to find the coefficient for StarRating to be positive (b3>0).

**Model3:** Finally, a model which includes interaction of weekend and new year with all other variables in the dataset is defined.

RoomRent =b0+b1\*IsNewYearEve+b2\*Cityname+b3\*CityRank+b4\*IsMetroCity+b5\*IsTouristDestination+b6\*IsWeekend+b7\*Date+b8\*StarRating+b9\*Airport+b10\*FreeWifi+b11\*FreeBreakfast+b12\*HotelCapacity+b13\*HasSwimmingPool+b14\*IsWeekend\*IsNewyeareve+e (3)

This model helped rule out many variables. Another benefit is, having a dummy variable for each city, permitted us to control for city-wide variation in prices of hotel rooms, potentially arising out of differences in real-estate prices and other expenses across cities.

**3.4 Results**

**Model 1:** Empirical support for H1 is found. Regression analysis yielded b1>0 with p of 9.47e-6 as shown in Table 1.

**Model 2:** The analysis of Model 2 also yielded statistical support for hypothesis H1. Recall that Model 2 extended Model 1, by including two additional independent variables, as shown in equation (2). It is again found that the room prices at hotels on new year eve were higher than the prices at other times. This regression analysis also yielded b1>0, with p of 1.7e-06, as shown in Table 1. As expected, it is additionally observed a positive relationship between the hotel room prices and the hotel star ratings, b3>0, with p < 2e-16. Model 2 fit the data better than Model 1.

**Model 3:** The analysis of Model 3 also yielded support to H1. But it shows that the factors distance from airport, free wifi, swimming pool and hotel capacity are more important than new year eve in determining the room rent. It also shows that interaction of weekend and new year eve got nothing to do with the room rent. It is observed that some cities like Varanasi, Jaipur, Jodhpur, Goa, Udaipur has positive effect on the room rent.

**4. Conclusion**

This paper was motivated by the need for research that could improve our understanding of influences of the pricing strategies in the hotel industry in India. The unique contribution of this paper is that we investigated the price premium charged by hotels on new year eve. We found that customers pay a premium price on new year eve in some hotels.

This research has some important managerial implications. We find that star rating and some cities matter. When consumers enjoy free wifi and swimming pool, it prompts an increase in quality perceptions, purchase intentions and willingness-to-pay. It also generates positive word-of-mouth.

Table 1: Regression analysis of Room Rent in hotels

Model 1

Estimate Std Error Pr(>|t|)

Intercept 5367.61 68.08 < 2e-16 \*\*\*

IsNewYearEve 855.22 193.03 9.47e-06 \*\*\*

Model 2

Estimate Std Error Pr(>|t|)

Intercept -6935.32 286.96 < 2e-16 \*\*\*

IsNewYearEve 898.18 187.56 1.7e-06 \*\*\*

IsWeekend -145.17 127.72 0.256

StarRating 3581.45 78.28 < 2e-16 \*\*\*

Model 3

Estimate Std Error Pr(>|t|)

Intercept -10307.299 1641.679 3.53e-10 \*\*\*

IsNewYearEve 2568.774 4891.478 0.59949

CityNameAhmedabad 1412.271 913.553 0.12215

CityNameAmritsar 92.054 652.828 0.88787

CityNameBangalore -383.864 1034.240 0.71053

CityNameBhubaneswar 987.641 1046.153 0.34515

CityNameChandigarh 733.875 845.199 0.38525

CityNameChennai -729.063 1001.411 0.46660

CityNameDarjeeling 553.841 1177.256 0.63804

CityNameDelhi -981.938 1274.676 0.44111

CityNameGangtok -4173.934 1539.580 0.00672 \*\*

CityNameGoa 3454.353 432.780 1.56e-15 \*\*\*

CityNameGuwahati -616.443 1083.487 0.56940

CityNameHaridwar -1236.702 1257.706 0.32548

CityNameHyderabad 570.474 934.390 0.54152

CityNameIndore 1353.717 851.96 0.11209

CityNameJaipur 2774.325 517.441 8.39e-08 \*\*\*

CityNameJaisalmer 2509.561 1269.00 0.04800 \*

CityNameJodhpur 6209.865 606.495 < 2e-16 \*\*\*

CityNameKanpur 1584.405 1761.8 0.36851

CityNameKochi 946.008 516.581 0.06708 .

CityNameKolkata 96.963 1032.503 0.92518

CityNameLucknow 2679.668 914.678 0.00340 \*\*

CityNameMadurai 1620.147 723.613 0.02517 \*

CityNameManali -647.539 1464.550 0.65839

CityNameMangalore 797.178 1119.445 0.47640

CityNameMumbai 1315.388 1317.349 0.31805

CityNameMunnar -774.908 1585.269 0.62498

CityNameMysore -1135.664 1246.433 0.36224

CityNameNainital -562.982 1474.634 0.70263

CityNameOoty -1436.653 1470.972 0.32875

CityNamePanchkula -408.320 1416.165 0.77310

CityNamePune 961.681 818.972 0.24032

CityNamePuri -386.558 1310.401 0.76800

CityNameRajkot 818.293 896.792 0.36154

CityNameRishikesh 109.904 1278.595 0.93150

CityNameShimla 925.190 1026.627 0.36750

CityNameSrinagar 2479.291 1135.873 0.02907 \*

CityNameSurat 791.286 1079.708 0.46365

CityNameThiruvanthipuram 447.670 594.392 0.45137

CityNameThrissur -2560.035 1289.100 0.04706 \*

CityNameUdaipur 5014.149 815.683 8.12e-10 \*\*\*

CityNameVaranasi 4601.326 553.215 < 2e-16 \*\*\*

CityRank 29.975 48.444 0.53609

IsMetroCity 1133.988 978.780 0.24665

IsTouristDestination 778.121 600.473 0.19505

IsWeekend 530.874 463.536 0.25212

Date04-Jan-17 -922.105 2135.965 0.66596

Date08-Jan-16 -362.004 1705.553 0.83192

Date08-Jan-17 -1439.518 2185.845 0.51019

Date18-Dec-16 -1906.519 1584.744 0.22898

Date21-Dec-16 -1304.895 1515.368 0.38919

Date24-Dec-16 -1762.519 1584.744 0.26608

Date25-Dec-16 -1923.724 1584.744 0.22481

Date28-Dec-16 -1292.395 1515.368 0.39375

Date31-Dec-16 -2876.454 2058.938 0.16242

DateDec 18 2016 -2059.285 1313.335 0.11691

DateDec 21 2016 -1351.923 1228.419 0.27112

DateDec 24 2016 -1397.135 1313.323 0.28743

DateDec 25 2016 -1475.246 1313.322 0.26133

DateDec 28 2016 -833.425 1228.329 0.49746

DateDec 31 2016 -1897.198 1831.781 0.30036

DateJan 04 2017 -764.468 1228.777 0.53386

DateJan 08 2017 -1602.605 1306.817 0.22009

DateJan 4 2017 -526.894 1515.754 0.72814

DateJan 8 2017 -1215.463 1527.116 0.42609

StarRating 3762.749 111.382 < 2e-16 \*\*\*

Airport 42.625 7.727 3.53e-08 \*\*\*

FreeWifi 721.625 224.978 0.00134 \*\*

FreeBreakfast -6.422 128.204 0.96005

HotelCapacity -10.097 1.028 < 2e-16 \*\*\*

HasSwimmingPool 1854.827 166.550 < 2e-16 \*\*\*

IsNewYearEve:IsWeekend -1395.317 4717.111 0.76739