

Hotel Reservation Cancellation Analysis

Business Problem Description:

In recent years, both city hotels and resort hotels have experienced a significant increase in reservation cancellation rates. This trend has led to a range of operational and financial challenges for the hospitality industry. Each hotel is facing critical issues related to revenue management and resource optimization, adversely affecting their overall business performance.

Problem Statement

The primary problem is the high rate of reservation cancellations which has multiple negative consequences for hotels, including:

1. **Revenue Loss:** Cancellations result in lost revenue opportunities as rooms that could have been sold to other guests remain vacant.
2. **Operational Inefficiencies:** High cancellation rates disrupt the scheduling and allocation of resources, such as staff and amenities, leading to suboptimal operations.
3. **Customer Satisfaction:** Frequent cancellations may affect customer satisfaction and loyalty, as hotels struggle to manage overbooking strategies and last-minute availability issues.
4. **Forecasting Challenges:** Accurate demand forecasting becomes difficult, impacting pricing strategies and inventory management.

Objectives

To address these issues, the objectives of the data analysis project are as follows:

1. **Identify Patterns and Trends:** Analyze historical reservation data to uncover patterns and trends in cancellation behavior.
2. **Predict Cancellation Likelihood:** Develop predictive models to estimate the probability of cancellations for future bookings.
3. **Understand Key Factors:** Identify key factors contributing to cancellations, such as booking lead time, seasonality, room type, and customer demographics.
4. **Mitigate Cancellations:** Propose actionable strategies to reduce the cancellation rate, such as adjusting cancellation policies, implementing targeted marketing campaigns, and improving customer engagement practices.

Data Sources

The project will utilize various data sources, including:

Historical reservation and cancellation records

Customer profiles and demographics

Room availability and pricing data

Seasonal and event-related data

Customer feedback and reviews

Expected Outcomes

By conducting a thorough data analysis, the project aims to achieve the following outcomes:

1. **Enhanced Revenue Management:** Implement data-driven strategies to minimize revenue loss from cancellations.
2. **Improved Operational Efficiency:** Optimize resource allocation and scheduling to better accommodate fluctuations in room occupancy.
3. **Increased Customer Satisfaction:** Develop proactive measures to enhance customer experience and reduce dissatisfaction caused by cancellations.
4. **Accurate Demand Forecasting:** Improve forecasting models to enhance pricing and inventory management decisions.

Assumptions

1. **Data Availability and Quality:** It is assumed that historical data on hotel reservations, including cancellations, is available and of high quality. This data should include information such as booking dates, cancellation dates, customer demographics, booking channels, price sensitivity, and special requests.
2. **Consistency in Market Conditions:** The analysis assumes that market conditions, such as economic factors and travel trends, have remained relatively stable over the data period. Significant fluctuations in these conditions could affect the validity of the findings.
3. **Uniformity in Hotel Operations:** It is assumed that the operations of the city hotels and resort hotels have remained consistent during the period analyzed. Any major operational changes could influence cancellation rates.
4. **Impact of External Factors:** External factors like natural disasters, pandemics, or geopolitical events have been minimal or uniformly distributed over the analysis period, as these could disproportionately affect cancellation rates.

Research Questions

1. What are the variables that affect hotel reservation cancellations?
2. How can we minimize hotel reservation cancellations?
3. How will hotels be assisted in making pricing and promotional decisions?

Hypotheses

1. **Price Sensitivity Hypothesis:** Higher room rates are positively correlated with higher cancellation rates. Customers who book rooms at higher prices may be more likely to cancel, possibly seeking better deals or facing financial constraints.
2. **Booking Channel Hypothesis:** The cancellation rate varies significantly across different booking channels (e.g., direct bookings, online travel agencies, corporate bookings). Certain channels may have higher or lower cancellation tendencies based on customer behavior.
3. **Lead Time Hypothesis:** Reservations made further in advance have a higher likelihood of cancellation. Customers booking well in advance may experience changes in their plans more frequently compared to those making last-minute reservations.
4. **Customer Demographics Hypothesis:** Specific customer demographics (age, location, purpose of stay) are more prone to canceling reservations. Understanding these demographics can help in tailoring marketing and communication strategies to reduce cancellations.
5. **Seasonal Variability Hypothesis:** There is a seasonal pattern to cancellations, with certain times of the year experiencing higher cancellation rates due to factors such as holidays, weather conditions, and local events.

Conclusion

Addressing the high cancellation rates is crucial for the sustainability and profitability of city and resort hotels. Through comprehensive data analysis, the project seeks to understand the root causes of cancellations and develop effective strategies to mitigate their impact. This will not only enhance financial performance but also improve operational efficiency and customer satisfaction, ultimately contributing to the long-term success of the hotels.

Report

1. Reservation Status Count

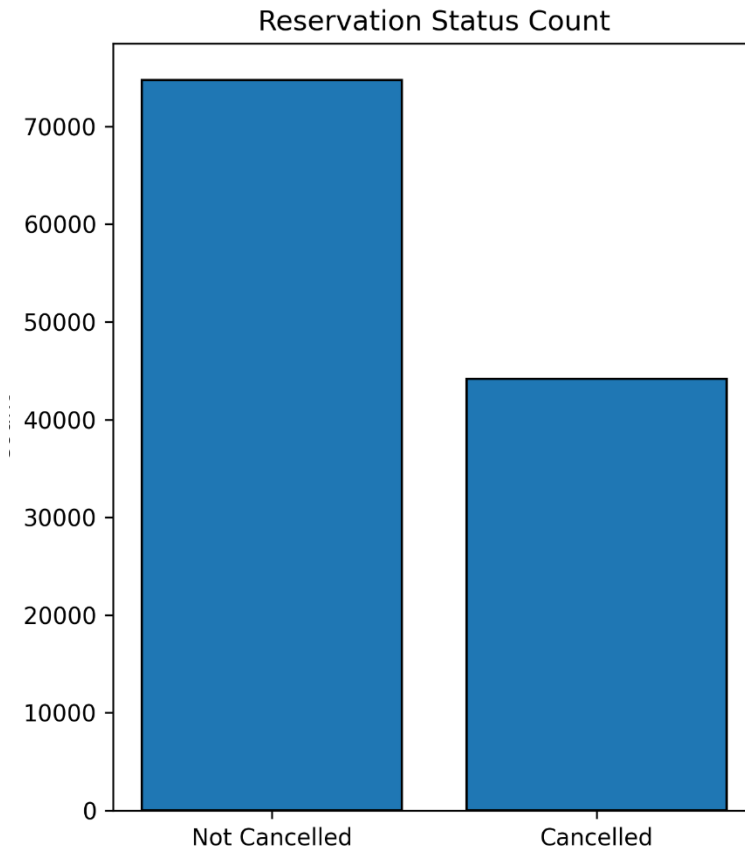


Fig no. 1

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

2. Reservation Cancellation Status

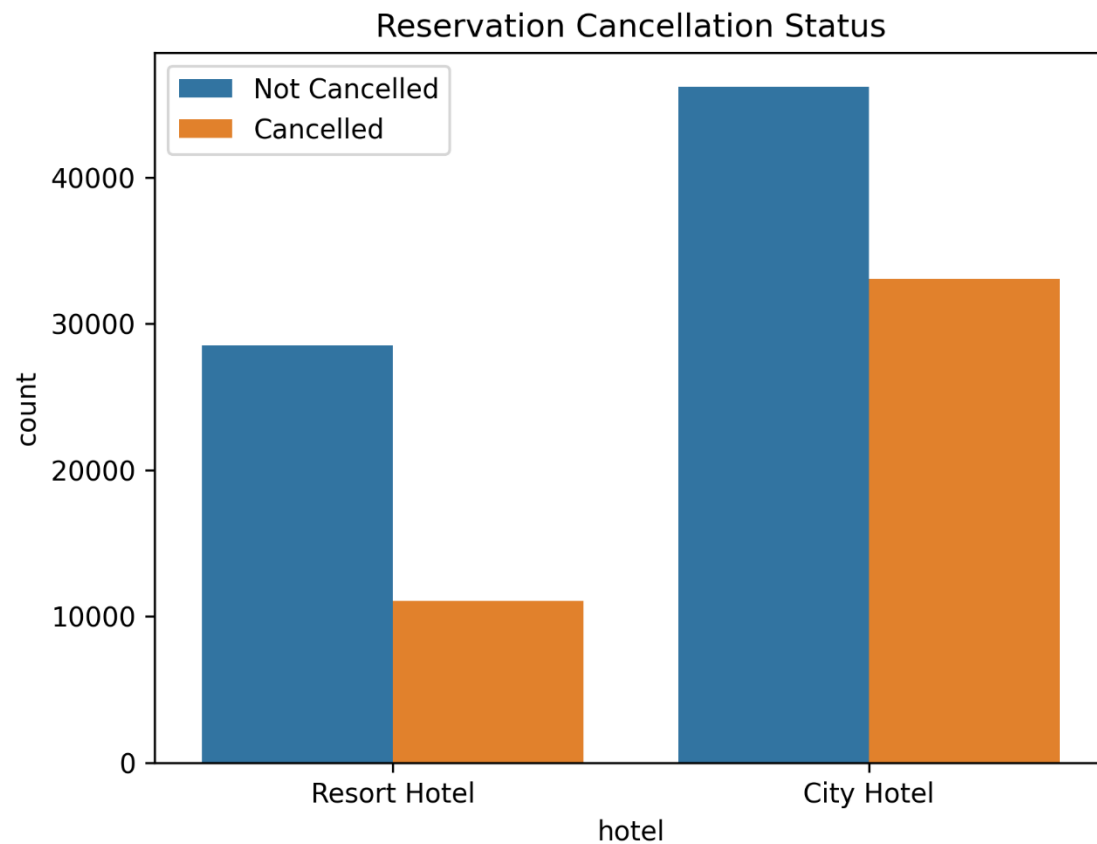


Fig. no 2

In comparison with Resort hotel, City hotel have more booking, hence it may be possible that Resort hotels are more expensive than City hotel.

3 . Average Daily Rate of Hotels

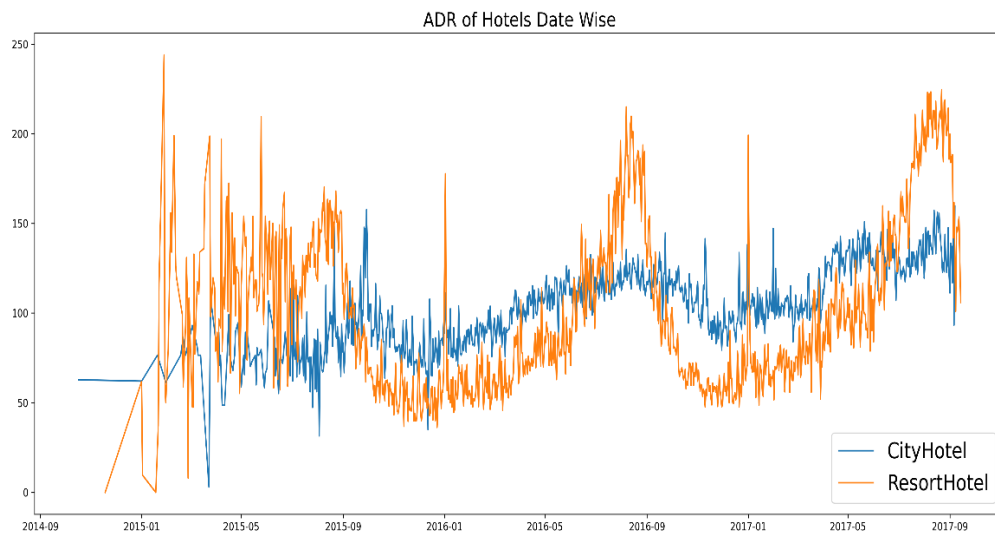


Fig. no 3

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

4 . Reservation Status per Month

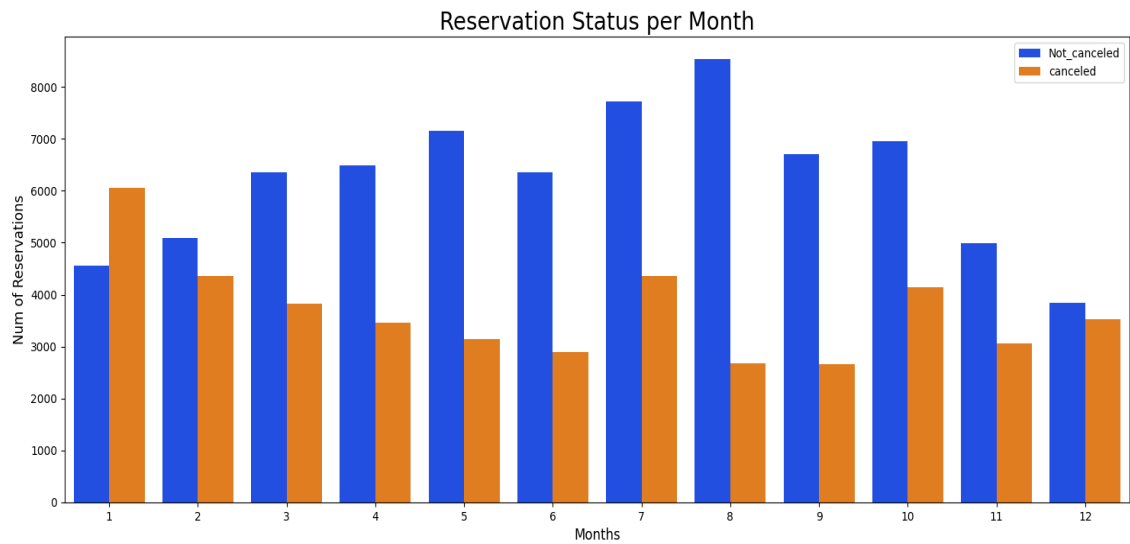


Fig. no 4

This is a grouped bar graph to analyze the month with the highest and lowest reservation levels according to reservation status. It can be seen that, the number of confirmed reservations is highest in the month of August, whereas January is the most canceled reservations.

5 . ADR for each Month

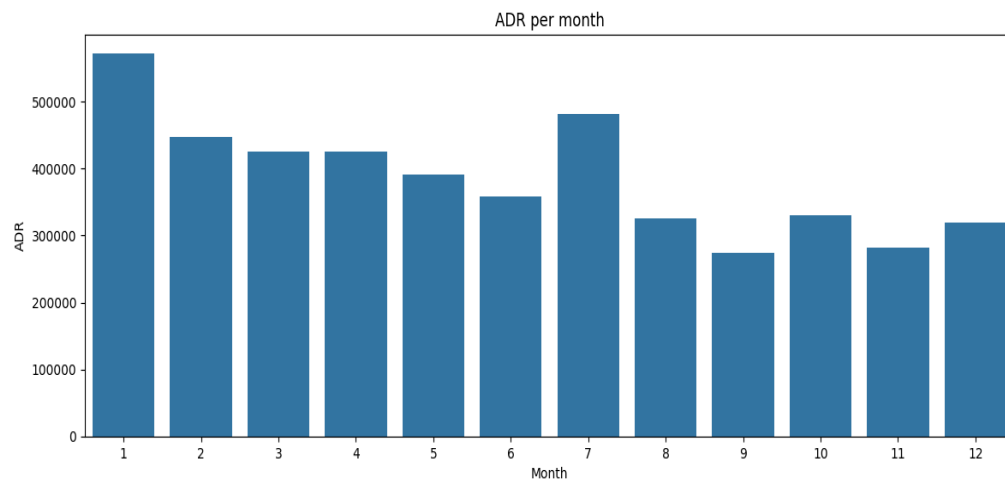


Fig. no 5

The above bar graph demonstrate that cancellations are most common when prices are greatest and are least common when they are lowest. Therefore, the cost of the accomodation is solely responsible for the cancellation.

6 . Top 10 Countries with high reservation cancellation rate

Top 10 Countries with max cancellations

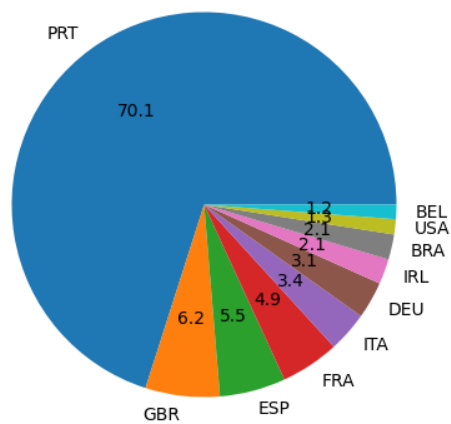


Fig. no 6

The top country with highest cancellation rate is Portugal with approx 70 % cancellation rate.

7 . Market Segment of Reservations and Cancellations

Let's check the area from where guests are visiting the hotels and making reservations. Whether they are coming from Direct or Groups, Online or Offline?

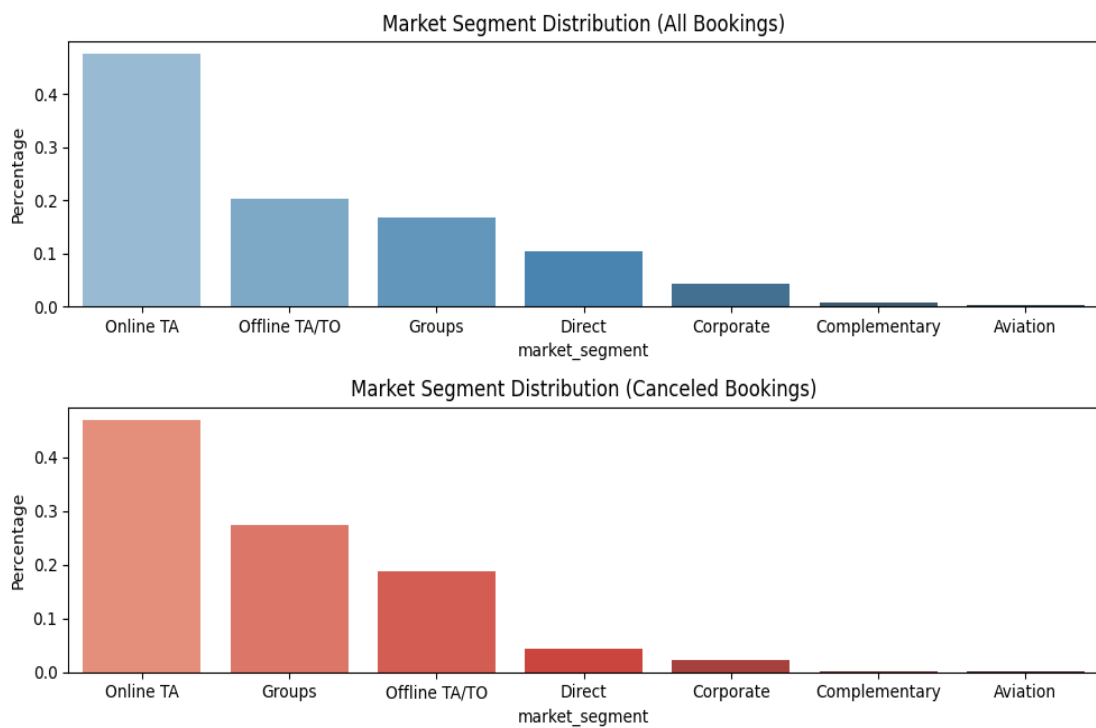


Fig. no. 7

So around 46% of the clients come from online travel agencies, whereas 27 % come from groups. Only 4 % of clients book hotels directly by visiting them and making reservations.

The Cancellation rate is very high in Online travel agents. It is possible that there is a high rate of fake reservations in Online Booking segments.

8. Average Daily Rate

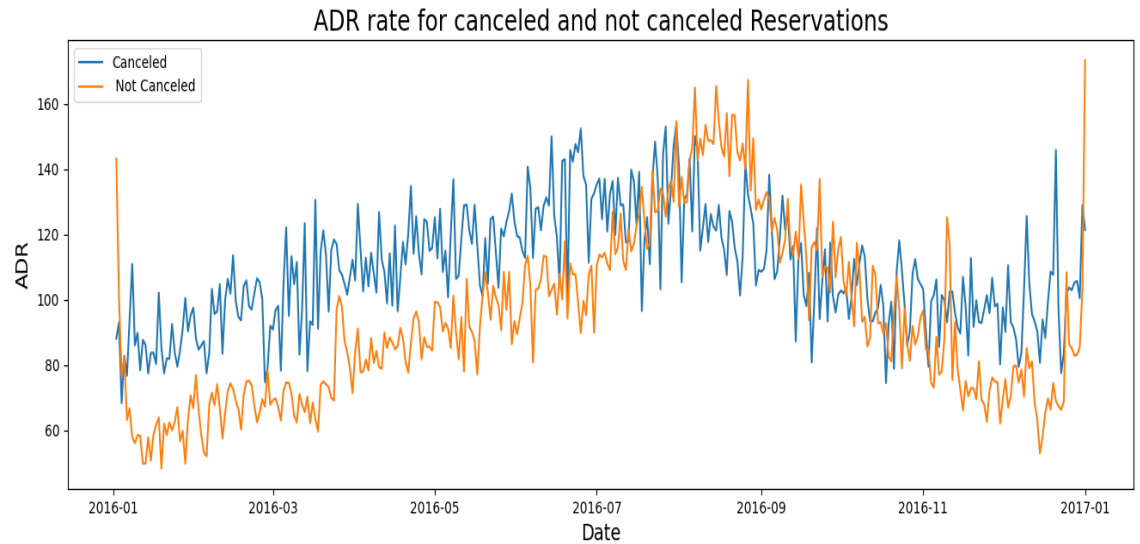


Fig. no. 8

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

Suggestions for the Business Problems

- ✓ Cancellation rate rise as the price increases. In order to prevent cancellations of reservations, hotels should work on their pricing strategies and try to lower the rates for specific hotels based on locations. They can also provide some discounts to the clients.
- ✓ As the ratio of the cancellation and not cancellations is higher in the resort hotel than the city hotel. So the hotels should provide a reasonable discount on the room price on weekends or on holiday.
- ✓ In the month of January, hotels should start campaigns or marketing with a reasonable amount to increase their revenue as the cancellation is the highest in this month.
- ✓ They should also increase the quality of their hotels and their services mainly in Portugal to reduce cancellation rate there.
- ✓ The Cancellation rate is very high in Online travel agents. It is possible that there is a high rate of fake reservations in Online Booking segments. So it needs to work on online segment.