

Project-2

Analysis Report for Investing in the Indian Hotel Industry

Finlatics

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Abstract

India is advancing on the tourism front. The advancement in the transportation sector has increased the number of tours and travels made. These ever-growing tours have created the need to set up new hotels, thus making the hotel industry business potentially profitable. This report provides the required analysis to help one find the right place to invest for higher returns. While planning to invest, one should consider many factors which would help them get a profit. Factors like the number of climates, monsoon effects, history of the industry, etc, strongly determine the favourability of establishing hotel businesses in a region. It is not just about identifying these factors but also weighing them accordingly to help make a clearer choice. This project report takes the help of a mathematical model which weighs these factors and helps one get a quantitative idea of where to invest. Based on the data provided, one can calculate the Success percentage of the hotel industry in the state. This factor provides the required quantitative basis to aid in better decision-making. The higher the Success percentage, the more the chances of gaining profit. It is also important to consider the Loss percentage (i.e., $100 - \text{Success Percentage}$), which is also invisibly present. As one can guess, the higher the difference between the Success Percentage and the Loss Percentage, the more chances of coming out with a profit.

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1 Introduction

As the need rises for smarter investments, one would always like to go through an analysis report to test his fortunes virtually before getting into the big picture without much experience in the current investing problem. Now for such a highly risky job, one would like to use a reliable tool that could assure one of less risk and less compromise. A mathematical model is one such tool that is not only safe but also provides a concrete claim which is more dependable. Mathematics has always been a good tool to support an analysis. That is why in today's world, especially in the scientific world, no one accepts an analysis without a mathematical proof to their statements. In the coming years, this attitude is said to take over every other subject.

There are many pros to an analysis that a mathematical model supports. A mathematical model enables us to work with numbers, develop outputs with quantitative biases and help one improve it far better than traditional qualitative thinking. Another advantage of employing a mathematical model is that it is easy to convey and more dependable than most qualitative models. With good enough inputs, there is a high possibility of getting a high output. These inputs could be in the form of various factors, some of which we will discuss in the following sections.

2 Factors

2.1 Climate



Figure 1: Climates across the country

Source: Finlatics Project-2

Climate is a crucial factor when deciding whether to set up a hotel. Based on the data received from Finlatics, we can classify the climates into four categories;

- Tropical Wet (Humid)
- Tropical Dry
- Subtropical Humid Climate
- Mountain Climate

There are various sub-categories to these, but they are not of much interest to us. Based on this, the following table shows the number of Climates in each region.

Serial No.	States	No. of Climates
1	Bihar	1
2	Goa	
3	Manipur	
4	Meghalaya	
5	Mizoram	
6	Nagaland	
7	Tripura	
8	Rajasthan	
9	Sikkim	
10	Assam	2
11	Andhra Pradesh	
12	Chhattisgarh	
13	Arunachal Pradesh	
14	Gujarat	
15	Haryana	
16	Jharkhand	
17	Karnataka	
18	Kerala	
19	Odisha	
20	Punjab	
21	Tamil Nadu	
22	Telangana	
23	Uttar Pradesh	
24	Uttarakhand	
25	Himachal Pradesh	3
26	Maharashtra	
27	Madhya Pradesh	
28	West Bengal	

Figure 2: Table depicting the number of climates in each state

According to the usual trend, people like to visit places with at least 2 to 3 climates. A state having a single climate would reduce the number of visitors coming into the state due to a lack of diversity. On the other hand, too much variety is also not appreciated. Thus having 2 or 3 climates in a state gives the perfect climatic balance. Thus we can weigh the states with 2 or 3 climates higher than those with 1 or 4 climates.

Now speaking of the monsoon period, in India, on average, the monsoon period lasts for about 115-120 days in the year. Nobody likes it to rain the whole year. The ratio of No. of days from June 1 to October 31 to the gap between the monsoon retreat and the monsoon onset helps us in this case. The greater the ratio, the lesser the gap between the retreat and the onset of the monsoon, and vice versa.

For this data to be uniform, we have considered that every state receives rainfall. Even if the monsoon flow line is not indicated to pass through the state, we have

taken the flow (onset/retreat) as the nearest one to the state. E.g., Even if the monsoon flow line does not pass through Mizoram, we have considered the flow line passing through Manipur to get the rain data for Mizoram. To apply this method for all, some significantly compromised approximations have been taken. All these compromises have been taken just to get a uniform data set.

2.2 Current Status of the Hotel Industry

The current status of the number of hotels in the country is given in the following table with a visual representation through the bar graph.

Serial No.	States	No of Hotels
1	Andhra Pradesh	34000
2	Arunachal Pradesh	5000
3	Assam	25000
4	Bihar	4000
5	Chhattisgarh	25000
6	Goa	44000
7	Gujarat	107000
8	Haryana	48000
9	Himachal Pradesh	83000
10	Jharkhand	4000
11	Karnataka	40000
12	Kerala	672000
13	Madhya Pradesh	14000
14	Maharashtra	102000
15	Manipur	3000
16	Meghalaya	2000
17	Mizoram	1000
18	Nagaland	1000
19	Odisha	20000
20	Punjab	11000
21	Rajasthan	72000
22	Sikkim	12000
23	Tamil Nadu	116000
24	Telangana	34000
25	Tripura	1000
26	Uttar Pradesh	58000
27	Uttarakhand	50000
28	West Bengal	87000

Figure 3: Table depicting the number of hotels in each state

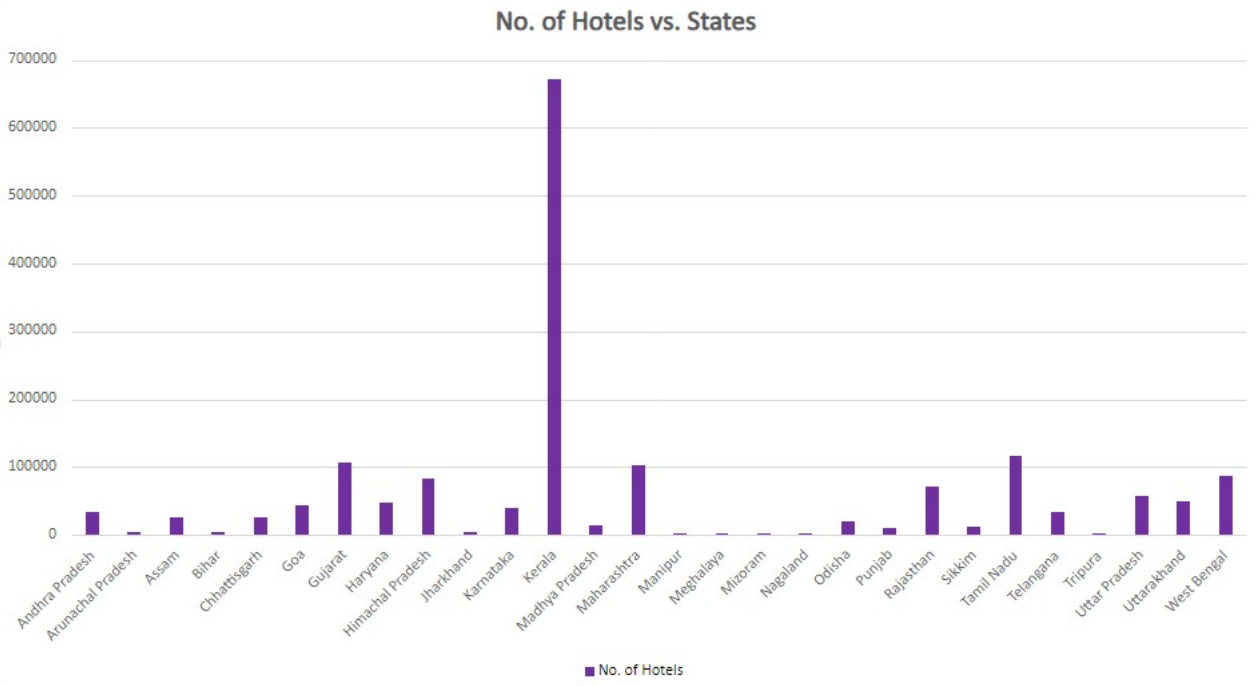


Figure 4: Visual Representation of the above table

From the above bar chart, it is clear that Kerala has the highest number of hotels while states like Mizoram, Nagaland, and Tripura have the least. Now we can define a numerical factor associated with the No. of Hotels set up in each state. This factor is the state's Previous Success Factor, defined as the ratio of No. of Hotels in the state to the total No. of Hotels in the Country. One can observe that the state with a higher No. of hotels will have a higher Previous Success Factor. A similar graph for the Previous Success Factor plotted against each state can be obtained.

3 Mathematical Model

As discussed earlier, we will use a mathematical model to support our various claims. Let us define a numerical value called Success Percentage. The success percentage has been calculated using the following formula.

$$Success\ Percentage = \left(\frac{Climate\ Factor + Previous\ Success\ Factor}{2} \right) \times 100 \quad (1)$$

where

$$Climate\ Factor = \frac{\frac{d}{g} + p}{2} \quad (2)$$

$d =$ No. of days from June 1 to October 31, $g =$ Date of Monsoon Retreat – Date of Monsoon Onset & $p =$ Pleasant Climate Factor which is 0.75 if No. of Climates are 2 or 3 and is 0.25 if No. of Climates are 1 or 4. and

$$Previous\ Success\ Factor = \frac{No.\ of\ Hotels\ in\ State}{Total\ No.\ of\ Hotels\ in\ Country} \quad (3)$$

The success percentage of a state gives us a quantitative idea of the potential held by the state in the hotel industry.

4 Suggestion for Investors

For all the investors seeking to invest in the hotel industry, according to our analysis, you would like to put your money based on the following table.

Serial No.	States	Success Factor
1	Andhra Pradesh	47.71
2	Arunachal Pradesh	50.05
3	Assam	50.64
4	Bihar	40.00
5	Chhattisgarh	49.42
6	Goa	36.35
7	Gujarat	63.25
8	Haryana	70.18
9	Himachal Pradesh	71.23
10	Jharkhand	48.79
11	Karnataka	48.73
12	Kerala	66.75
13	Madhya Pradesh	54.35
14	Maharashtra	55.42
15	Manipur	34.28
16	Meghalaya	34.25
17	Mizoram	34.22
18	Nagaland	34.22
19	Odisha	49.27
20	Punjab	69.08
21	Rajasthan	69.69
22	Sikkim	38.81
23	Tamil Nadu	50.15
24	Telangana	48.55
25	Tripura	35.07
26	Uttar Pradesh	55.67
27	Uttarakhand	55.43
28	West Bengal	50.13

Figure 5: Table depicting the success percentage of each state

The above data has been calculated using eq.1 in the above section.

According to the mathematical model, investing in states marked in yellow will be highly profitable, while those in orange also give profit. The ones marked in green are just parred where there are few returns to the investment. Investing in the blue ones is highly risky, making significant losses possible.

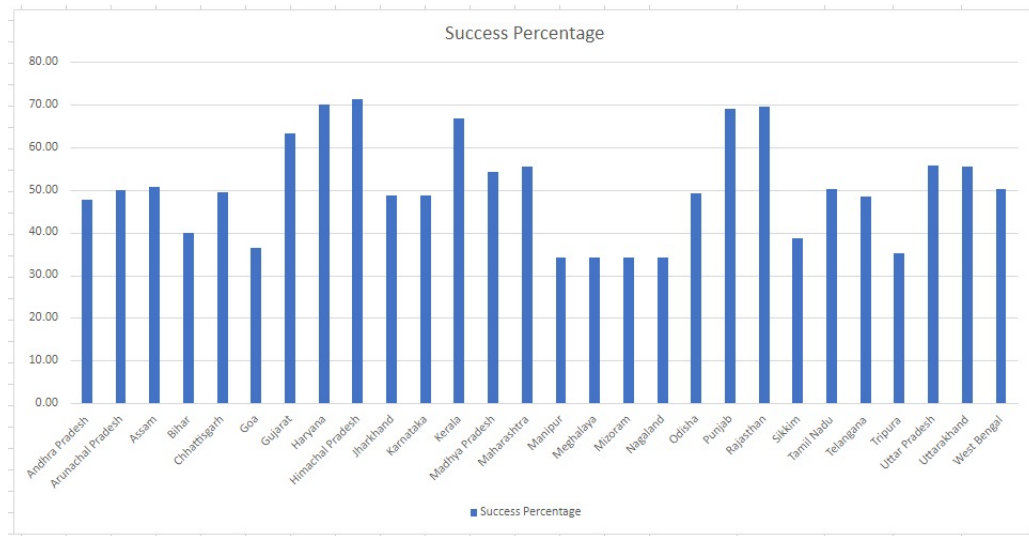


Figure 6: Comparing Success Percentage in each state

From the bar graph below, investing in states like Assam and Arunachal Pradesh is suitable in the North-Eastern regions. But on the whole, they are not that profitable.

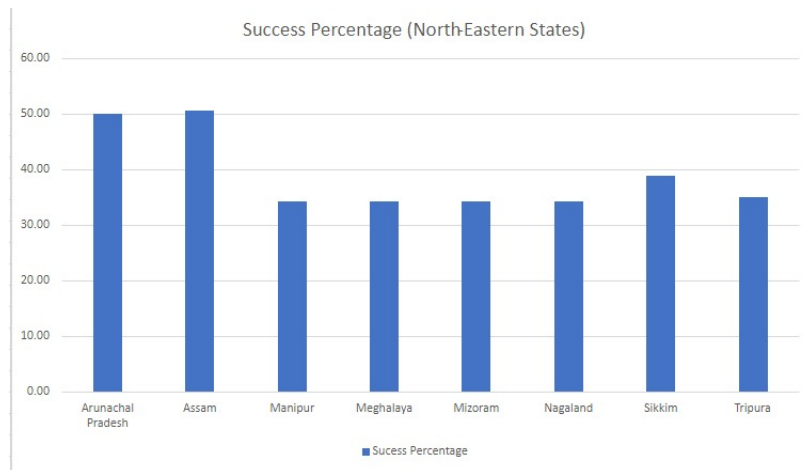


Figure 7: Comparing Success Percentage in the North-Eastern States

5 Conclusion

Overall, the hotel industry in India is very profitable. Places like Kerala and Himachal Pradesh are potential regions where the hotel industry is set to grow. Investing in these sectors has a high gain value and a high stability factor, as with the expanding travel industry, the hotel industry is set to be the talking point. Companies such as Oyo are profiting a lot from them. With Proper planning and smart investments, the hotel industry will surely strike up exponentially.