**INTRODUCTION:**

We are here to explore a hotel booking dataset to discover important factors that govern the bookings. This data set contains booking information for a city hotel and a resort hotel and includes information such as when the booking was made, length of stay, the number of adults, children, and/or babies, and the number of available parking spaces, among other things. We will analyze some important aspects of hotel booking which will help us identify major loopholes and give us insights which will be helpful to run a profitable hotel business.

**Attribute Information:**

* **hotel:** name of hotel whether City hotel or Resort Hotel
* **is\_canceled:** (0 or 1) Indicates whether booking was cancelled or not.
* **lead\_time:** The time between reservation and actual arrival.
* **arrival\_date\_year:** Year of arrival date.
* **arrival\_date\_month:** Month name of arrival date.
* **arrival\_date\_week\_number:** Week number on arrival date.
* **arrival\_date\_day\_of\_month:** Day of the month of arrival date.
* **stays\_in\_weekend\_nights:** Number of weekend nights the guest stayed or booked to stay at the hotel.
* **stays\_in\_week\_nights:** Number of weeknights the guest stayed or booked to stay at the hotel.
* **Adults, Children, Babies:** Number of adults, children and babies arriving.
* **Meal:** Type of meal booked.
* **Country:** The origin country of the guests.
* **market\_segment:** Shows how the reservation was made and what is the purpose of reservation.
* **distribution\_channel:** The medium through which the booking was made.
* **is\_repeated\_guest:** (0 or 1) Indicates whether or not the booking is of a repeated guest.
* **previous\_cancellations:** (0 or 1) Indicates whether or not the guest has previous cancellations.
* **reserved\_room\_type:** Type of room booked.
* **assigned\_room\_type:** Type of room allotted /assigned.
* **booking\_changes:** Number of changes/amendments made to the booking.
* **deposit\_type:** Whether refundable/non-refundable/No-deposit made.
* **Agent:** ID of the travel agency that made the booking.
* **Company:** The name of the company that made the booking or is responsible for paying for the booking.
* **days\_in\_waiting\_list:** Number of days the booking was in the waiting list before it was confirmed to the customer.
* **customer\_type:** Type of customers (Transient, group, etc.)
* **Adr:** Average daily rate is the average revenue that a hotel receives for each occupied guest room per day.
* **required\_car\_parking\_spaces:** Number of car parking spaces required.
* **total\_of\_special\_requests:** Number of special requests made.
* **reservation\_status:** Self-explanatory.
* **reservation\_status\_date:** Self-explanatory.

**Business Problem:**

In recent years Resort Hotel and City Hotels have seen many cancellations rates. Each hotel is now dealing with a number of issues as a result, including fewer revenues and less than ideal hotel room use. Consequently, lowering cancellation rates in both hotels. The primary goal is to increase their efficiency in generating revenue, and for us to offer business advice to address the problem.

Research Questions:

1. What are the variables that affect hotel reservations cancellation?
2. What can we make hotel reservations cancellation better?
3. How will hotels be assisted in making pricing and promotional decisions?

Hypothesis:

1. More cancellations occur when the price is higher.
2. When there is a longer waiting period, customers tend to cancel more frequently.
3. Most customers make reservations online.
4. The people make reservations with children between June-August because of school holidays.
5. City hotels have a higher cancellation rate compared to resort hotels.
6. Bookings with more special requests are less likely to be canceled. May be Guests who make special requests might be more committed to their stay.

Analysis and finding:

**A blue rectangular object with white text

Description automatically generated**

The accompanying bar graph shows the percentage of reservations that are cancelled and not cancelled.

It is obvious that there are a significant number of reservations that have not been cancelled. Still 37% of the client s who cancelled their reservation, which has significant impact on the hotel earnings.

A graph of a hotel

Description automatically generated

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

A graph of blue and orange lines

Description automatically generated

The line graph above shows that, on certain days, the average daily rate of the City Hotel is less than Resort Hotel, and on other days, it even less. In weekend and holidays may see a rise in Resort hotels.

A graph of different colored bars

Description automatically generatedThe above bar graph we developed analyzes the months with the highest and lowest reservation levels according to reservation status. As we can see, both the number of reservations and number of cancelled reservations are the largest in the month of August. Whereas in January most cancelled reservations happened.

A graph of different colored bars

Description automatically generated

The bar graph demonstrates that cancellations are most common when price is more, and the cancellation is least when price is lower. Therefore, the price of hotels is responsible for cancellations.

A pie chart with different colored circles

Description automatically generated

From the above pie chart, we conclude that Portugal has the highest number of cancellations.

A graph of blue bars

Description automatically generated with medium confidence

In the above graph we checked the area from where the Guests visited the hotels and made reservations. Around 46% clients come from online travel agencies, whereas 27% come from groups. Only 4% of clients book hotels directly by visiting them and making reservations.

A graph of blue and orange lines

Description automatically generated

As seen in the above graph, reservations are cancelled when the average daily rate is higher than when it is not cancelled. It proves from all the above analysis that higher prices leads to more cancellation.

A screenshot of a graph

Description automatically generated

1.Total special requests depends more on the total number of members arrived.

2.Average daily revenue depends more on total special requests and total members as compared to other variables.

A graph of a graph

Description automatically generated with medium confidence

According to the above-mentioned analysis the most frequent deposit type for cancelled reservations is "No Deposit" by 29637 reservations which impact the secure of booking is totally high for no deposit. We recommend change the deposit type for cancelation bookings to be only refundable.

A graph of different colored squares

Description automatically generated

We can conclude that room type A has more bookings and cancellations. It might indicate that guests are not satisfied with the room description or pictures provided during booking.

A graph of different colored rectangular shapes

Description automatically generated

As we can conclude that Transient customers have a higher cancellation rate compared to contract customers, indicating that long-term contracts lead to more stable bookings.

A graph with a line

Description automatically generated

As we can see the bookings with more special requests are less likely to be cancelled.

A graph of different colored bars

Description automatically generated

* The most preferred options are Bed and Breakfast for City hotel and resorts.
* One thing to note is SC in Resort is almost nonexistent. While in city hotels it is the second most preferred option.
* Could be because resorts are generally far away from cities.

A graph with red and blue bars

Description automatically generated

The chances of cancellation of repeated guest are less. The repeated guests may be familiar with the facility and deals of the hotels which make them loyal to the hotel.

A graph with a line

Description automatically generated

The customers who have cancelled most of their previous bookings may cancel their current bookings.

**Suggestions:**

1. Cancellation rates remain higher as the price does. To prevent cancellations, hotels should work on their pricing strategies and try to lower the price in the specific locations. They can also provide some discounts to the customers.
2. As the cancellation and non-cancellations of the resort hotel is higher than City hotel, the hotels should provide reasonable discount on the room prices on weekends and holidays.
3. They can also increase the quality of hotels and their services mainly in Portugal to reduce the cancellations rate.