

Hotel Booking Demand Analysis

Team 3 Project Description: Hotel Booking Demand Analysis

Introduction

In the highly competitive hospitality industry, understanding booking patterns and predicting demand is critical for effective hotel management. This project involves analyzing booking information from a city hotel and a resort hotel. By identifying trends and patterns in the booking data, you will help the hotels optimize their operations, improve customer satisfaction, and enhance revenue management strategies.

Your task is to analyze the provided dataset to uncover key insights and develop predictive models that can forecast booking demand and cancelations. This analysis will aid the hotels in making informed decisions regarding pricing, staffing, and inventory management.

Project Overview

This dataset 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. All personally identifying information has been removed from the data.

Content

The dataset includes the following variables:

1. **hotel:** Name of the hotel (City Hotel or Resort Hotel)
2. **is_canceled:** Value indicating if the booking was canceled (1) or not (0)
3. **lead_time:** Number of days that elapsed between the entering date of the booking into the PMS and the arrival date
4. **arrival_date_year:** Year of arrival date
5. **arrival_date_month:** Month of arrival date
6. **arrival_date_week_number:** Week number of year for arrival date
7. **arrival_date_day_of_month:** Day of arrival date
8. **stays_in_weekend_nights:** Number of weekend nights (Saturday or Sunday) the guest stayed or booked to stay at the hotel
9. **stays_in_week_nights:** Number of weeknights (Monday to Friday) the guest stayed or booked to stay at the hotel
10. **adults:** Number of adults
11. **children:** Number of children
12. **babies:** Number of babies

13. **meal:** Type of meal booked. Categories are: Undefined/SC – no meal package, BB – Bed & Breakfast, HB – Half board (breakfast and one other meal – usually dinner), FB – Full board (breakfast, lunch, and dinner)
14. **country:** Country of origin
15. **market_segment:** Market segment designation. In categories, the term "TA" means "Travel Agents" and "TO" means "Tour Operators"
16. **distribution_channel:** Booking distribution channel. The term "TA" means "Travel Agents" and "TO" means "Tour Operators"
17. **is_repeated_guest:** Value indicating if the booking name was from a repeated guest (1) or not (0)
18. **previous_cancellations:** Number of previous bookings that were canceled by the customer prior to the current booking
19. **previous_bookings_not_canceled:** Number of previous bookings not canceled by the customer prior to the current booking
20. **reserved_room_type:** Code of room type reserved. Code is presented instead of designation for anonymity reasons.
21. **assigned_room_type:** Code for the type of room assigned to the booking. Sometimes the assigned room type differs from the reserved room type due to hotel operation reasons (e.g., overbooking) or by customer request.
22. **booking_changes:** Number of changes/amendments made to the booking from the moment the booking was entered to the moment of check-in or cancellation
23. **deposit_type:** Indication on if the customer made a deposit to guarantee the booking. Categories are: No Deposit, Non Refund, and Refundable
24. **agent:** ID of the travel agency that made the booking
25. **company:** ID of the company/entity that made the booking or responsible for paying the booking. ID is presented instead of designation for anonymity reasons.
26. **days_in_waiting_list:** Number of days the booking was in the waiting list before it was confirmed to the customer
27. **customer_type:** Type of booking, assuming one of four categories: Contract - when the booking has an allotment or other type of contract associated to it; Group – when the booking is associated to a group; Transient – when the booking is not part of a group or contract, and not associated to other transient booking; Transient-party – when the booking is transient, but associated to at least other transient booking
28. **adr:** Average Daily Rate as defined by dividing the sum of all lodging transactions by the total number of staying nights
29. **required_car_parking_spaces:** Number of car parking spaces required by the customer
30. **total_of_special_requests:** Number of special requests made by the customer (e.g., twin bed or high floor)
31. **reservation_status:** Reservation last status, assuming one of three categories: Canceled – booking was canceled by the customer; Check-Out – customer has checked in but already

departed; No-Show – customer did not check-in and did not inform the hotel of the reason why

32. **reservation_status_date**: Date at which the last status was set

Project Goals

1. **Data Exploration**: Understand the structure and content of the dataset. Perform exploratory data analysis (EDA) to identify patterns and insights.
2. **Define an Analytics Question**: Based on your exploration, define a relevant analytics question related to booking demand, cancellations, or customer preferences.
3. **Method Selection**: Choose appropriate analytical methods to examine your defined question.
4. **Analysis and Interpretation**: Conduct a thorough analysis to derive meaningful insights. Interpret the results in the context of the business problem.
5. **Business Value and Storytelling**: Focus on presenting your findings in a compelling narrative. Use visualizations and storytelling techniques to communicate the business value of your insights.

Deliverables

1. **Project Proposal (Week 07)**: A brief proposal outlining your defined analytics question, and the potential business value of your analysis.
2. **Progress Report (Week 09)**: An update on your progress, including any preliminary findings and challenges you are facing.
3. **Final Presentation (Week 12)**: A presentation summarizing your project, analysis, findings, and business insights.
4. **Final Report (Week 13)**: A comprehensive report detailing your entire project, from data exploration to final recommendations.

Importance of Storytelling with Data

Storytelling with data is crucial as it transforms complex data into understandable and compelling narratives that can influence decision-making. Your goal is to engage your audience, simplify complex information, and drive actionable insights. By focusing on storytelling, you will capture the interest of managers, highlight key insights, and provide clear recommendations for optimizing hotel operations and improving customer satisfaction.

Good luck, and enjoy the process of transforming data into impactful stories!