**FLEET DATA REPORT**

**INTRODUCTION:**

This report provides a comprehensive analysis of airline fleets using a dataset that includes information on aircraft types, operational costs, fleet sizes, and average aircraft ages. The primary objective is to uncover key insights, identify trends and patterns within the data, for optimizing airline operations.

The following sections delve into the dataset, highlighting significant findings and suggesting strategies for improving fleet management.

1. **DATA OVERVIEW**

* The dataset consists of information about fleet data for different airlines.
* It includes features such as parent airlines ,airlines,aircraft types ,current ,future ,historic,totals ,orders,average ages ,unitcost ,total cost (current)

1. **DATA PREPARATION**

* The fleet data was loaded from CSV file using pandas.
* Libraries like Numpy and visual representation here we using matplotlib and seaborne.

1. **Exploratory Data Analysis (EDA)**

* Load and explore the dataset structure
* Dataframe information and dtypes were explored using **df.info()** and **df.dtypes**
* removing the gaps between words using the replace() function.
* **checking if there is null values in the columns and fix it using isnull().sum**
* inspect the column for unexpected or problematic values using unique
* find duplicate column using duplicated() and rename the column

1. **Data Description**

* Descriptive stastics of the final data were obtained using **df.describe()**.
* Obtaining the correlation between current and total cost we are using here corr() function

1. **DataVisualization**

* **visualization Aircraft type distributions across parent airlines using countplot..**
* **Using barplot showing fleet variatinon of airlines and aircraft type.**
* **Finding the cost trend by using hisplot.**
* Age distribution for aircraft types and parent airlines by using barplot.
* **showing relationship totalcost vs average age we are using here lineplot.**

1. **Conclusion**

* The analysis revealed variations in fleet sizes, aircraft types, and average ages across airlines
* Older aircraft are generally associated with higher total costs
* Future fleet planning shows a shift toward newer and potentially more cost-efficient aircraft.
* Data cleaning and visualization provided a clear understanding of key trends and outliers.
* Regular fleet data analysis can support smarter decision-making and operational efficiency