

Report Summary

Introduction

- **Objective:** Analyze hotel booking data to understand booking trends, customer demographics, and cancellation patterns, and provide actionable insights for improving operational strategies.
- **Data Overview:** Description of dataset, including key features and variables.

Data Understanding and Cleaning

- **Data Cleaning:** Summary of data preprocessing steps, including handling missing values, outliers, and inconsistent entries.
- **Feature Engineering:** Details on feature creation and transformation to enhance model performance.

Exploratory Data Analysis (EDA)

- **Booking Trends:** Insights into seasonal patterns, booking lead time, customer types and hotel types.
- **Customer Demographics:** Analysis of guest profiles, including age, family size, and nationality.
- **Cancellation Patterns:** Identification of factors influencing cancellations and trends over time.

Hypothesis Testing

- **Testing Approach:** Explanation of hypotheses tested (e.g., factors affecting cancellation rates) and statistical methods used (e.g., chi-square tests, t-tests).
- **Results:** Summary of findings and their implications for hotel management. Normalise the data in same unit which lead good fit for model .

Modelling

- **Model Selection:** Logistic Regression, Random Forest)
- **Performance Evaluation:** Metrics such as accuracy, precision, recall, and F1 score. Interpretation of model results and their impact on decision-making.

Recommendations

- **Pricing and Promotions:** Strategies for optimising pricing and promotions based on analysis. we can see more booking in europe so need to give good perks to those customers.
- **Customer Segmentation:** 75 percent of customer belongs to transients and we should give special perks to increase our bookings.
- **Marketing Strategy:** Recommendations for focusing marketing efforts on the most effective channels and regions.

- City Hotels has high cancellation , i recommend to improve the booking , pricing , reviews ,fooding and fluctuation in price.