AIRLINES CASE STUDY

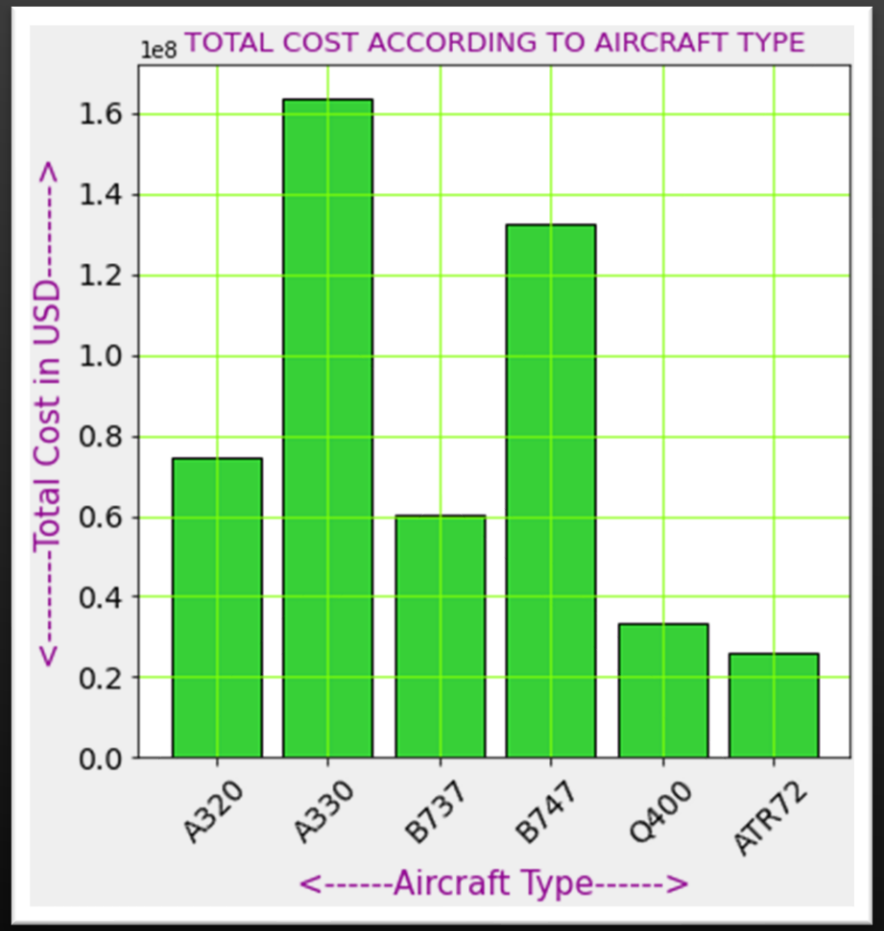
PRANAY CHURAMANI

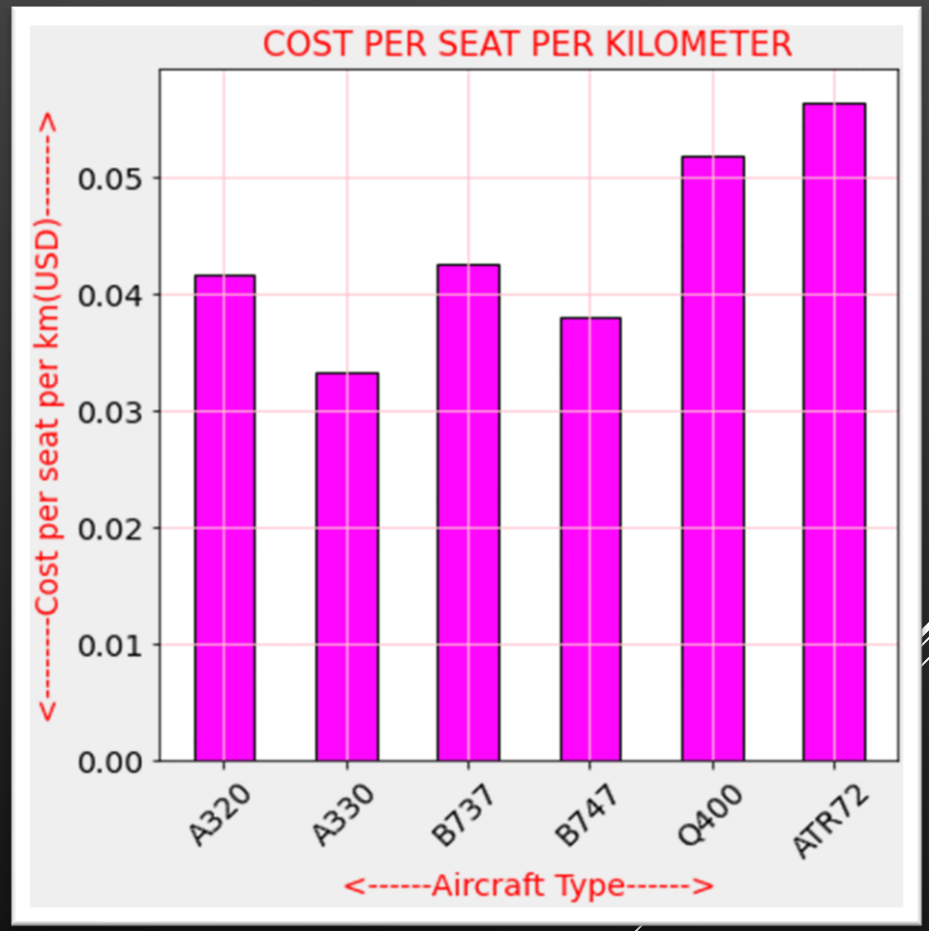
PART-A

- In the PART-A of this case study our aim is to observe the flight operations using characteristics for Airline A
- Airline A is a successful airline which is flying a substantially large international network
- We have the aircraft characteristics and flight operations in the form of raw data which is formatted for our analysis
- The total yearly cost of an aircraft was calculated using the following formula:
  - Total Cost = Total Hours Flown * Cost/hour
- We have also calculated the cost per seat per km flown which means that we need to calculate the cost of one seat in a particular type of Aircraft for each kilometer flown
  - For that we need to divide the total cost of that type of aircraft with the product of Number of seats, total hours flown and the speed of the aircraft
  - Cost per seat per km = Total cost/(No. of seats x Total hours x Avg. speed)

ANNEXURE-A

Graphical representation of the insights derived after performing Exploratory Data Analysis on Airline A





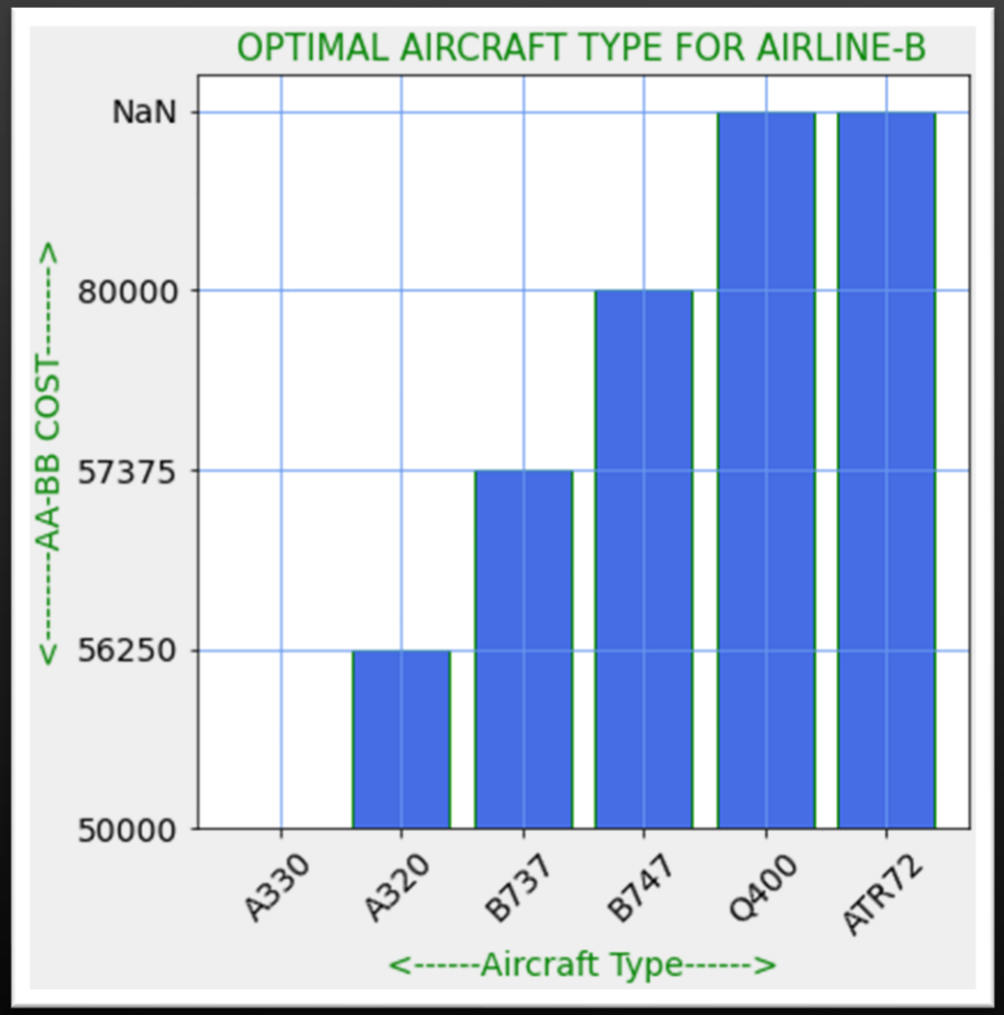
OUTCOME : Aircraft **A330** is the most economical aircraft type which is the least expensive and costs **0.033333$** per seat per km flown

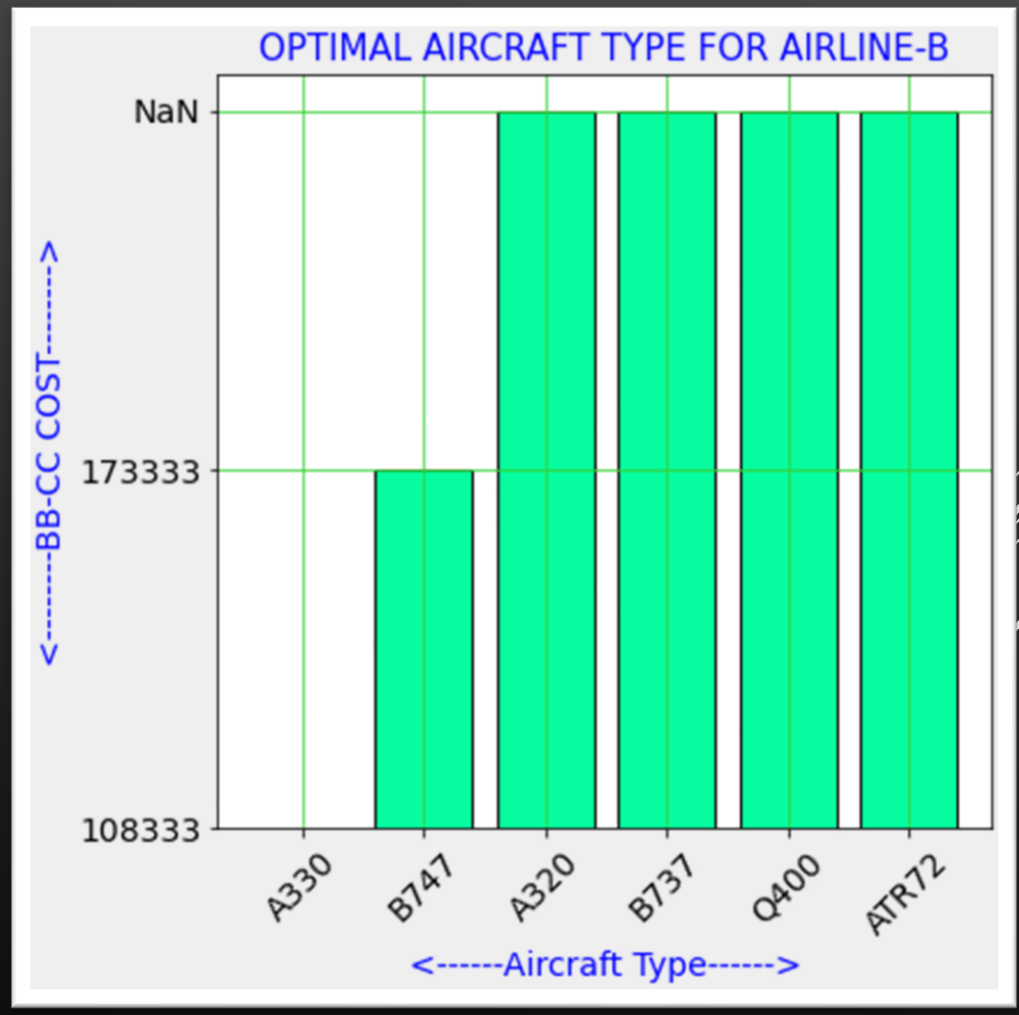
- Airline B is a new player in the airline business which being a startup airline aspires to fly on various city pairs
- Our task is to analyze appropriate airlines for traveling between the source and destination city pairs
- We need to consider various parameters to find the best suited airline type:
    1. Cost
    2. Distance
    3. Number of trips
    4. Number of seats
- For that, we need to verify if the aircraft's range is greater than the distance between the source and destination
    - If the condition is true, the cost of the trip is calculated as follows:
        - Total cost of the trip = Cost per seat per km(USD) x Number of Seats x Distance(km) x Number of trips
        - Where, Number of trips = Pass. Demand (per day) / Number of Seats

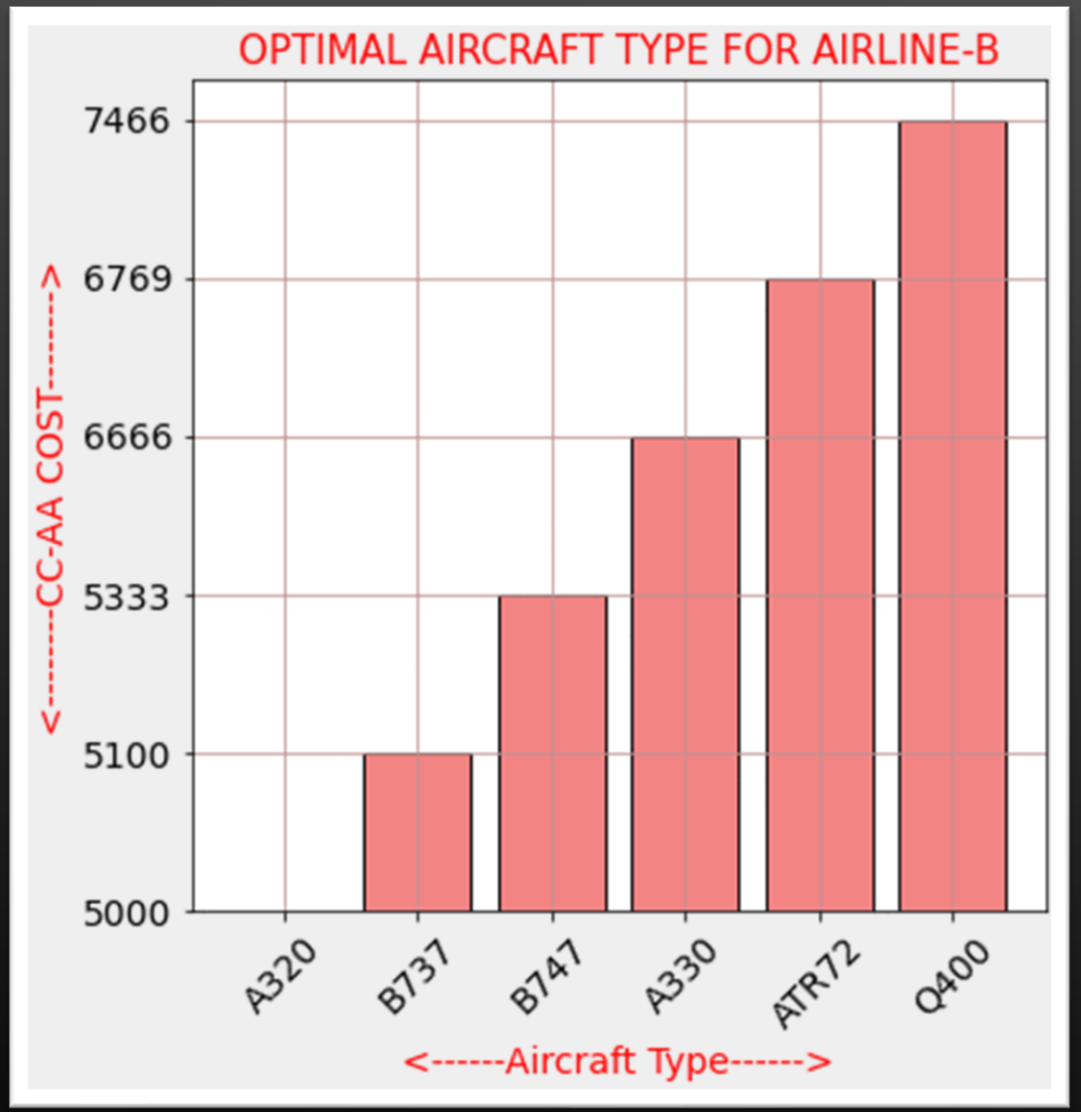
PART-B

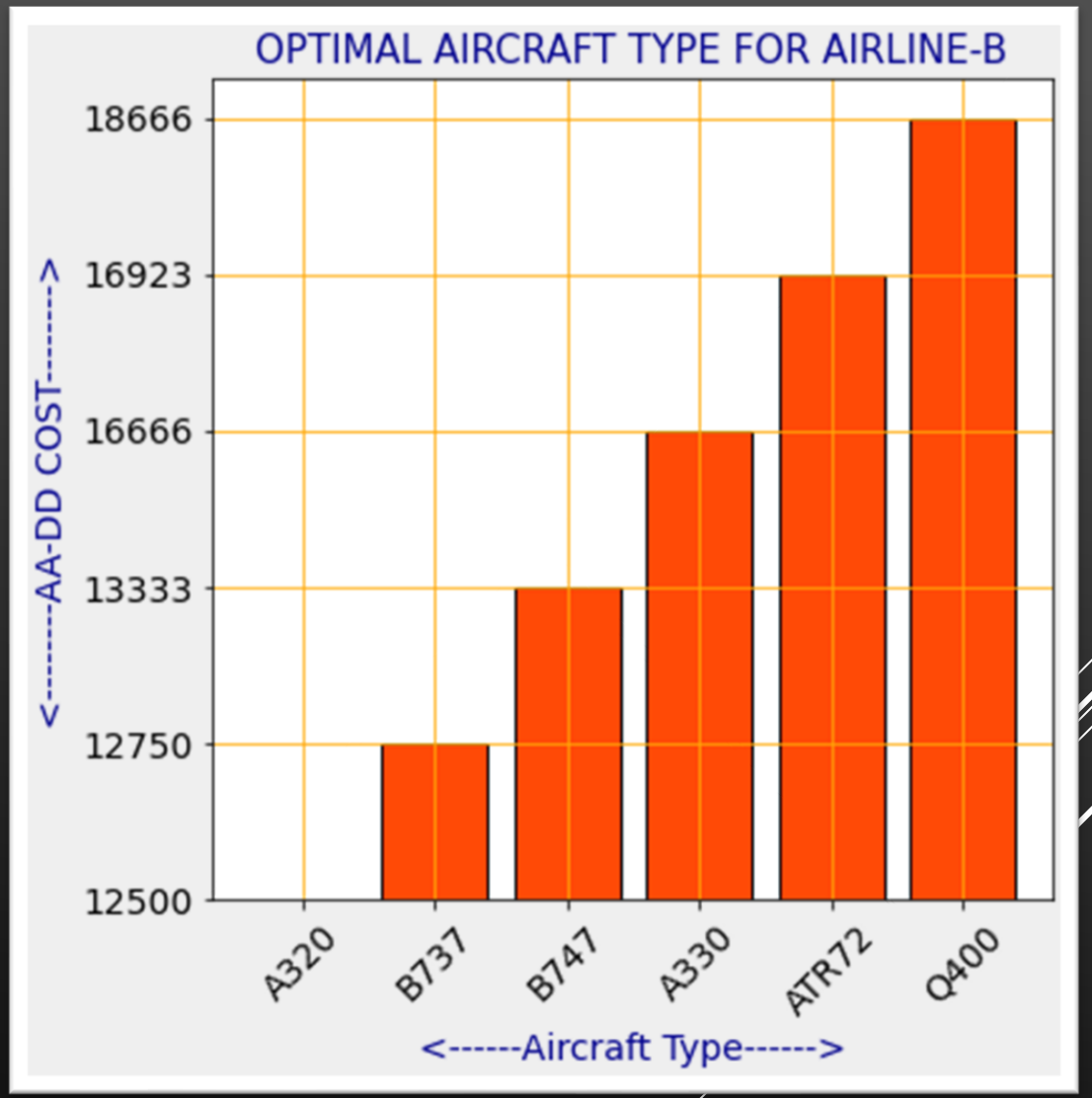
ANNEXURE-B

Graphical representation of the insights derived after performing Exploratory Data Analysis on Airline B






OPTIMAL AIRCRAFT TYPE FOR AIRLINE-B
7466
6769
6666
5333
5100
5000
<------CC-AA COST------>
A320
B737
B747
A330
ATR72
Q400
<------Aircraft Type------>


OPTIMAL AIRCRAFT TYPE FOR AIRLINE-B
18666
16923
16666
13333
12750
12500
<------AA-DD COST------>
A320
B737
B747
A330
ATR72
Q400
<------Aircraft Type------>

CONCLUSION

- Inference for AA-BB: 2 aircraft of type A330 are feasible
- Inference for BB-CC: Since most of the aircraft are not compatible for this journey, 2 aircrafts of type A330 are feasible
- Inference for CC-AA: If 1 A330 and 1 ATR72 are used, the cost is still 25 Dollars more than using 2 aircraft of A320 type. Hence, the A320 is more suitable than A330 and ATR72
- Inference for AA-DD: In continuance to the previous result, 2 aircrafts of type A320 will be well-matched than a mixture of non-identical types
- After the summarization of the analysis, the following results have been concluded:
  - **4** aircraft of type **A330** and, **4** aircraft of type **A320** are the most optimal aircraft types for **Airline B**