

Sky Insight: Predictive Customer Intelligence for British Airways



BRITISH AIRWAYS

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EXECUTIVE SUMMARY

STRATEGIC MISSION

As part of the **British Airways Data Science Program**, this project transforms fragmented customer touchpoints into a cohesive strategic roadmap. By bridging the gap between qualitative feedback (Reviews) and quantitative actions (Bookings), we enable data-driven decisions that enhance passenger retention and maximize conversion ROI.



**Qualitative
Feedback
(Reviews)**



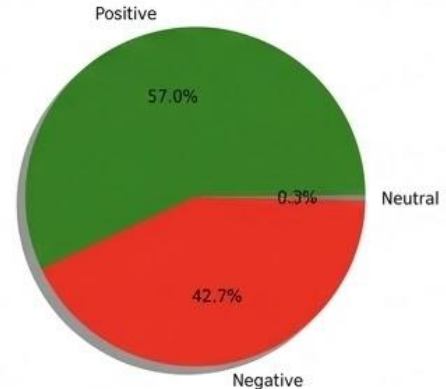
**Quantitative
Actions
(Bookings)**




Sentiment Category


- Sentiment analysis was performed based on web-scraped data from <https://www.airlinequality.com/airline-reviews/british-airways>
- The analysis depicts more positive than negative reviews.


```
sentiment_category
Positive      2104
Negative     1576
Neutral        11
Name: count, dtype: int64
```



Predictive Modeling to Identify Customer Behavioral Trends

 The visualization on the right depicts the top 5 important features affecting customer bookings.

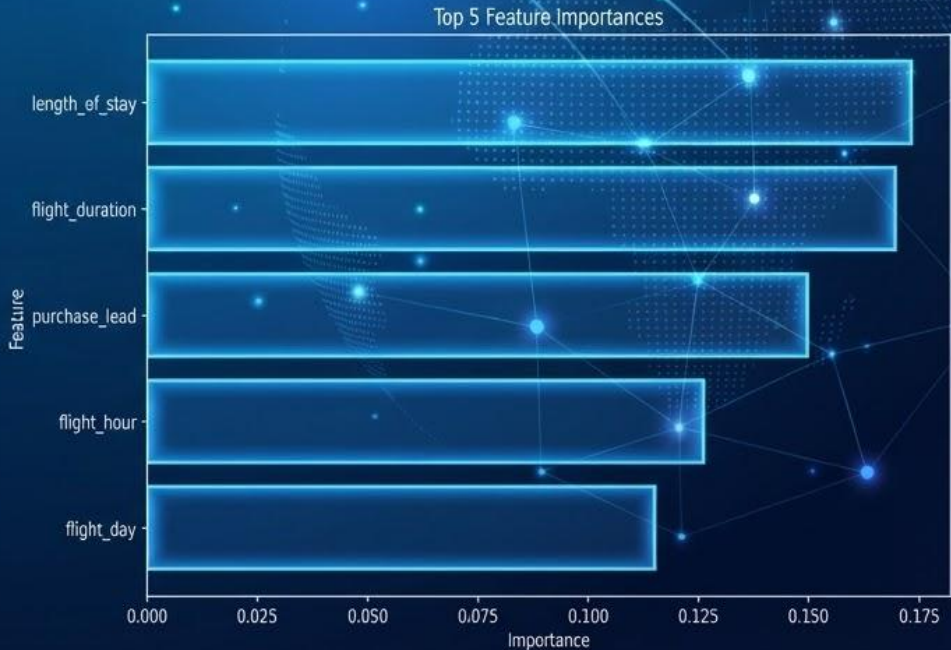
 The image to the left depicts the output for the Random Forest Classifier Model. Class 0 depicts incomplete bookings, while class 1 depicts the completed bookings.

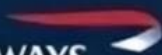
 The Random Forest model has an accuracy of 85% and an AUC score of 65%.

```

Accuracy: 0.85
AUC Score: 0.65
    
```

| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 0.86 | 0.99 | 0.92 | 8520 |
| 1 | 0.42 | 0.05 | 0.10 | 1480 |
| accuracy | | | 0.85 | 10000 |
| macro avg | 0.64 | 0.52 | 0.51 | 10000 |
| weighted avg | 0.79 | 0.85 | 0.80 | 10000 |





Data Science Suggestions

Actionable Insights for Enhancing the Passenger Journey



1. Targeted Service Recovery

- Implement automated sentiment alerts for 'Negative' reviews mentioning 'Service' to allow for immediate customer outreach.



2. Conversion Optimization

- Use the 85% accurate predictive model to offer dynamic 'Early Bird' incentives to users identified as 'Likely to Complete' based on their lead-time patterns.



3. Loyalty Integration

- (Future Work) Integrate demographic data to refine the precision of booking predictions.