

## Problem Statement

There is a company that operates a diverse fleet of aircraft ranging from small business jets to medium-sized aircraft. The company is currently facing challenges due to several factors such as stricter environmental regulations, higher flight taxes, increased interest rates, rising fuel prices, and a tight labor market resulting in an overall running cost. As a result, the company's overall profitability is under pressure, and we are seeking ways to address this issue.

## Methodology

Exploratory data analysis is done on data. Bookings, tickets, ticket flights, boarding passes, flights, seats\_aircrafts\_data, and airport data are joined to get the information of week-wise, route-wise occupancy and revenue generated by flight. An analysis is done to find maximum revenue-generating routes and best-performing flights we further analysed to replace the low-capacity aircraft in low occupancy routes.

## Insights

Week-wise occupancy of different aircraft on different routes

### **773 "Boeing 777-300"**

- Out of the total flights running on 10 routes, 3 routes have flights that have very low occupancy in 3<sup>rd</sup> week of July. Business is to decide whether to run flights on these routes or not.
- Routes with low occupancy are PEE VKO, OVB SVO, AER SVO

### **763 "Boeing 767-300"**

- Out of the total flights running on 26 routes, 9 routes have flights that have very low occupancy across all weeks. Business is to decide whether to run flights on these routes or not.
- These 9 routes are SCW GDX, GDX SCW, GDX MRV, SVX KXK, KXK SVX, VVO VKO, MRV GDX, VKO VVO, PKC DME
- On the remaining 15 routes, only 6 routes were very low in the first week of August. Business is to decide whether to run flights in the first week or not.
- These 6 route are DME,PKC KRR,ULV KHV,LED DME,SCW AER,VKO KUF,DME

### **321 "Airbus A321-200"**

- Out of the total flights running on 12 routes, only the ROV DME route has flights that have very low occupancy across all weeks. Business is to decide whether to run flights on this route or not.

### **773 "Boeing 777-300"**

- Out of the total flights running on 26 routes, 10 routes have flights that have very low occupancy across all weeks. Business is to decide whether to run flights on these routes or not.
- These 10 routes are NOZ,KRR RGK,SVO KRR,NOZ AER,NOZ NOZ,AER SVO,RGK KGP,AER AER,KGP OVS,SGC SGC,OVS
- On the remaining 16 routes, only 7 routes have very low in the first week of August. Business is to decide whether to run flights in the first week of August or not.
- These 7 routes are MJZ,SVO SVO,MJZ KGD,SVO KUF,AER MCX,SVO SCW,SVX ROV,SVO

### **319 "Airbus A319-100"**

- Out of the total flights running on 30 routes, 11 routes have flights that have very low occupancy across all weeks. Business is to decide whether to run flights on these routes or not.
- These 11 routes LED,YKS YKS,LED VKO,UUD UUD,VKO HTA,UFA UFA,HTA DYR,SVO KHV,DYR KEJ,VKO VKO,KEJ
- Out of the remaining 19 routes ABA DME, and CNN DME have very low occupancy in the 3<sup>rd</sup> and 4<sup>th</sup> week of July while DME USS, DYR KHV, USS DME, UUS SVO, BTK DME, OVB PEE have very low occupancy in only 3<sup>rd</sup> week of July. Business is to decide whether to run flights on these routes or not.

### **SU9 "Sukhoi Superjet-100"**

- Out of the total flights running on 126 routes, 8 routes have flights that have very low occupancy across all weeks. Business is to decide whether to run flights on these routes or not.
- These 8 routes are CEE,NOZ NOZ,CEE VKO,OGZ OGZ,VKO URS,DME DME,URS CEK,IKT LED,KZN
- Out of the remaining 118 routes 53 routes have very low occupancy in the 3<sup>rd</sup> week of July. Business is to decide whether to run flights on these routes or not.
- These 53 routes are IKT CEK, PEE GOJ, BQS KHV, TOF SVO, MMK SVO, SVX HMA, SVO MMK, VOG TOF, BAX VKO, BAX DME, SVO TOF, SGC SVX, KHV BQS, OVS KJA,

NUX SVO, TOF VOG, NOZ OVB, OVS SVO, OMS SVO, HMA DME, ULV VKO, LED GOJ, GOJ LED, DME BAX, DME KEJ, REN VKO, DME BZK, BZK SVO, AER ROV, TOF DME, EGO DME, MRV PEE, BZK VKO, ULV SVO, ROV VOG, ESL UFA, BAX SVO, SVX PEE, NUX DME, NSK DME, VOG VKO, EGO BZK, SVO BAX, DME ESL, SVX NSK, DME OVS, MRV MCX, GOJ SVO, AAQ EGO, KEJ SVO, CSY SVO, KZN K VX, K VX SVO

## **CR2 "Bombardier CRJ-200"**

- Out of the total flights running on 115 routes, 67 routes have flights that have very low occupancy across all weeks. Business is to decide whether to run flights on these routes or not.
- These 67 routes are MJZ IKT, OVS UFA, TJM UCT, UCT TJM, OVB SGC, SGC OVB, MJZ OVB, SKX VKO, KRO DME, LED VOZ, IKT VVO, VOZ LED, VKO SKX, VVO IKT, NFG VKO, KZN MRV, MRV KZN, VKO NFG, DME KRO, USK DME, OVB MJZ, REN LED, LED REN, AER GOJ, SLY VKO, NBC ROV, GOJ AER, VKT SVO, ULY SVO, TJM ARH, VKO SLY, ARH TJM, SVO VKT, KRO SVO, RTW VKO, USK SVO, UUA SVO, GRV DME, NJC LED, LED NJC, SVO ULY, VKO RTW, NBC OMS, ESL LED, SVO KRO, DME GRV, KGD ESL, IJK SVO, DME USK, KZN MQF, LED NOJ, PES DME, SVO USK, SKX SVO, DME PES, GDZ VKO, SVO IJK, NAL GOJ, VKO GDZ, OMS NBC, KGD KRR, TOF ARH, NFG SVO, OVB MQF, SVO SKX, CEK STW, KRR KGD, STW CEK
- In the remaining 48 routes only the route NYA SVO had very low occupancy in July while

## **CN1 "Cessna 208 Caravan"**

- Out of the total flights running on 34 routes, 9 routes have flights that have very low occupancy across all weeks. Business is to decide whether to run flights on these routes or not.
- These 9 routes are CEK,SWT SWT,CEK ROV,KZN KZN,ROV KJA,NOZ LED,CEE DME,PEZ UCT,UFA LED,TBW
- Out of the remaining 25 routes TBW LED, UFA UCT have very low occupancy in the 1<sup>st</sup> week of August and NBC SCW, NUX HMA, and EGO AER have very low occupancy in the 3<sup>rd</sup> and 4<sup>th</sup> week of July while PEZ DME, PEZ SVO, LED KLF, ESL SVO, KGP NUX, K VX DME, ABA OVB, CNN MJZ, RTW ULY, ABA TOF, PES SVO have very low occupancy in 3<sup>rd</sup> week of July Business is to decide whether to run flights on these routes or not.