Airline Optimization and Price Prediction

10Alytics Case Study *(Data Source = Kaggle)*

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Data Dictionary

- **1) Airline:** The name of the airline company is stored in the airline column. It is a categorical feature having 6 different airlines.
- **2) Flight:** Flight stores information regarding the plane's flight code. It is a categorical feature.
- **3) Source City:** City from which the flight takes off. It is a categorical feature having 6 unique cities.
- **4) Departure Time:** This is a derived categorical feature obtained created by grouping time periods into bins. It stores information about the departure time and have 6 unique time labels.
- **5) Stops:** A categorical feature with 3 distinct values that stores the number of stops between the source and destination cities.
- **6) Arrival Time:** This is a derived categorical feature created by grouping time intervals into bins. It has six distinct time labels and keeps information about the arrival time.
- **7) Destination City:** City where the flight will land. It is a categorical feature having 6 unique cities.
- **8) Class:** A categorical feature that contains information on seat class; it has two distinct values: Business and Economy.
- **9) Duration:** A continuous feature that displays the overall amount of time it takes to travel between cities in hours.
- **10)Days Left:** This is a derived characteristic that is calculated by subtracting the trip date by the booking date.
- **11) Price:** Target variable stores information of the ticket price.

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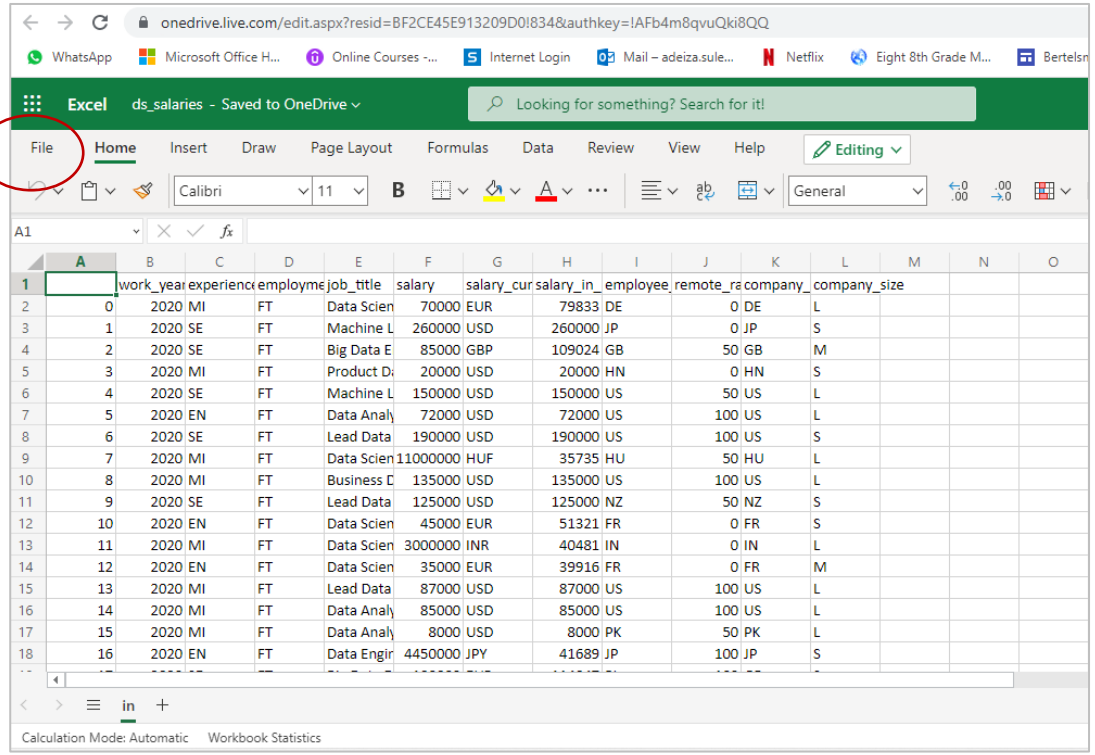
How to Download the Dataset

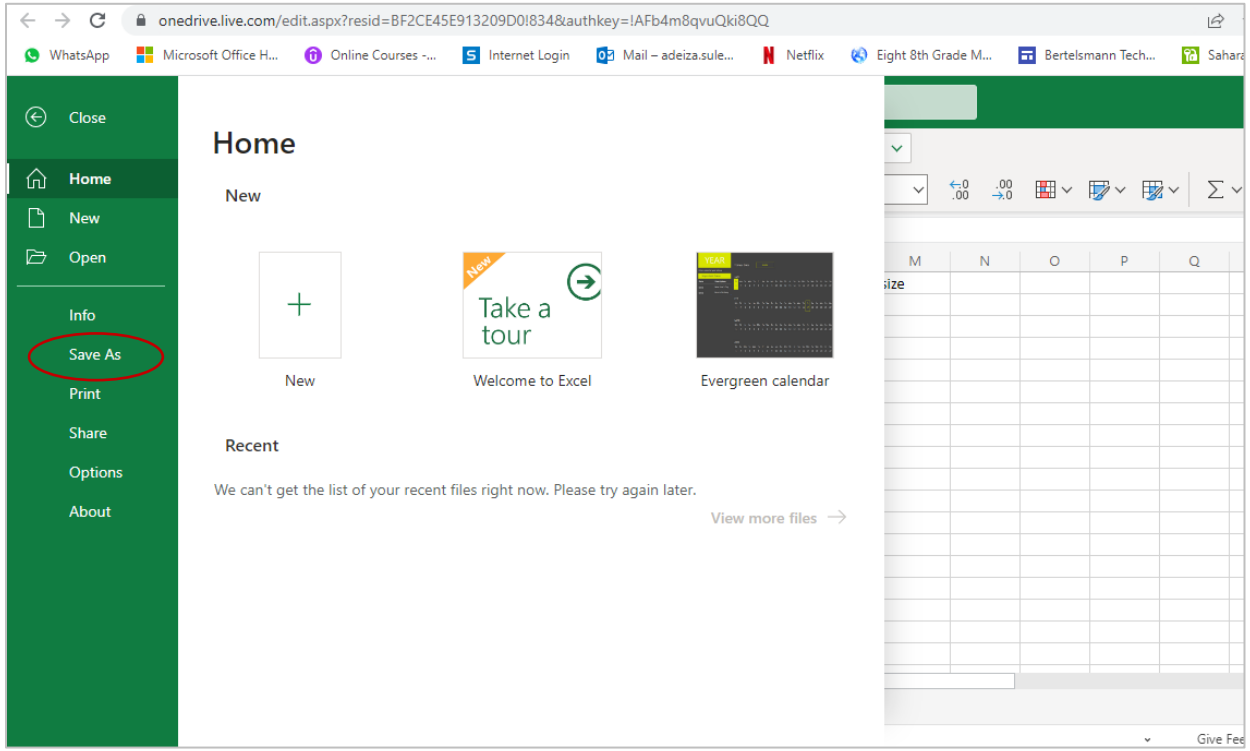
Step 1

Download your Data - HERE

Step 2



Step 3



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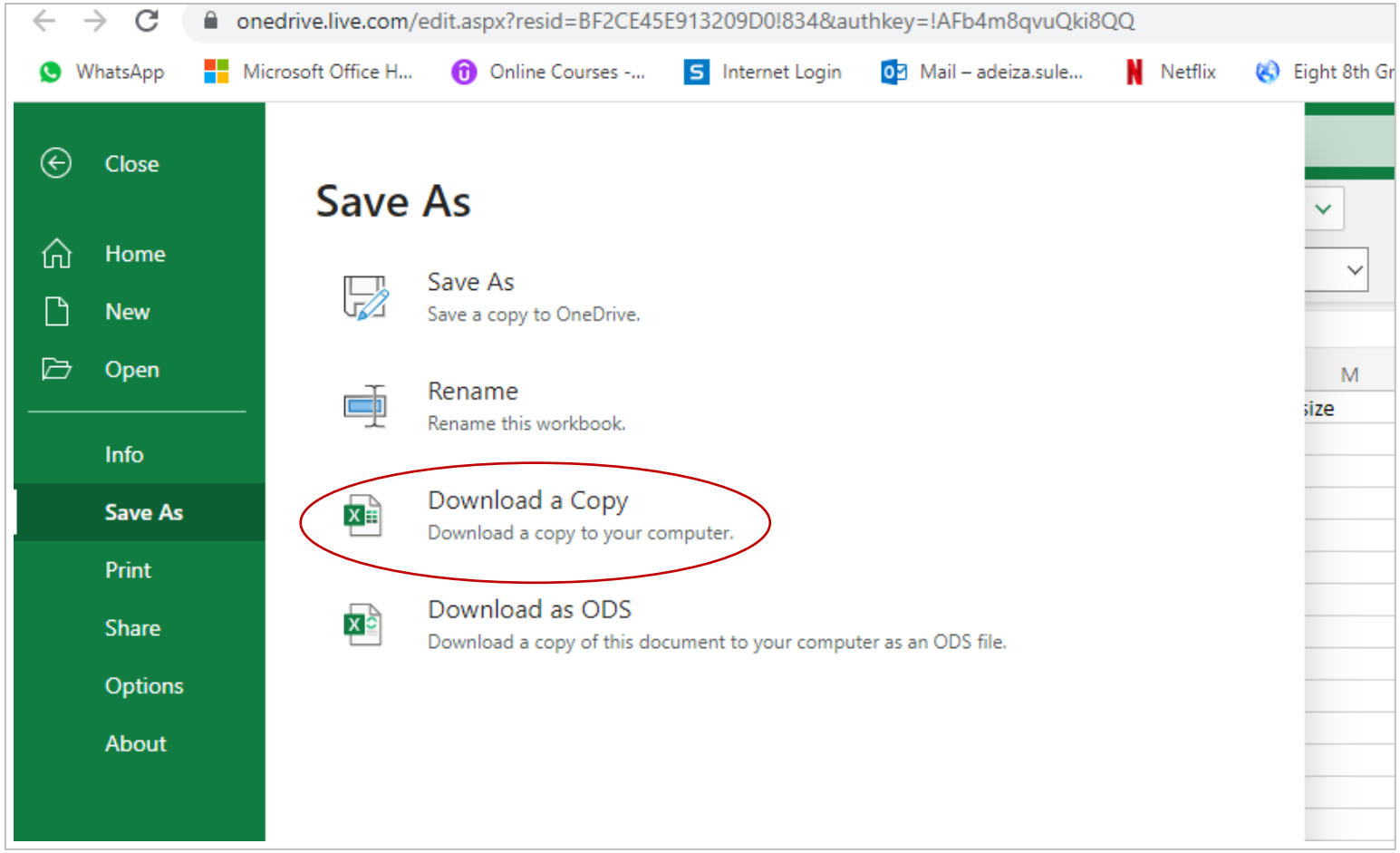
How to Download the Dataset

Step 4



Airline Optimization and Price Prediction

The airline industry is fiercely competitive, driving airlines to seek operational efficiency, revenue maximization, and superior customer experiences. Leveraging data-driven insights is crucial in achieving these goals. By analyzing data, airlines can optimize routes, fine-tune pricing strategies, streamline operations, and personalize services. Real-time monitoring of customer feedback enables proactive issue resolution and exceptional experiences. Data Analytics provides a competitive advantage, helping airlines thrive in a dynamic industry, foster loyalty, and drive revenue growth. By harnessing the potential of Power BI, airlines can unlock their data's full potential and enhance their overall performance.

In this case study, we will explore the analysis of an airline dataset using Power BI or Tableau to uncover valuable insights and provide recommendations for optimizing airline operations and delivering an exceptional customer experience.

Objective:
The primary objective of this case study is to analyze the provided airline dataset and derive actionable insights that can drive operational improvements and enhance the customer experience. By leveraging the power of data visualization and analytics in Power BI or Tableau, we aim to identify key patterns, trends, and performance indicators that can inform decision-making across different aspects of airline operations.

Tailored Analysis

Here are some insights and visualizations you can consider:

1. Find the number of flights operated by each airline. This will help you identify which airlines have the most significant presence in the dataset.

2. Show the number of flights originating from and arriving at different cities. This will give you an overview of the flight connectivity between various locations.

3. Compare the average prices of different airlines and classes. This will help you identify which airlines and classes tend to have higher or lower prices.

4. Analyze the distribution of flight durations. This will provide insights into the typical duration of flights and identify any outliers or unusual patterns.

5. Analyze the flight schedules throughout the day. This will help you identify peak hours, gaps between flights, and potential opportunities for optimizing scheduling.

Tailored Analysis

6. Analyze the average ticket prices based on the number of days left until departure. It will help you understand how prices vary with the proximity to the departure date.

7. Display the distribution of flights based on the number of stops. This will give you an overview of the preference for non-stop or multi-stop flights.

8. Calculate the total revenue generated by each airline. This will provide insights into the revenue contribution of different airlines.

9. Analyze flight counts or average prices based on the time of the day or the day of the week.

10. Implement slicers or dropdown filters to enable users to interactively explore the data based on various dimensions such as airline, class, source/destination city, stops, etc. This will allow users to customize their analysis based on specific criteria.

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Expectations for your Reports

1. **Executive Summary**: Provide a concise overview of the report, highlighting the key findings, insights, and recommendations.
2. **Introduction**: Set the context for the analysis, explaining the purpose of the report, the dataset used, and the objectives of the analysis.
3. **Methodology**: Describe the approach and techniques used for analyzing the dataset, including data cleaning, transformations, and visualization methods employed in Power BI.
4. **Dataset Overview**: Provide an overview of the airline dataset, including the relevant features and variables included, data sources, and any limitations or assumptions made during the analysis.
5. **Analysis and Findings**: Present the main insights derived from the analysis using Power BI. This section should include a detailed exploration of each key aspect, such as airline performance, pricing analysis, route optimization, customer segmentation, and operational efficiency. Support your findings with visualizations and explain the implications of the insights for the airline industry.
6. **Recommendations**: Based on the analysis, provide actionable recommendations for the airline industry. These recommendations should address areas for improvement, strategies for enhancing customer experience, optimizing operations, and maximizing revenue.
7. **Conclusion**: Summarize the key takeaways from the analysis, emphasizing the main findings and their significance for the airline industry.
8. **Limitations and Future Work**: Discuss any limitations of the analysis, such as data availability or quality constraints, and propose areas for future research or analysis to build upon the current findings.
9. **References**: Include a list of all the sources referenced in the report, such as research papers, articles, or documentation related to the dataset or Power BI/Tableau techniques used.

Write your report on a word document and submit the PDF

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Create a dashboard and share your insights on LinkedIn.

(Tag @10Alytics and let people know where you learned this amazing skill)