BRITISH AIRWAYS

PROJECT PROPOSAL

British Airways, the flag carrier airline of the United Kingdom, operates thousands of flights daily, connecting customers worldwide. The end-to-end process of running these flights efficiently, ensuring timely departures and arrivals, and delivering top-class customer service is a monumental task with many critical responsibilities. As data scientists, your role will be to apply analytical skills to influence multi-million-pound decisions, drive business strategies, reduce costs, and increase revenue.

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TASKS OVERVIEW

1 CUSTOMER FEEDBACK ANALYSIS

You'll scrape and collect customer feedback data from third-party sources, analyze it, and present your insights.

2 PREDICTIVE MODEL FOR CUSTOMER ACQUISITION

You'll prepare a dataset, train a machine learning model, and evaluate its performance to forecast customer bookings.

SCRAPING AND COLLECTING DATA

The first task is to understand customer sentiments and feedback about British Airways. Customers interact with BA at numerous points during their journey, and their feedback is invaluable for continuous improvement. Your objective is to gather this feedback from third-party sources, specifically from Skytrax, a popular website for airline reviews. Using tools like Python and libraries such as BeautifulSoup, you will scrape reviews focusing on the airline itself. The goal is to collect a comprehensive dataset that will allow for meaningful analysis.

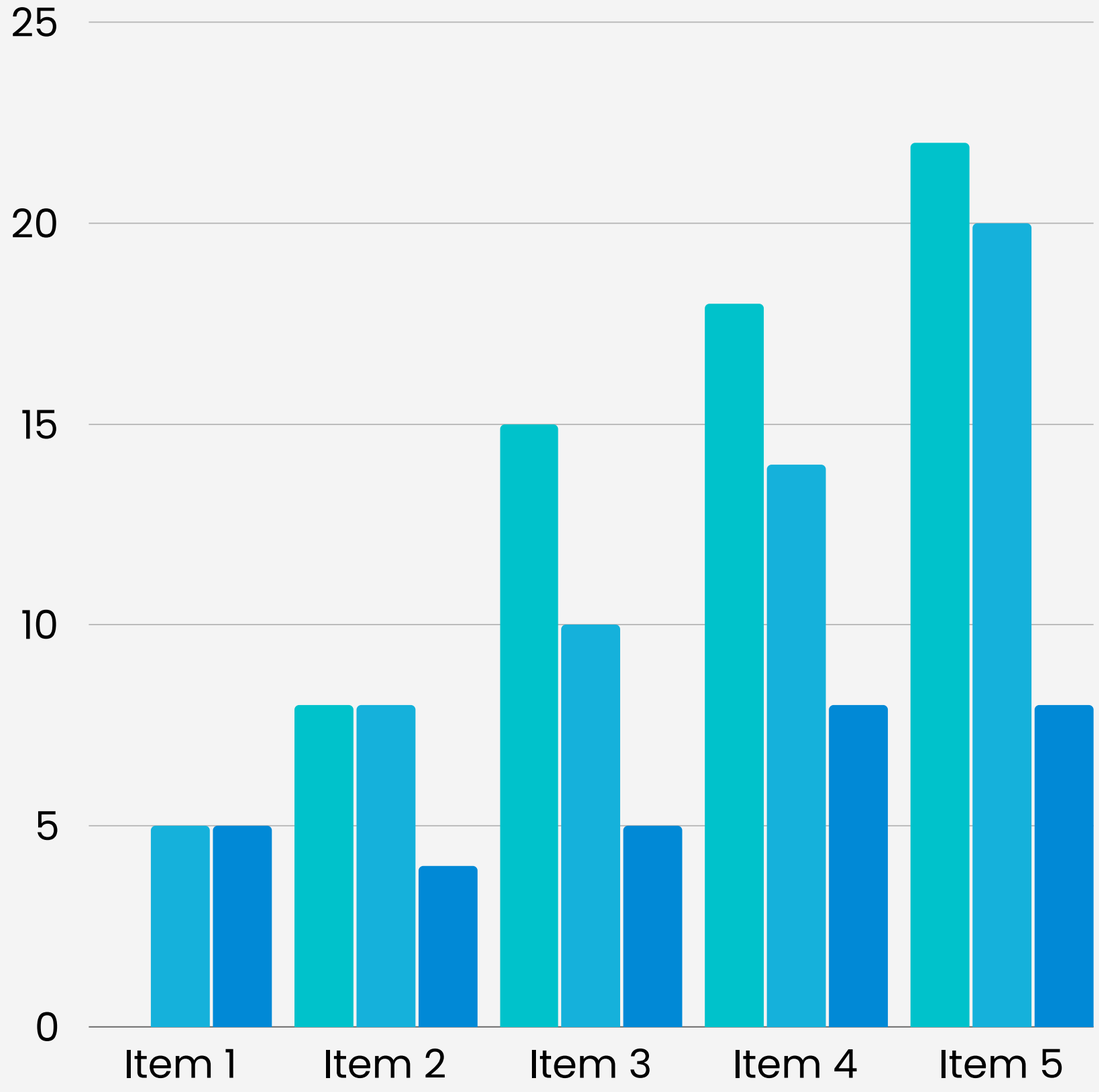
DATA CLEANING AND PREPARATION

Once you have collected the data, the next step is to clean and prepare it for analysis. Raw data can be messy, containing unstructured text that needs to be refined. You'll perform several cleaning tasks, such as removing unnecessary characters, filtering out stop words, and applying lemmatization to ensure the text is in its base form. Additionally, you will convert qualitative data, like review ratings, into quantitative values for easier analysis. Data cleaning is crucial as it transforms raw data into a structured format that can be easily analyzed.

DATA ANALYSIS TECHNIQUES

With clean data in hand, you can now proceed to analyze it. There are several techniques you can use to uncover insights:

- Sentiment Analysis: This will help you determine the overall sentiment of each review, whether positive, negative, or neutral. Sentiment analysis will give you a clear picture of how customers feel about their experiences with British Airways.
- Topic Modelling: This technique allows you to identify common themes and topics discussed in the reviews. By understanding the key issues customers are talking about, you can gain deeper insights into their experiences.
- Word Clouds: These visualizations will help you see the most frequently mentioned words in the reviews, providing a quick and intuitive understanding of common concerns or praises.



INSIGHTS
AND PRESENTATION

The final step in this task is to present your findings. Your manager would like a concise summary of the key insights, visualized effectively in a single PowerPoint slide. This slide will be used in a board meeting, so clarity and impact are paramount. You will create visualizations, such as graphs and charts, to represent your findings and include clear explanations to convey the key points effectively. Your presentation should highlight the overall sentiment, the main topics discussed, and any actionable insights derived from the analysis.

The second task involves building a predictive model to forecast customer bookings. In today's data-driven world, airlines must be proactive in acquiring customers before they embark on their holidays. This requires high-quality data and effective predictive models. You will start by exploring the provided customer booking dataset. Understanding the different columns and basic statistics is crucial for preparing the data. You'll engage in feature engineering to create new variables that can enhance the model's predictive power. Additionally, you'll handle missing values and outliers to ensure the dataset is clean and ready for modeling.

PREDICTIVE MODEL FOR CUSTOMER ACQUISITION

With the prepared dataset, the next step is to train a machine learning model. For this task, we recommend using a RandomForest algorithm due to its interpretability and effectiveness in handling complex datasets. You will split the data into training and testing sets, ensuring that the model is trained on a portion of the data and tested on the remaining part to evaluate its performance. Training the model involves fitting it to the training data and adjusting its parameters to optimize performance. The goal is to create a model that can accurately predict whether a customer will make a booking based on the provided features.

DATASET PREPARATION

MACHINE LEARNING
MODEL TRAINING

After training the model, you will evaluate its performance using various metrics such as accuracy, precision, recall, and F1-score. These metrics will give you a clear understanding of how well the model performs and its reliability in making predictions. Additionally, you'll examine the feature importance to identify which variables contribute most to the model's predictive power. This analysis will provide insights into the factors that influence customer bookings, allowing British Airways to focus on the most impactful elements. Visualizing the model's performance and feature importance will be crucial for presenting your findings. You will create charts and graphs to effectively communicate the results and summarize your insights in a single PowerPoint slide.

MODEL EVALUATION AND INSIGHTS

The final step in this task is to present your findings. You will create a concise summary of the key insights, visualized effectively in a single PowerPoint slide. This slide will be used in a board meeting, so clarity and impact are paramount. You will create visualizations, such as graphs and charts, to represent your findings and include clear explanations to convey the key points effectively.

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