PROJECT TITLE:

Unlocking Insights into the Global air transportation network with Tableau

1. INTRODUCTION :

The air transport system generally includes airports, ATC (air traffic control) system, and airlines. The airports represent the ground part of the system's infrastructure handling the aircraft operated by different airlines transporting passengers and freight/cargo shipments.

1.1 Overview

Air transport is one of the fastest modes of public transport which connects international boundaries. Air transport allows people from different countries to cross international boundaries and travel other countries for personal, business, medical, and tourism purposes. Although, air transport provides the fastest means by saving the time of journey, another aspect of air transport is the facilities and comfort level of the passengers.

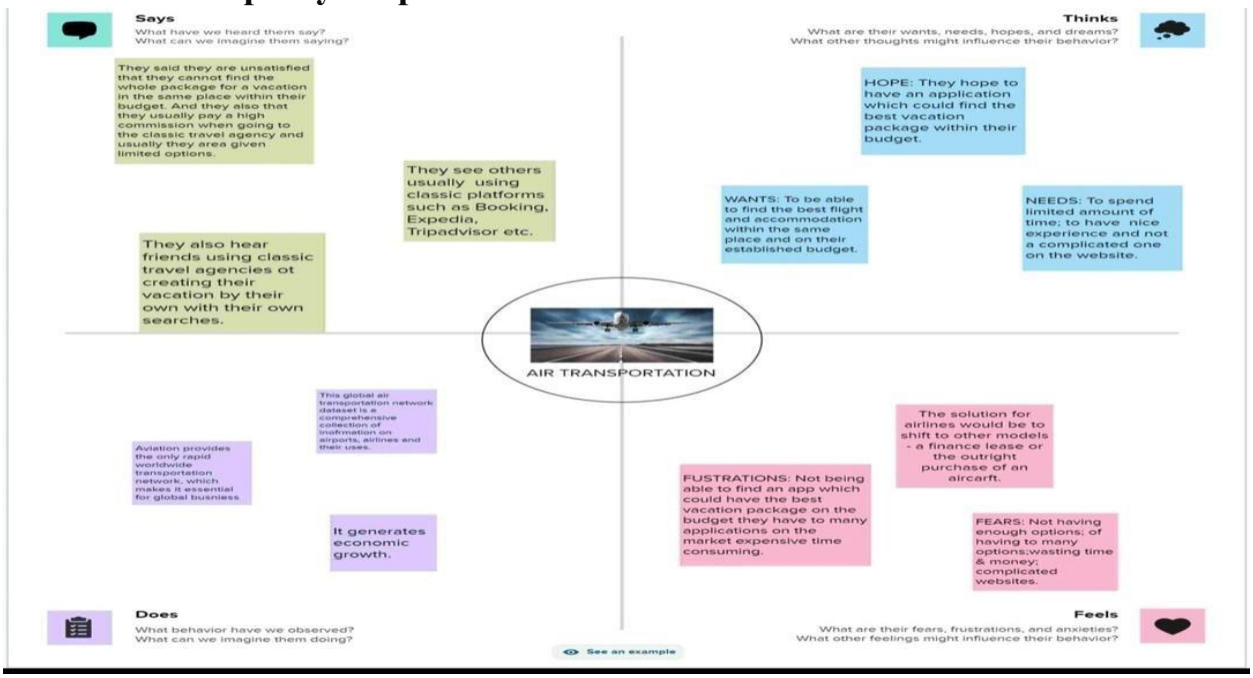
1.1 Purpose

The air transport mode is defined by four basic elements: airlines, commercial transport aircraft, the air space used for their flights, and the infrastructure required to supporting their operations, like airports and ATM (Air Traffic Management) facilities.

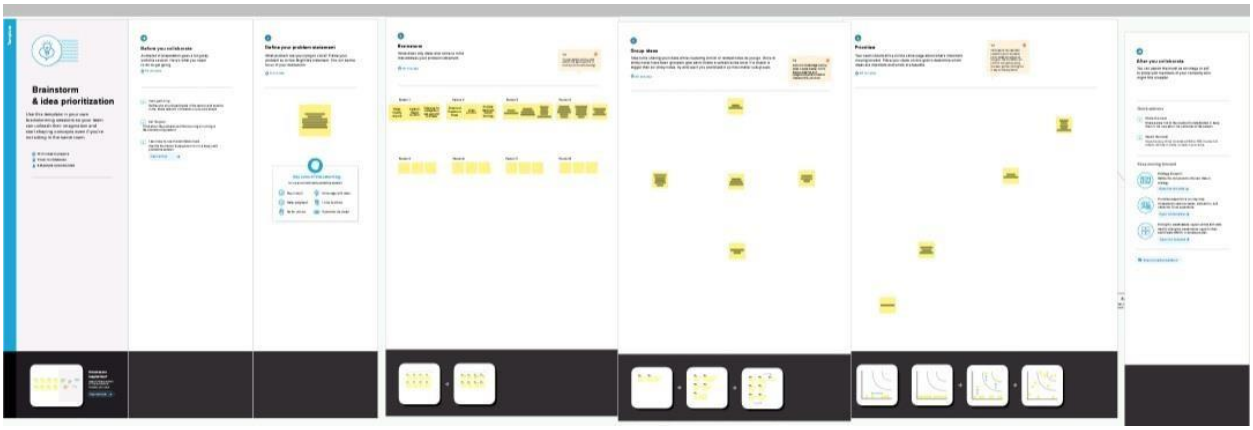
Aircraft performance has a decisive influence on the fuel consumption of a certain flight, but obviously, there are aspects in the flight depending on how they are operated by airlines and especially on the infrastructure management that may largely affect the overall flight energy efficiency. Airports, in particular, have a different energy balance and offer more chances to use alternative energy

2. PROBLEM DEFINITION & DESIGN THINKING :

2.1 Empathy Map



2.1 Ideation & Brainstorming Map



3. RESULTS

Number of airports

148

airports at higher altitude within a country

Index (Rout..	Name (airp..	City	ICAO (airpo..	
0	Goroka Airp..	Goroka	AYGA	5,282
1	Madang Air..	Madang	AYMD	20
2	Mount Hag..	Mount Hag..	AYMH	5,388
3	Nadzab Air..	Nadzab	AYNZ	239
4	Port Mores..	Port Mores..	AYPY	146
5	Wewak Inte..	Wewak	AYWK	19
6	Narsarsuaq..	Narssarssu..	BGBW	112
7	Godthaab / ..	Godthaab	BGGH	283
8	Kangerluss..	Sondrestrom	BGSF	165
9	Thule Air B..	Thule	BGTL	251
10	Akureyri Ai..	Akureyri	BIAR	6
11	Egilsstaðir ..	Egilsstadir	BIEG	76
12	Hornafjörð..	Hofn	BIHN	24
13	Húsavík Air..	Husavik	BIHU	48
14	Ísafjörður A..	Isafjordur	BIIS	8
15	Keflavik Int..	Keflavik	BIKF	171
16	Patreksfjör..	Patreksfjor..	BIPA	11
17	Reykjavik A..	Reykjavik	BIRK	48
18	Siglufjörðu..	Siglufjordur	BISI	10
19	Vestmanna..	Vestmanna..	BIVM	326
20	Sault Ste M..	Sault Saint..	CYAM	630
21	Winnipeg / ..	Winnipeg	CYAV	760
22	Halifax / CF..	Halifax	CYAW	144
23	St. Anthony..	St. Anthony	CYAY	108
24	Tofino / Lon..	Tofino	CYAZ	80
25	Kugaaruk A..	Pelly Bay	CYBB	56
26	Baie Comea..	Baie Comeau	CYBC	71
27	CFB Bagotv..	Bagotville	CYBG	522
28	Baker Lake ..	Baker Lake	CYBK	59
29	Campbell Ri..	Campbell Ri..	CYBL	346
30	Brandon M..	Brandon	CYBR	1,343

airports at higher altitude in the world

Name (airports.csv)	City	ICAO (airports.csv)	
Daocheng Yading Airport	Daocheng	ZUDC	14,472
Qamdo Bangda Airport	Bangda	ZUBD	14,219
Kangding Airport	Kangding	ZUKD	14,042
Ngari Gunsa Airport	Shiquanhe	ZUAL	14,022
El Alto International Airport	La Paz	SLLP	13,355
Capitan Nicolas Rojas Airport	Potosi	SLPO	12,913
Yushu Batang Airport	Yushu	ZYLS	12,816
Copacabana Airport	Copacabana	SLCC	12,591
Inca Manco Capac International Airport	Juliaca	SPJL	12,552
Golog Maqin Airport	Golog	ZLGL	12,426

Airlines within a country

Airline ID	Name	Icao
320	Air Sofia	SFB
544	Aviodetach..	BGF
647	Air Scorpio	SCU
695	Air VIA	VIM
727	AVB-2004 L..	VBC
738	Aviostart AS	VSR
991	Air Concorde	KGD
1054	Air Ban	LZP
1055	Air Lazur	LZR
1095	Air Sport	MSK
1212	Air Max	RMX
1342	Balkan Agr..	BAA
1389	BH Air	BGH
1480	Bright Avia..	BRW
1501	Bulgarian A..	BUC
1506	Bulgarian A..	BVC
1548	Bulgaria Air	LZB
2258	Eurosense	EBG
2701	Heli Air Ser..	HLR
2751	Hemus Air	HMS
2871	Inter Air	ITW
2915	Intersky	IKY
4155	Rebus	REB
4818	Skorpion Air	SPN
5327	Vega Airlines	VEA
5358	Viaggio Air	VOA
5379	Vointeh	VTV
5462	Wizz Air Hu..	WVL

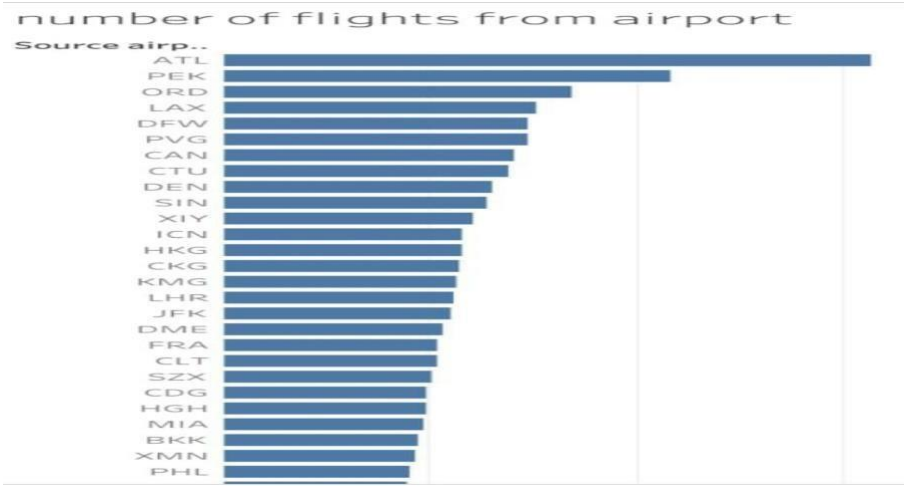
Country

Bulgaria

Active

N

Y



Country (airports.csv)
India

Airports Final

City
Null
Adampur
Agartala
Agatti Island
Agra
Ahmedabad
Aizwal
Ajmer
Akola

Country (airports.csv)
India

Number of airports

Country
Bulgaria

Airlines within a country

Airline ID	Name	Icao	Callsign
320	Air Sofia	SFB	AIR SOFIA
544	Aviodetach..	BGT	BULGARIAN
647	Air Scorpio	SCU	SCORPIO U..
695	Air VIA	VIM	Null
727	AVB-2004 J..	VBC	AIR VICTOR
738	Aviostart AS	VSB	AVIOSTART
901	Air Concorde	KGD	CONCORDE ..
1054	Air Ban	LZB	DOC AIR
1055	Air Lazur	LZR	LAZUR BEE-..
1095	Air Sport	MSK	AIR SPORT
1215	Air Max	MMX	AEROMAX
1322	Balkan Agr..	BAA	BALKAN AG..
1380	BH Air	BGH	BALKAN HO..
1480	Bright Avia..	BRW	BRIGHTSE..
1501	Bulgarian A..	BUC	BULGARIAN..
1506	Bulgarian A..	BVC	BULGARIAN..
1548	Bulgaria Air	FZB	FLYING BUL..
2258	Eurosense	EBG	EUROSENSE..
2701	Heli Air Ser..	HTB	HELI BULGA..
2751	Hemus Air	HMS	HEMUS AIR..
2871	Inter Air	ITW	INTER WIN..
2915	Intersky	IKY	GENERAL S..
4155	Rebus	RBB	REBUS
4818	Skorpion Air	SPN	AIR SKORPIO
5327	Vega Airlines	VEA	VEGA AIRLI..
5358	Viaggio Air	VDA	VIAGGIO
5370	Vointech	VVT	VOINTECH
5462	Wizz Air Hu..	WVL	WIZZ BUL

Active
N
Y

airports at higher altitude in the world

Name (airports.csv)	City
Daocheng Yading Airport	Daocheng
Qamdo Bangda Airport	Bangda
Kangding Airport	Kangding
Ngari Gunsa Airport	Shiquanhe
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Yushu Batang Airport	Yushu
Copacabana Airport	Copacabana
Inca Manco Capac Internation..	Juliaca
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Bulgaria

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695	Air VIA	VIM	NITI
727	AVB-2004 L..	VBC	AIR VICTOR
738	Aviostart AS	VSB	AVIOSTART
981	Air Concorde	KGD	CONCORDE ..
1054	Air Ban	LZP	DOC AIR
1055	Air Lazur	LZB	LAZUR BEE-..
1095	Air Sport	MSK	AIR SPORT
1212	Air Max	RMX	AEROMAX
1342	Balkan Agr..	BAA	BALKAN AG..
1386	BH Air	BGH	BALKAN HO..
1480	Bright Avia..	BRW	BRIGHT SE..
1501	Bulgarian A..	BUC	BULGARIAN..
1506	Bulgarian A..	BYC	BULGARIAN..
1548	Bulgaria Air	LZB	FLYING BUL..
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2915	Intersky	IKY	GENERAL S..
4155	Rebus	REB	REBUS
4818	Skorpion Air	SPN	AIR SKORPIO
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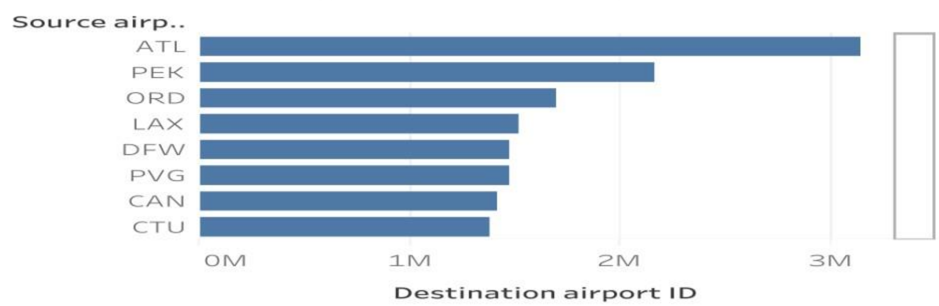
number of flights from airport



Country (airports.csv)
India

Number of airports

Global Air Transportation Network

World Map Showing Countries with details of Airports | Table Showing Airports which areat at Higher Altitude in the world and within the Country | Table Showing List of All Airlines within the Country | Bar Graph Showing Countries with No.of Airports & No.of Flights from Airports

Airports Final

Number of airports

148

Country (airports.csv)
India

City
- Null
- Adampur
- Agartala
- Agatti Island
- Agra
- Ahmedabad
- Aizwal
- Ajmer
- Akola
- Allahabad
- Along
- Amritsar
- Aurangabad
- Baghdogra
- Bakshi Ka Talab
- Bangalore
- Bareilly
- Baroda
- Belgaum
- Bellary
- Bengaluru
- Bhatinda
- Bhaunagar
- Bhiwani
- Bhopal
- Bhubaneswar
- Bhuj
- Bidar
- Bikaner
- Bilaspur
- Bokaro
- Calicut

Country (airports.csv)
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544	Aviodetachment-28	BGF	BULGARIAN	
647	Air Scorpio	SCU	SCORPIO UNIVERS	
695	Air VIA	VIM	Null	
727	AVB-2004 Ltd	VBC	AIR VICTOR	
738	Aviostart AS	VSR	AVIOSTART	
991	Air Concorde	KGD	CONCORDE AIR	
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1055	Air Lazur	LZR	LAZUR BEE-GEE	
1095	Air Sport	MSK	AIR SPORT	
1212	Air Max	RMX	AEROMAX	
1342	Balkan Agro Aviation	BAA	BALKAN AGRO	
1389	BH Air	BGH	BALKAN HOLIDAYS	
1480	Bright Aviation Services	BRW	BRIGHT SERVICES	
1501	Bulgarian Air Charter	BUC	BULGARIAN CHARTER	
1506	Bulgarian Aeronautical Ce..	BVC	BULGARIAN WINGS	
1548	Bulgaria Air	LZB	FLYING BULGARIA	
2258	Eurosense	EBG	EUROSENSE	
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Global Air Transportation Network

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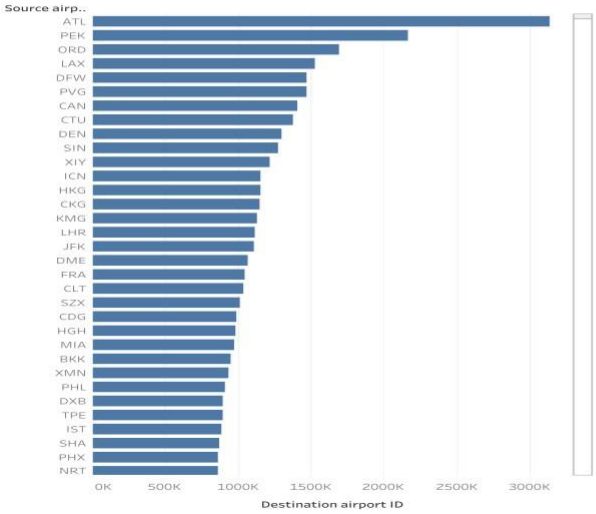
number of flights from airport



Number of airports

Country (airports.csv)
India

148

4. ADVANTAGES & DISADVANTAGES

Advantages

Fast delivery times

Undoubtedly, one of the most advantageous features offered by air transport is its **speedy delivery times**.

There is no faster transport service than air transport. In addition, the frequency of flights makes delivery times very frequent and fast.

No physical limits

Air transport is the only means of transportation that **does not support physical limits**. Road transport, for example, must undergo different physical constraints that slow down delivery times.

It is one of the means of transportation that offers practically no interruption in its services, which is very attractive for companies.

Very reliable transportation

One of the great advantages of air transport for both passengers and goods is its great **reliability**.

Delays in delivery dates or loss of goods are options that can be very difficult to achieve with this means of transport.

Long Distances

No other means of transport in the logistics sector can **cover** such **long distances** as air transport. This is a **great advantage for international trade**, being able to cover long distances, impossible for road or sea transport.

Disadvantages

Higher Cost

There is no doubt that air transport is the least economical means of transportation compared to other types of transport.

The cost of infrastructure, fuel… makes air transport economically superior to other alternatives.

It is important to know how to analyze and calculate the economic and logistical performance to know if it is the ideal option to be used.

Less storage capacity

Storage capacity is lower than land and sea transport. This is a clear disadvantage, air transport is ideal for medium or low loads, but is not so attractive for large volumes

Restrictions on goods

Air transport, due to its specific characteristics, cannot carry certain products or goods. It suffers from certain restrictions, especially in liquid products such as petroleum, oils, etc…

5. APPLICATIONS:

The significance of airways multiplies during war time situation and disaster management, natural calamities.

The cargo (freight) services are based mainly on aviation sector.

Airway is the index of modernity of a region.

Air ways are free gift of nature and no capital is spent in their construction or maintenance

Aviation sector provides employment to 7 million people directly and indirectly.

6. CONCLUSION

The air transport industry is not only a vital engine of global socio-economic growth but is also of vital importance as a catalyst for economic development in most countries and for many regions within each country. Its importance arises not only from its ability to facilitate the movement of people but also its ability to expedite the movement of goods. Currently, rising operating costs, stoked by the high price of aviation fuel combined with slowing or even negative demand growth, will lead to dramatic restructuring of the airline industry and the collapse of many airlines especially smaller ones. Reduced access to air services for both passengers and freight may put many communities at a disadvantage.

7. FUTURE SCOPE :

Engines and aircraft become lighter, quieter and more efficient. Emerging technologies are reshaping with robotics, artificial intelligence, the internet of things, unmanned aircraft systems and the push for hybrid and electric airplanes – just to name a few.

Alternative fuels can significantly change the current scenario of aviation in support of the environmental protection. The vast investment in Artificial Intelligence (AI) and Big Data could be seen as a promising way of increasing safety, efficiency and sustainability. These technologies can help improve aviation infrastructure and airspace utilization.