**Hotel Booking Cancellation Analysis**

A picture containing building, swimming pool, property, real estate

Description automatically generated

**Business Problem**

In recent years, City Hotel and Resort Hotel have seen high cancellation rates. Each hotel is now dealing with a few issues as a result, including less revenue and less than ideal hotel room use. Consequently, lowering cancellation rates is both hotels’ primary goal to increase their efficiency in generating revenue and for us to offer thorough business advice to address this problem.

The analysis of hotel booking cancellation as well as other factors that have no bearing on their business and yearly revenue generation are the main topics of this report.

**Assumptions**

1. No unusual occurrence between 2015 and 2017 will have a substantial impact on the data used.

2. The information is still current and can be used to analyze a hotel’s possible plans in an efficient manner.

3. There are no unanticipated negatives to the hotel employing an advised technique.

4. The hotels are not currently using any of the suggested solutions.

5. The biggest factor affecting the effectiveness of earning income is booking cancellations

6. Cancellations result in vacant rooms for the booked length of time.

7. Clients make hotel reservations the same year they make cancellations.

**Research Questions**

1. What are the variables affecting hotel cancellations?

2. How can we make hotel reservation cancellations better?

3. How will hotels be assigned in making pricing and promotional decisions?

**Hypothesis**

1. More cancellations occur when prices are higher.

2. When there is a longer waiting list, customers tend to cancel more frequently.

3. Most clients come from offline travel agents to make reservations.

4. Lead time for cancelled reservation is higher

**About the Dataset**

Downloaded from Kaggle, the dataset contains booking information - 119390 observations for a City Hotel and a Resort Hotel. Each observation represents a hotel booking between the 1st of July 2015 and 31st of August 2017, including booking that effectively arrived and booking that were canceled.

The data is originally from the article [Hotel Booking Demand Datasets](https://www.sciencedirect.com/science/article/pii/S2352340918315191), written by Nuno Antonio, Ana Almeida, and Luis Nunes for Data in Brief, Volume 22, February 2019.

**Analysis and Findings**

Below are the findings after doing data exploration and analysis.

We have 118899 reservations after data cleaning.

**A picture containing text, screenshot, diagram, rectangle

Description automatically generated**

The above bar graph shows the percentage of reservations that are cancelled and those that are not. It is obvious that there are still a significant number of reservations that have not been cancelled. There is still 37% of clients who cancelled their reservations, which has a significant impact on the hotels’ earnings.

**A picture containing text, screenshot, diagram, rectangle

Description automatically generated**

In comparison to resort hotels, city hotels have more bookings. It is possible that resort hotels are more expensive than those of city hotels.

A graph of blue and orange lines

Description automatically generated with low confidence

The line graph above shows that, on certain days, the average daily rate for a city hotel is lower than the resort hotel. It goes without saying that weekends and holidays may see a rise in resort hotels rates.

A graph of blue and orange bars

Description automatically generated with low confidence

We analyzed the number of reservations in each month. As can be seen, both the number of confirmed reservations and the number of cancelled reservations is highest in August whereas January has the highest number of reservation cancellations.

A picture containing text, screenshot, colorfulness, plot

Description automatically generated

This bar graph shows that cancellations are most common when prices are higher and least common when prices are lower. Therefore, the reservation cancellation solely depends on price.

A picture containing text, screenshot, diagram, plot

Description automatically generated

The above chart shows the top 10 countries with the most cancellations. Portugal can be seen as the highest with over 62% of cancelled reservations.

A picture containing text, diagram, screenshot, circle

Description automatically generated

When we checked the market segment from where the guests are making reservations, 46% of the guests come from online agencies whereas 27% come from groups. Only 4% of clients book directly by visiting the hotel and making reservations.

A graph of blue and orange lines

Description automatically generated with low confidence

As seen in the above graph, reservations are cancelled when the average daily rates are higher than when they are not cancelled. It clearly proves all the above analysis that higher prices lead to more reservation cancellations.

A picture containing text, screenshot, diagram, plot

Description automatically generated

The average lead time for cancelled reservation is about 145 days which is higher compared to non-cancelled reservation which is 80 days.

A picture containing text, diagram, screenshot, line

Description automatically generated

The cancelled reservation has a greater variation in lead time as compared to the not cancelled data.

**Suggestions**

1. Cancellation rates rise as prices rise. To prevent cancellations, hotels could work on their pricing strategies and try to lower the rates for the specific hotel based on location.

2. As the ratio of cancellations and non-cancellations is higher in the resort hotels than the city hotels, the hotels should provide discounts on weekdays or holidays.

3. Since cancellations are higher in January, hotels can start campaigns or marketing with a reasonable amount to increase their revenue

4. Hotels can also increase the quality of their hotels and services mainly in Portugal to reduce cancellation rate.