Your task as a data scientist at British Airways (BA) involves understanding customer feedback from reviews and turning it into actionable insights that can influence decision-making. Here's how you can approach this:

### 1. \*\*Data Collection and Cleaning\*\*

You've already collected the reviews and cleaned most of the data. The next step is to analyze it effectively.

Key columns in your dataset:

- \*\*Title\*\*: A short summary of the customer's experience.

- \*\*Content\*\*: Full details of the review.

- \*\*Rating\*\*: Overall customer satisfaction (1-10 scale).

- \*\*Date\*\*: When the review was posted.

- \*\*Date Flown\*\*: The month and year the flight took place.

- \*\*Country\*\*: The country of the reviewer.

- \*\*Traveller Type\*\*: Type of traveler (solo, family, business).

- \*\*Recommended\*\*: Whether the customer would recommend BA.

- \*\*Seat Comfort, Cabin Staff Service, Food & Beverages, etc.\*\*: Individual ratings for different aspects of the flight.

### 2. \*\*Analysis Steps\*\*

#### A. \*\*Sentiment Analysis\*\*

Use Natural Language Processing (NLP) techniques to analyze the sentiments expressed in the `Content` of the reviews. This will help you understand if most of the reviews are positive, neutral, or negative.

- \*\*Objective\*\*: Assess overall customer satisfaction and sentiment trends.

- \*\*Method\*\*: Use libraries like `TextBlob` or `VADER` to assign a sentiment score to each review.

- \*\*Output\*\*: A column indicating whether the review is positive, neutral, or negative.

#### B. \*\*Topic Modeling\*\*

Perform topic modeling to uncover common themes in the customer reviews.

- \*\*Objective\*\*: Identify the key areas customers talk about the most (e.g., staff service, flight delays, food quality).

- \*\*Method\*\*: Use Latent Dirichlet Allocation (LDA) to find common topics in the reviews.

- \*\*Output\*\*: A list of major topics and how often they occur.

#### C. \*\*Correlation Analysis\*\*

Check for correlations between the different aspects of the customer experience, such as `Seat Comfort`, `Cabin Staff Service`, and the `Rating`.

- \*\*Objective\*\*: Understand what drives customer satisfaction (e.g., is overall satisfaction strongly influenced by seat comfort?).

- \*\*Method\*\*: Use correlation coefficients (e.g., Pearson or Spearman) to identify significant relationships.

- \*\*Output\*\*: A correlation matrix showing relationships between different aspects of the experience.

#### D. \*\*Identify Trends\*\*

Analyze how feedback has changed over time.

- \*\*Objective\*\*: Understand if customer satisfaction is improving or declining over time.

- \*\*Method\*\*: Aggregate reviews by year and month and analyze trends in `Rating`, `Recommended`, or sentiment.

- \*\*Output\*\*: Line graphs showing how key metrics (average rating, recommendation rate) have changed.

#### E. \*\*Customer Segmentation\*\*

Segment customers based on the type of traveler (e.g., business, family, solo) and analyze the differences in satisfaction.

- \*\*Objective\*\*: Determine if certain customer types are more satisfied or dissatisfied than others.

- \*\*Method\*\*: Group reviews by `Traveller Type` and analyze the differences in their ratings and sentiment.

- \*\*Output\*\*: A comparison of satisfaction levels across different traveler segments.

### 3. \*\*Visualization\*\*

Use visualizations to make your findings clearer and more actionable:

- \*\*Sentiment distribution\*\*: Pie chart showing the distribution of positive, neutral, and negative reviews.

- \*\*Topic modeling\*\*: Bar chart displaying the top 5 topics mentioned in reviews.

- \*\*Correlation heatmap\*\*: A heatmap showing correlations between different aspects of customer satisfaction.

- \*\*Trends over time\*\*: Line graph showing how the average rating or sentiment has changed over time.

- \*\*Traveler type comparison\*\*: Bar chart comparing satisfaction levels across different traveler types.

### 4. \*\*Recommendations\*\*

Based on your analysis, provide actionable recommendations to BA:

- \*\*If seat comfort has a high correlation with overall satisfaction\*\*, BA could focus on upgrading their seating arrangements.

- \*\*If sentiment towards cabin staff service is mostly negative\*\*, consider more training for staff to improve the customer experience.

- \*\*If certain months or routes show higher dissatisfaction\*\*, BA can investigate operational issues specific to those periods or destinations.

### 5. \*\*Conclusion\*\*

Your goal is to turn raw customer feedback into insights that help BA improve customer satisfaction, optimize costs, and increase revenue.