AIRLINES CASE STUDY

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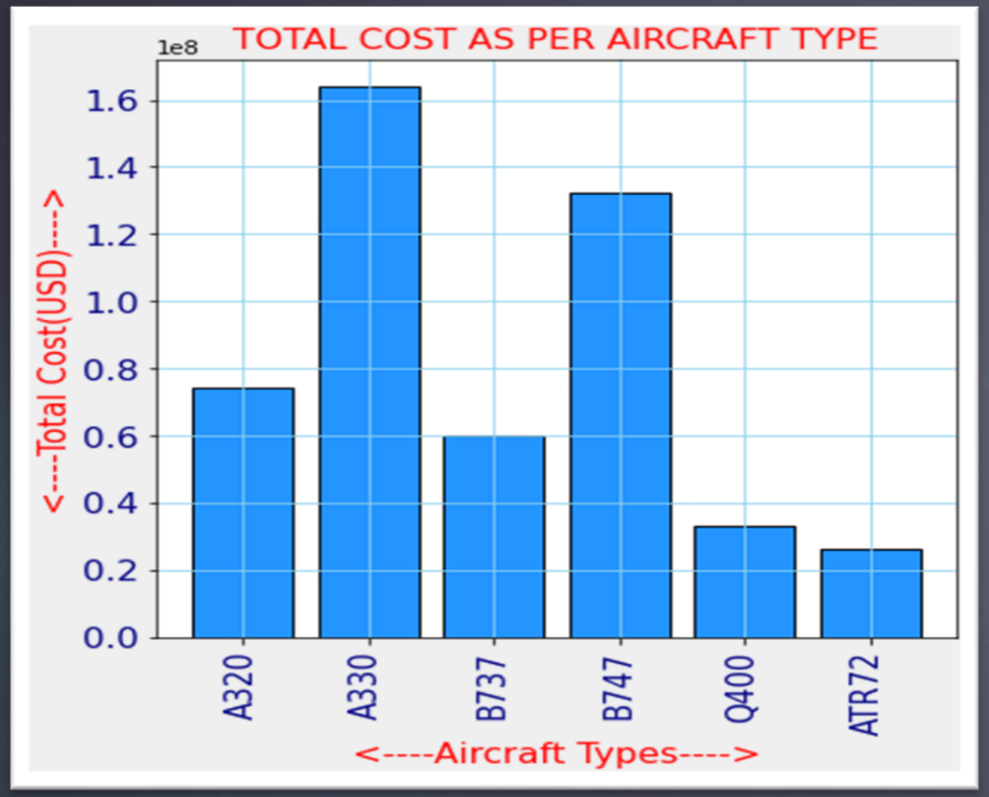
PART - A

- Part-A of the case study focuses on the analysis of multiple operations of Airline A by making optimum use of its characteristics.
- Airlines A is a well-established airline that is currently flying a large international network and we are provided with immense information regarding the operations and characteristics of this airline infrastructure.
- Based upon the data given for the year 2014, the following insights are drawn:
  - The total cost incurred by distinct aircraft types for the given year is derived by the following formula :
    - Total cost (in USD) = Hours flown * Costs / hour
  - Based on the total cost(in USD), the cost per seat per km flown is evaluated using the following formula:
    - Cost per seat per km = Total cost(USD) / (No. of seats x Total hours x Avg. speed)
    - Where the (Total hours * Avg. speed) is the total distance covered in km.

ANNEXURE-A

Data Exploration on Airline "A" resulted in useful insights that are graphically represented in this Annexure.



Conclusion: Aircraft **A330** is the best-suited aircraft type as it is the most cost-effective aircraft which costs **0.033333 USD** only.

PART-B

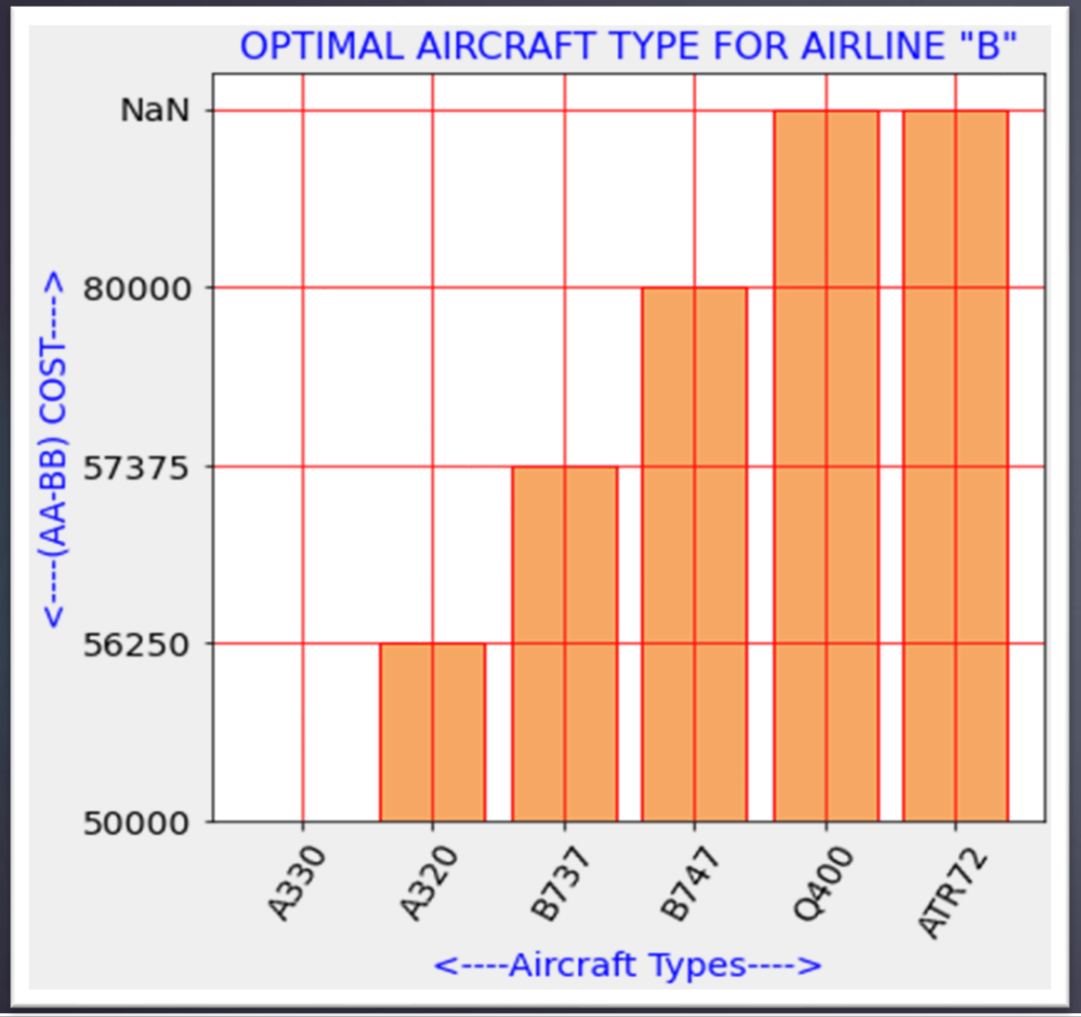
- Airline "B" has emerged as a new startup airline that seeks to fly over numerous city-pairs
- This case study examines relevant airlines for traveling between the source and target destination.

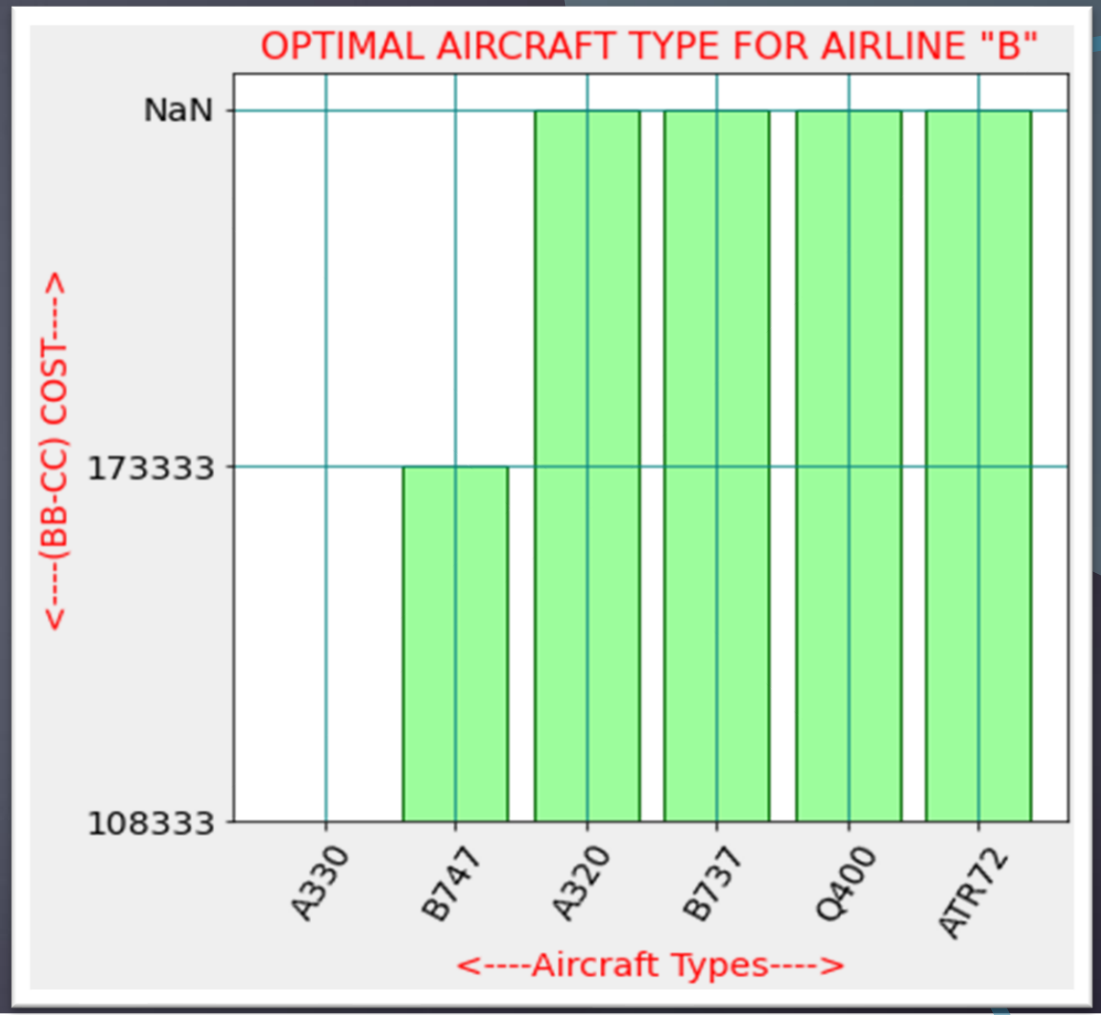
- This study configures the best-suited aircraft based on multiple parameters that are:
  - Range in km
  - Passenger demand per day
  - Total Cost incurred in USD
  - Number of seats

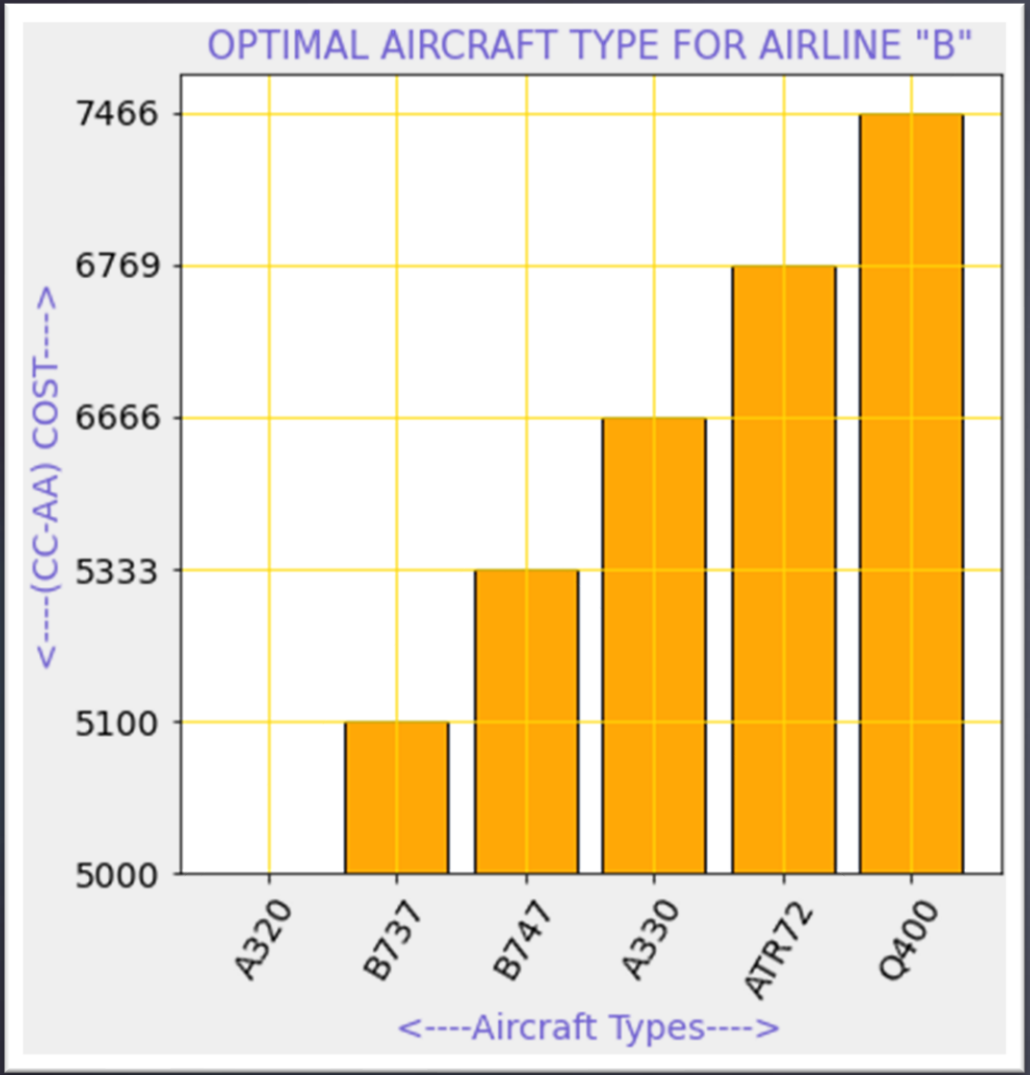
- Our job is to explore if the range of the aircraft is greater than the distance between the source and target destination
  - If the condition is met, then we will be calculating the cost of the trip using the following formula:
    - Total cost of the trip = Cost per seat per km x Number of Seat x Distance(km) x Number of trips
    - Here, Number of trips = Pass. Demand per day / Number of Seats

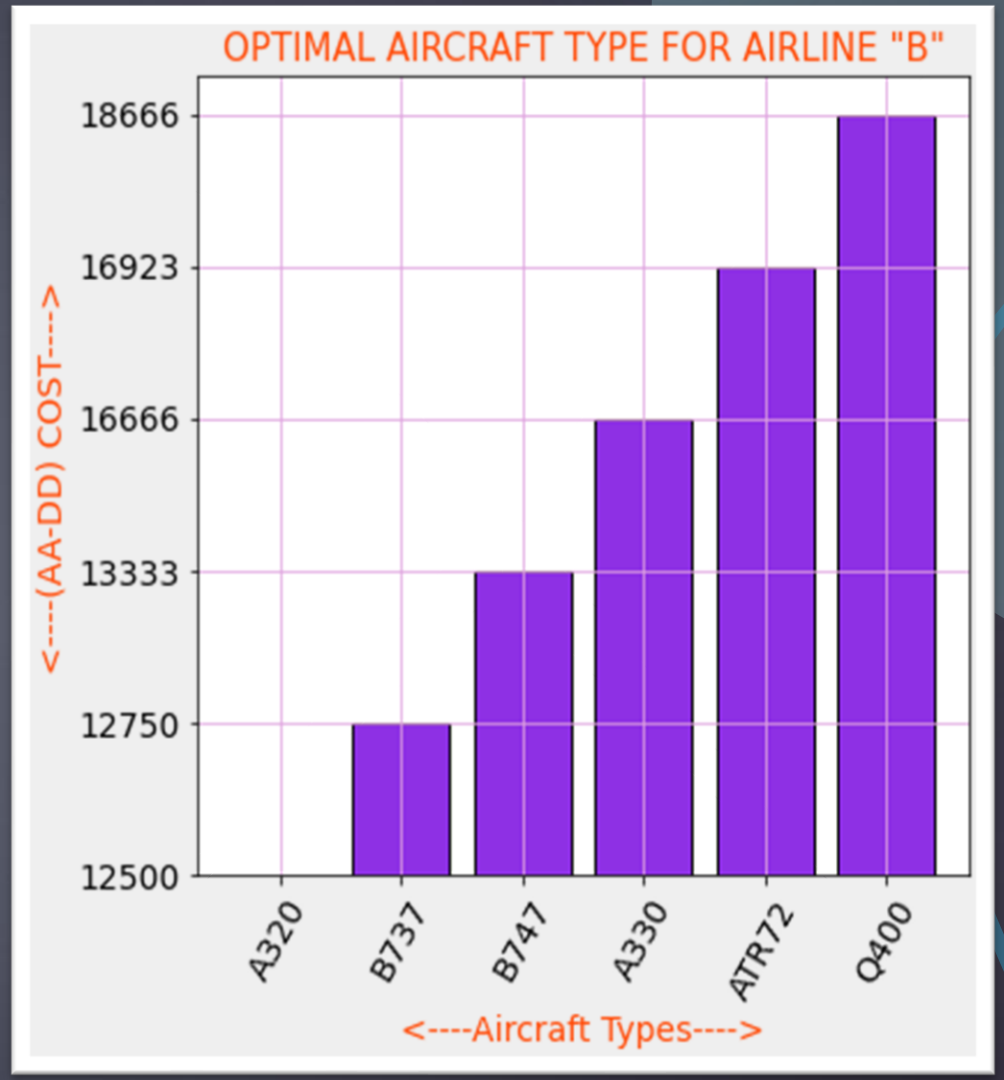
ANNEXURE B

Data Exploration on Airline "B" resulted in useful insights that are graphically represented in this Annexure.






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


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

CONCLUSION

- Conclusion for AA-BB: 2 aircraft of type A330 are preferable
- Conclusion for BB-CC: As most of the aircraft are not compatible for this journey, 2 aircraft of type A330 are preferable
- Conclusion for CC-AA: If 1 A330 and 1 ATR72 are used, the cost is still 25 USD more than using 2 aircraft of type A320. Hence, A320 is preferred over A330 & ATR72
- Conclusion for AA-DD: In extension to the previous scenario, 2 aircraft of type "A320" will be apt than a mixture of distinct types
- Based on the concrete findings for optimal Aircraft, the following Inferences are made after considering all the required parameters:
  - **4** Aircraft of **A330** and **4** Aircraft of **A320** are the most optimal options to travel for **Airline B**