Hotel Room Pricing In The Indian Market

1. Introduction:

India is a very diverse country and split into 29 states and 7 union territories. Tourism is also very common in India. As a result of which a lot of hotels have been built for the convenience of tourists. The prices of each hotel are varying dependent on certain factors. The hotels should charge according to the quality of their service and the amenities they provide. There are a few common factors which generally affect the price of hotel rooms in a similar way. But this may not be true always, because few hotels hey have some distinct feature (for example, the hotel might be a heritage site, so people are willing to pay more to stay in them; in fact, the most expensive hotel in this dataset - Rambagh Palace - is a heritage site).

This report addresses the factors influencing the "Hotel Room Pricing in The Indian Market**". What are the factors which are the most influential when hotel owners decide the pricing of their rooms?** Are these factors consistent for all datasets or are there exceptions? The answer to this is obtained by proper analysis of the data.

2. Overview of the Study

I have done data analysis pertaining to hotel room prices across 42 cities in India (**Cities42.csv**). The diversity in India results into a variety of hotels depending on customer's choices and pocket. There are hotels in metro cities, rural cities, tourist destinations and cities which are not tourist destinations. The dataset has the pricing of the hotels on different dates, including New Year's Eve and Christmas. We empirically study the factors which affect hotel room prices.

3. An empirical study of hotel room prices in India

The specific objective of this study is to analyse the pricing strategy used in various hotels located in 42 cities in India. We made comparisons between the prices of various hotel rooms, based on a few factors.

Three of the most important factors which affect the pricing of the hotel rooms are:

(THESE FACTORS ARE SELECTED ON THE BASIS OF CORRELATIONS OBTAINED AFTER ANALYSING THE DATASET. IT MAY SEEM ABSURD, BUT I HAVE TESTED EACH VARIABLE USING CORRELATION TEST AND THEN SELECTED 3 FACTORS FOR ROOM RENT.)

1. Star Rating of the hotel
2. The capacity of the hotel
3. Whether or not the hotel has a swimming pool

3.1) Hypothesis

We study how price of a hotel room varies with star rating of the hotel, the existence of a swimming pool and the capacity of the hotel. Hence, we make the following hypothesis:

1. The price of a hotel room is independent of the star rating of the hotel.
2. The price of a hotel room is independent of the capacity of the hotel.
3. The price of a hotel room is independent of the existence of a swimming pool.

4. Data

Before reviewing this dataset in detail, consider a few points. The minimum room rent is a merely INR 299 per night, as compared to INR 322500 per night. The mean and median are much closer to the minimum, as compared to the maximum (INR 5474 and INR 4000, respectively). This shows that the more expensive hotels in the dataset are relatively less, hence are outliers. Also, the most expensive ones are a heritage hotel, which prove their pricing strategy. This point is also supported by the fact that most of the hotels have a star rating which is average (median star rating is 3). It is expected that hotels which have a swimming pool will have a higher price tag than a hotel which does not have one. Tourists want to relax after a tiring journey, so they tend to book hotels with swimming pool. Hence, demands for such hotel rooms will be higher. Only 4708 hotels out of total have swimming pools. As the data shows, majority of the entries are from hotels without swimming pools, hence swimming pool is a form of luxury. The price of a hotel room is even expected to depend on the number of rooms the hotel has. More the capacity of hotel, indicates that the hotel has huge infrastructure and better amenities. So the cost of room rent increases drastically.

Room Rent: The room rent is one of the most important factors when considering which hotel to stay in. Generally, the higher the quality of service, the higher the room rent is. There are a lot of factors which affect the room pricing in the hotel industry.

Star Rating: In India, hotels are assigned a star rating by the Ministry of Tourism. Hotels are assigned a star rating between 1 and 5. 1 - Poor service and 5 – Excellent service. The star rating is assigned according to the services, ambience and quality offered by the hotel to its customers. Since the star rating is an assurance of quality and luxury, the price of the hotel rooms is strongly positively correlated with it. Tourists often choose hotels based on star ratings and testimonials.

Hotel Capacity: Usually, the more the number of hotels, the bigger is the hotel and the higher the rent of the room is likely to be. This is because most hotels built on large scales tend to have good amenities, a high star rating, good infrastructure so can charge a higher price for their hotel rooms. Most of the hotels with a large number of rooms have a high star rating and our big hotel

brands, so they have a higher price than hotels which low capacities, who cannot afford to maintain a large number of rooms.

Swimming Pools: It is likely that a room in a hotel with a swimming pool will be more expensive than a room in a hotel without one. Majority of the hotels do not have a swimming pool, due to space constrains, financial constraints and hassles related to management of the pool. This makes the swimming pool a luxury. Also, it is the ideal way for a family, group of friends or an individual to have some fun and relax.

City: It plays a major role. Tourists especially foreigners choose to stay in well furnished hotels located in elite cities like Mumbai, Delhi, Goa etc. It is likely that the city in which the hotel is situated in will strongly influence the rent of the rooms of the hotel. Also, a variable, CityRank, was used to uniquely identify each city in the dataset. Each city has different characteristics, which influences the pricing of the hotel rooms in that city. Some cities have a hotel which does not follow the general trend of pricing of the city. This might be because the hotel has something special to offer e.g. it is a heritage hotel.

Tourist Destination: Cities which are popular tourist destinations will have a higher demand for their hotel rooms, as more people would want to stay in the hotels when they visit the city because tourist spots are the ones with exquisite beauty and nature's bounty. This allows the hotel owners to charge the tourists a higher price for their rooms, as compared to the hotel owners in cities which are not popular tourist destinations.

Distance from nearest airport: It is expected that the hotel room prices are correlated to the distance of the hotel from the nearest airport. A hotel which is very far from the airport would not be preferred by most travelers. This is because they would not like to spend a lot of time travelling from the airport to the hotel and back. Instead, if they could find a hotel closer to the airport, it is more likely that they would prefer staying in that hotel

3.3.) Regression Models

We analyzed the research model using three models:

Model 1: The effect of star rating on room rent was first established in my analysis. The room rent was regressed for the star rating of a hotel as follows:

Model 1 was estimated, using linear least squares (linear regression model). If the room rent is higher for hotels with higher star ratings, the coefficient of correlation is positive.

Model 2: The effect of the existence of a swimming pool on room rent was established next in my analysis.

If the room rent is higher for hotels having a swimming pool and lesser otherwise, the coefficient of correlation positive.

Model 3: The effect of the capacity of the hotel on room rent was established next in my analysis.

If the room rent is higher when the number of rooms is more, the coefficient of correlation is positive.

3.4.) Results:

Model 1: Empirical support was found for H1. The average room rent increased as the star rating increased. The regression analysis using Ordinary Least Squares yielded >0 and $p<0.05$, which is the critical value. Hence, the null hypothesis was rejected. The alternative hypothesis i.e. Room Rent and Star Rating are not independent of each other, was accepted.

Model 2: Empirical support was found for H2. The average room rent was higher if the hotel had a swimming pool as compared to the average room rent in hotels which did not have swimming pools. The regression analysis using Ordinary Least Squares yielded >0 and $p<0.05$, which is the critical value. Hence, the null hypothesis was rejected. The alternative hypothesis i.e. the price of a hotel room is not independent of the existence of a swimming pool, was accepted.

Model 3: Empirical support was found for H3. The average room rent increased when the capacity of the hotel increased. The regression analysis using Ordinary Least Squares yielded >0 and $p<0.05$, which is the critical value. Hence, the null hypothesis was rejected. The alternative hypothesis i.e. the price of a hotel room is not independent of the capacity of the hotel, was accepted.

Conclusion: This analysis was necessary so that we can understand the reasons for variation in room rents of hotels in India and adopt strategies to maximize profit. The contribution of the analysis was that the room rents of hotels of 42 major Indian cities were incorporated and analyzed. The observation made was that hotels with a higher star rating charge customers more than hotels with a lower star rating. Plus, the hotels with swimming pools tend to be more expensive than hotels without swimming pools. Another observation made was that the room rents were also dependent on the number of rooms in the hotel. These are the factors which affect the hotel room pricing in the Indian Market.

Some important statistics:

Number of hotel rooms in each city in India:

Agra	Ahmedabad	Amritsar	Bangalore	Bhubaneswar
432	424	136	656	120
Chandigarh	Chennai	Darjeeling	Delhi	Gangtok
336	416	136	2048	128
Goa	Guwahati	Haridwar	Hyderabad	Indore
624	48	48	536	160
Jaipur	Jaisalmer	Jodhpur	Kanpur	Kochi
768	264	224	16	608
Kolkata	Lucknow	Madurai	Manali	Mangalore
512	128	112	288	104
Mumbai	Munnar	Mysore	Nainital	Ooty
712	328	160	144	136
Panchkula	Pune	Puri	Rajkot	Rishikesh
64	600	56	128	88
Shimla	Srinagar	Surat	Thiruvanthipuram	Thrissur
280	40	80	392	32
Udaipur	Varanasi			
456	264			

Room Rent:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
299	2436	4000	5474	6299	322500

Star rating:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
0.000	3.000	3.000	3.459	4.000	5.000

Distance from nearest Airport:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
0.20	8.40	15.00	21.16	24.00	124.00

Hotel Capacity:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
0.00	16.00	34.00	62.51	75.00	600.00

Swimming Pool (0 for no, 1 for yes):

	Var1	Freq
1	0	8524
2	1	4708

Regression Analysis of hotel room pricing in the Indian market:

	β	SE	t-statistics
Intercept	-6896.154	340.549	-20.25
Star Rating	3581.78	78.34	45.72
Swimming Pool	4773.49	126.53	37.73
Hotel Capacity	15.1011	0.8212	18.39

a) Hotel Grace Residency, Andheri, Mumbai, Maharshtra

b) Raasleela, Sony Ji Ki Bari Adjoining The Leela Kempenski Udaipur