**Hotel Pricing in The Indian Market Analysis Report**

1. **Introduction**

The hotel industry in India is a mature industry marked by intense competition, where an increase in market share typically comes at a competitor’s price. According to recent estimates of the World Travel & Tourism Council, India rank 40th in world. And Indian tourism demand will grow at 8.8% over the last ten years, which would place the country as the most rapidly growing tourism market in the world. The data available with the World Travel and Tourism Council, India, indicates that India ranks 18th in business travel, and should rank among the top 5 within this decade. At present this industry has a supply of 1, 25,000 rooms in India and still lack by 1,50,000 room which is fuelling its price. The Indian hotel industry revenue per available rooms (RevPAR) is likely to grow by up to 9 per cent in the next fiscal supported by stronger domestic demand, ICRA said in a report. The average room rates (ARR) grew by 2 per cent during 9 months in FY17, while average occupancy grew by 2 per cent, lower than ICRAs earlier estimates of 3-4 per cent. It is estimated that demand is going to exceed supply by at least 100 per cent over the next two years.  With such demand-supply disparity, room rates in Indian hotels are likely to rise by 25 per cent annually, with occupancy rates rising to 80 per cent, over the next two years. New budget and star hotels are being set up in the country. Many foreign hospitality players are heading towards Indian markets. The hotel industry in India is going through an interesting phase. One of the major reasons for the increase in demand for hotel rooms in the country is the high growth in sectors like information technology, telecom, retail and real estate. The growth of the tourism industry has also added fillip to the hotel industry. In recent years the government has taken several steps to boost travel and tourism, which have benefitted the hotel industry the most.

Some key point about hotel Industry in India are following:

* The tourism and hospitality sector is among the top 10 sectors in India to attract the highest Foreign Direct Investment (FDI). According to the data released by Department of Industrial Policy and Promotion (DIPP), the hotel and tourism sector attracted around US$ 9.2 billion of FDI between April 2000 and March 2016.
* The hotel industry in India thrives largely due to the growth in tourism and travel. Due to the increase in tourism with rising foreign and domestic tourists, hotel sector is bound to grow. There is an emergence of budget hotels in India to cater to the majority of the population who seek affordable stay. International companies are also increasingly looking at setting up such hotels. Imbalance in increase in tourists both domestic and foreign not been supported with equal number of rooms is a latent source of opportunity for growth.

1. **An empirical field study of heritage hotel prices in India**

There are many hotels given in the dataset. In recent years, large number of seats were booked into the hotels. As time has wheeled in the direction of luxury, these metro cities (Bangalore, New Delhi, Mumbai, Chennai, Kolkata) were highly gained in popularity, specially at the time of new year eve.

These heritage properties also present a competitive alternative to conventional hotels. In this light, the objective of this study is to compare the pricing strategy employed at hotels located at tourist sites with the pricing strategy employed at conventional hotels.

The Indian government has also taken several steps to make India a global tourism hub. The government has initiated ‘Project Mausam’ under which it has proposed to establish cross cultural linkages and to revive historic maritime cultural and economic ties with 39 Indian Ocean countries. Further, the government plans to cover 150 countries under e-visa scheme by the end of the year. The government has also introduced e-Tourist Visa (e-TV) for 150 countries as against the earlier coverage of 113 countries (source: Ministry of Tourism).

1. **Data**

There are number of cities in India are well-known for its rich cultural heritage, with many forts and palaces. Before reviewing the data in detail, it is useful to consider an illustration. For example, The Indian government has realized the country’s potential in the tourism industry and has taken several steps to make India a global tourism hub. In the Union Budget 2017-18, the Government of India announced some initiatives to give a boost to the tourism and hospitality sector such as setting up of five special tourism zones, special pilgrimage or tourism trains and worldwide launch of Incredible India campaign among others.

For this project, our dataset is based on hotels located in 42 Indian cities (Mumbai, Delhi, Bangalore, Chennai, Hyderabad, Ahmedabad, Kolkata, Surat, Pune, Jaipur, Lucknow, Amritsar, Indore, Agra, Madurai, Goa, Rajkot, Varanasi, Srinagar, Jodhpur, Chandigarh, Thiruvanthipuram, Guwahati, Mysore, Bhubaneswar, Kochi, Mangalore, Udaipur, Haridwar, Puri, Shimla, Panchkula, Darjeeling, Rishikesh, Gangtok, Ooty, Jaisalmer, Nainital, Munnar, Manali) in India, similar to the hotels mentioned in the above examples. The cities have hotels located in traditional, tourist sites, as well as conventional modern hotels. We collected from the given data that aggregates hotel availability, room prices and features. It is indeed probable that many factors other than heritage 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 are all likely to influence hotel prices.

City: It is likely that the city in which a hotel is located in will strongly influence the hotel

room prices. We collected data from multiple Indian cities. Specifically, we used a dummy

variable to index the cities IsWeekend, IsNewYearEve, City Rank, IsMetroCity, CityRank, IsTouristDestination, FreeWifi, FreeBreakfast, HasSwimmingPool, respectively.

Our results was invariant to which city is indexed as j = 0. We also indexed the hotels using a subscript . Accordingly, the subscript was used to refer to hotel in city .

Heritage: We used a dummy variable to indicate whether a hotel was a tourist hotel.

indicated a heritage hotel (e.g. The Vivanta by Taj, Mumbai), while indicated a modern hotel.

We marked a hotel as modern, if the location and construction was unrelated to India and

cultural heritage (e.g. Tatvam Residency, Kolkata).

Price: We collected data from December 24, 2016 to January 8 2017. We used to denote the average price of a room at a hotel. We measured, as the average of the most expensive and least expensive room at hotel in city.

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. 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. We used the variable to denote the star rating of hotel

in city.

Rooms: We recorded the total number or rooms in hotel in city and 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, we used as a 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 and Railway Station: 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, we recorded the distance between a given

hotel and the closest airport and railway station. We used the variables and to denote the

distance of hotel in city from the closest airport and train station respectively.

Bar and Business Center: 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 bar and whether it had a business center. We used to denote the presence or absence

of a bar at hotel in city. Similarly, we used to denote the presence or absence of a business

center at hotel in city. Table 1 shows the summary statistics.

1. **Describe table:**

describe(Cities)

## vars n mean sd median trimmed  
## CityName\* 1 13232 18.07 11.72 16 17.29  
## Population 2 13232 4416836.87 4258386.00 3046163 4040816.22  
## CityRank 3 13232 14.83 13.51 9 13.30  
## IsMetroCity 4 13232 0.28 0.45 0 0.23  
## IsTouristDestination 5 13232 0.70 0.46 1 0.75  
## IsWeekend 6 13232 0.62 0.48 1 0.65  
## IsNewYearEve 7 13232 0.12 0.33 0 0.03  
## Date\* 8 13232 14.30 2.69 14 14.39  
## HotelName\* 9 13232 841.19 488.16 827 841.18  
## RoomRent 10 13232 5473.99 7333.12 4000 4383.33  
## StarRating 11 13232 3.46 0.76 3 3.40  
## Airport 12 13232 21.16 22.76 15 16.39  
## HotelAddress\* 13 13232 1202.53 582.17 1261 1233.25  
## HotelPincode 14 13232 397430.26 259837.50 395003 388540.47  
## HotelDescription\* 15 13224 581.34 363.26 567 575.37  
## FreeWifi 16 13232 0.93 0.26 1 1.00  
## FreeBreakfast 17 13232 0.65 0.48 1 0.69  
## HotelCapacity 18 13232 62.51 76.66 34 46.03  
## HasSwimmingPool 19 13232 0.36 0.48 0 0.32  
## mad min max range skew  
## CityName\* 11.86 1.0 42 41.0 0.48  
## Population 3846498.95 8096.0 12442373 12434277.0 0.68  
## CityRank 11.86 0.0 44 44.0 0.69  
## IsMetroCity 0.00 0.0 1 1.0 0.96  
## IsTouristDestination 0.00 0.0 1 1.0 -0.86  
## IsWeekend 0.00 0.0 1 1.0 -0.51  
## IsNewYearEve 0.00 0.0 1 1.0 2.28  
## Date\* 2.97 1.0 20 19.0 -0.77  
## HotelName\* 641.97 1.0 1670 1669.0 0.01  
## RoomRent 2653.85 299.0 322500 322201.0 16.75  
## StarRating 0.74 0.0 5 5.0 0.48  
## Airport 11.12 0.2 124 123.8 2.73  
## HotelAddress\* 668.65 1.0 2108 2107.0 -0.37  
## HotelPincode 257975.37 100025.0 7000157 6900132.0 9.99  
## HotelDescription\* 472.95 1.0 1226 1225.0 0.11  
## FreeWifi 0.00 0.0 1 1.0 -3.25  
## FreeBreakfast 0.00 0.0 1 1.0 -0.62  
## HotelCapacity 28.17 0.0 600 600.0 2.95  
## HasSwimmingPool 0.00 0.0 1 1.0 0.60  
## kurtosis se  
## CityName\* -0.88 0.10  
## Population -1.08 37019.65  
## CityRank -0.76 0.12  
## IsMetroCity -1.08 0.00  
## IsTouristDestination -1.26 0.00  
## IsWeekend -1.74 0.00  
## IsNewYearEve 3.18 0.00  
## Date\* 1.92 0.02  
## HotelName\* -1.25 4.24  
## RoomRent 582.06 63.75  
## StarRating 0.25 0.01  
## Airport 7.89 0.20  
## HotelAddress\* -0.88 5.06  
## HotelPincode 249.76 2258.86  
## HotelDescription\* -1.25 3.16  
## FreeWifi 8.57 0.00  
## FreeBreakfast -1.61 0.00  
## HotelCapacity 11.39 0.67  
## HasSwimmingPool -1.64 0.00

1. **Summary of Dataset:**

summary(Cities)

## CityName Population CityRank IsMetroCity   
## Delhi :2048 Min. : 8096 Min. : 0.00 Min. :0.0000   
## Jaipur : 768 1st Qu.: 744983 1st Qu.: 2.00 1st Qu.:0.0000   
## Mumbai : 712 Median : 3046163 Median : 9.00 Median :0.0000   
## Bangalore: 656 Mean : 4416837 Mean :14.83 Mean :0.2842   
## Goa : 624 3rd Qu.: 8443675 3rd Qu.:24.00 3rd Qu.:1.0000   
## Kochi : 608 Max. :12442373 Max. :44.00 Max. :1.0000   
## (Other) :7816   
## IsTouristDestination IsWeekend IsNewYearEve Date   
## Min. :0.0000 Min. :0.0000 Min. :0.0000 Dec 21 2016:1611   
## 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:0.0000 Dec 24 2016:1611   
## Median :1.0000 Median :1.0000 Median :0.0000 Dec 25 2016:1611   
## Mean :0.6972 Mean :0.6228 Mean :0.1244 Dec 28 2016:1611   
## 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:0.0000 Dec 31 2016:1611   
## Max. :1.0000 Max. :1.0000 Max. :1.0000 Dec 18 2016:1608   
## (Other) :3569   
## HotelName RoomRent StarRating   
## Vivanta by Taj : 32 Min. : 299 Min. :0.000   
## Goldfinch Hotel : 24 1st Qu.: 2436 1st Qu.:3.000   
## OYO Rooms : 24 Median : 4000 Median :3.000   
## The Gordon House Hotel: 24 Mean : 5474 Mean :3.459   
## Apnayt Villa : 16 3rd Qu.: 6299 3rd Qu.:4.000   
## Bentleys Hotel Colaba : 16 Max. :322500 Max. :5.000   
## (Other) :13096   
## Airport   
## Min. : 0.20   
## 1st Qu.: 8.40   
## Median : 15.00   
## Mean : 21.16   
## 3rd Qu.: 24.00   
## Max. :124.00   
##   
##

HotelAddress   
## The Mall, Shimla : 32   
## #2-91/14/8, White Fields, Kondapur, Hitech City, Hyderabad, 500084 India: 16   
## 121, City Terrace, Walchand Hirachand Marg, Mumbai, Maharashtra : 16   
## 14-4507/9, Balmatta Road, Near Jyothi Circle, Hampankatta : 16   
## 144/7, Rajiv Gandi Salai (OMR), Kottivakkam, Chennai, Tamil Nadu : 16   
## 17, Oliver Road, Colaba, Mumbai, Maharashtra : 16   
## (Other) :13120   
## HotelPincode HotelDescription FreeWifi FreeBreakfast   
## Min. : 100025 3 : 120 Min. :0.0000 Min. :0.0000   
## 1st Qu.: 221001 Abc : 112 1st Qu.:1.0000 1st Qu.:0.0000   
## Median : 395003 3-star hotel: 104 Median :1.0000 Median :1.0000   
## Mean : 397430 3.5 : 88 Mean :0.9259 Mean :0.6491   
## 3rd Qu.: 570001 4 : 72 3rd Qu.:1.0000 3rd Qu.:1.0000   
## Max. :7000157 (Other) :12728 Max. :1.0000 Max. :1.0000   
## NA's : 8   
## HotelCapacity HasSwimmingPool   
## Min. : 0.00 Min. :0.0000   
## 1st Qu.: 16.00 1st Qu.:0.0000   
## Median : 34.00 Median :0.0000   
## Mean : 62.51 Mean :0.3558   
## 3rd Qu.: 75.00 3rd Qu.:1.0000   
## Max. :600.00 Max. :1.0000   
##

1. **Hypothesis**

We study how the price of the hotels according to their facilities is different from the normal hotel price.If there is a “price of heritage”, we expect that, the hotelroom rate at heritage sites will be more than that at modern hotels, holding all else constant. Therefore, we make the following hypothesis.

**H0: The prices of hotel rooms at tourist sites are same as the prices at normal sites.**

* t.test(RoomRent,IsTouristDestination)

Welch Two Sample t-test

data: RoomRent and IsTouristDestination

t = 85.856, df = 13231, p-value < 2.2e-16

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

5348.337 5598.253

sample estimates:

mean of x mean of y

5473.9918380 0.6971735

# The difference between the two means is different as p-value = 2.2e-16 (<0.05) so we reject the Null hypothesis. It Means The prices of hotel rooms at tourist sites are different than the prices at normal sites.

**H1: The price of hotel rooms at new year event are same as the prices at normal days of year.**

* t.test(Cities$RoomRent ~ Cities$IsNewYearEve)

Welch Two Sample t-test

data: Cities$RoomRent by Cities$IsNewYearEve

t = -4.1793, df = 2065, p-value = 3.046e-05

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-1256.5297 -453.9099

sample estimates:

mean in group 0 mean in group 1

5367.606 6222.826

# P-Value = 3.046e-05 (<0.05) Which is small enough for Rejecting the Null Hypothesis.

# Hence there is significant difference between the Room Rent on new year’s eve and on other days

# **H2- Their is no Difference between the Room Rent of Metro Cities and other cities**

* t.test(Cities$RoomRent ~ Cities$IsMetroCity)

Welch Two Sample t-test

data: Cities$RoomRent by Cities$IsMetroCity

t = 10.721, df = 13224, p-value < 2.2e-16

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

888.0308 1285.4102

sample estimates:

mean in group 0 mean in group 1

5782.794 4696.073

# P-Value = 2.2e-16 (<0.05) Which is small enough for Rejecting the Null Hupothesis.

# Hence there is significant difference between the Room Rent of Metro Cities and other cities

## H3: The correlation between RoomRent and Star Rating is Zero

* cor.test(Cities$RoomRent , Cities$StarRating)

Pearson's product-moment correlation  
data: Cities$RoomRent and Cities$StarRating  
t = 45.719, df = 13230, p-value < 2.2e-16  
alternative hypothesis: true correlation is not equal to 0  
95 percent confidence interval:  
 0.3545660 0.3839956  
 sample estimates:  
 cor   
 0.3693734

# We Can clearly see that the corrrelation between RoomRent and StarRating = 36.9% or approx 37%.and this relation is significant because the p-value = 2.2e-16 (<0.05) which suggests us to reject the Null hypothesis.

## H4: There is no correlation between RoomRent and Distance to the irport.

* cor.test(Cities$RoomRent , Cities$Airport)

Pearson's product-moment correlation  
data: Cities$RoomRent and Cities$Airport  
t = 5.7183, df = 13230, p-value = 1.099e-08  
alternative hypothesis: true correlation is not equal to 0  
95 percent confidence interval:  
 0.03264192 0.06663581  
 sample estimates:  
 cor   
 0.04965324

# We can see that the correlation is small 5% But it is significant as the p-value < 0.05. Hence the null hypothesis can be neglected. And It shows that there is relation between the price hotel room and the distance between airport and hotel.

## H5: The correlation between RoomRent and Hotel Capacity is Zero

* cor.test(Cities$RoomRent , Cities$HotelCapacity)

Pearson's product-moment correlation  
 data: Cities$RoomRent and Cities$HotelCapacity  
 t = 18.389, df = 13230, p-value < 2.2e-16  
 alternative hypothesis: true correlation is not equal to 0  
 95 percent confidence interval:  
 0.1412142 0.1744430  
 sample estimates:  
 cor   
 0.1578733

# As the p-value = 2.2e-16 (<0.05) We can reject the Null hypothesis that Means Their exists a significant relation between Room Rent and Hotel Capacity and as we see it is approx 16%

## H6: Their is no difference in the means of room Rent where Swimming Pool is available or not.

* t.test(Cities$RoomRent~ Cities$HasSwimmingPool)

Welch Two Sample t-test  
 data: Cities$RoomRent by Cities$HasSwimmingPool  
 t = -29.013, df = 5011.3, p-value < 2.2e-16  
 alternative hypothesis: true difference in means is not equal to 0  
 95 percent confidence interval:  
 -5096.030 -4450.942  
 sample estimates:  
 mean in group 0 mean in group 1   
 3775.566 8549.052

# The difference between the two means is different as p-value = 2.2e-16 (<0.05) so we reject the Null hypothesis. It shows that there is difference in the Means of price of hotel room which has the swimming pool and the price of hotel room which do not have swimming pool.

1. **Model**

We analyzed the research question using a model.

**Model 1:** We first established the effect of heritage on the price of a room in a hotel with

the simplest model we could come up with. We regressed the price on the dummy variable

for whether a hotel was a tourist hotel, as follows.

We estimated Model 1, using linear least squares. If there was a “Price of hotel room depend on following factors (Tourist place, Hotel capacity, New year events, Metro cities,Swimming pool, Airport distance, Star rating)” in the market, we expected to find &gt;0 in support of hypotheses H0 to H6.

We estimated Model 2, described in (2) using linear least squares. Once again, if there was

indeed a “Price of hotel room depend on following factors (Tourist place, Hotel capacity, New year events, Metro cities,Swimming pool, Airport distance, Star rating)” in the market, we expected to find &gt;0 in support of hypotheses H0 to H6.

We expected that rerunning the regression with the seven additional independent variables

would fit the data better.

A benefit of having the seven additional regressors outlined in Model 1 was 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 us to investigate the effect of heritage on hotel pricing,

after controlling for price variation due to the star rating. We expected to find the coefficient

for to be positive. So, the majored Hypothesis is correct. Similarly, 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.

1. **Results**

Model 1:

* We found empirical support for H0. The average hotel room prices at the 42 Cities heritage hotels were higher than the prices at modern hotels. The regression analysis using Ordinary Least

Squares yielded, with p <0.05.

* We found empirical support for H1. The average hotel room prices at the new year were higher than the prices at normal days. The regression analysis using Ordinary Least

Squares yielded, with p <0.05.

* We found empirical support for H2. The average hotel room prices at the Metro cities were higher than the hotel room prices of other cities. The regression analysis using Ordinary Least

Squares yielded, with p <0.05.

* We found empirical support for H3. There is strong correlation between the prices of hotel room and the Star rating of Hotels of 42 cities. The regression analysis using Ordinary Least

Squares yielded, with p <0.05.

* We found empirical support for H4. There is strong correlation between the prices of hotel room and the Airport distance from Hotels of 42 cities. The regression analysis using Ordinary Least

Squares yielded, with p <0.05.

* We found empirical support for H5. There is strong correlation between the prices of hotel room and the Hotels capacity of hotels. The regression analysis using Ordinary Least

Squares yielded, with p <0.05.

# We found empirical support for H6. It shows that there is difference in the Means of price of hotel room which has the swimming pool and the price of hotel room which do not have swimming pool. The regression analysis using Ordinary Least

Squares yielded, with p <0.05.

1. **Conclusion**

This paper was motivated by the need for research that could improve our understanding of

how new year eve, tourism, hotel capacity, swimming pool facility, Airport distance, metro cities, and star rating of hotel, influences the pricing strategies in the hotel industry. The unique contribution of this paper is that we investigated the price premium charged by hotels to heritage tourists who travel to experience nature and/or culture. We found that tourists visiting in the high prices of the room rent in India.

This research has some important managerial implications. We find that tourist destination matters. When consumers experience different popular destinations, it prompts an increase in quality perceptions, purchase intentions and willingness-to- pay. It also generates positive word-of- mouth.

----END OF PROJECT REPORT----