



INTRODUCTION

Air transportation is a major industry in its own right and it also provides important inputs into wider economic, political, and social processes. The demand for its services, as with most transport, is a derived one that is driven by the needs and desires to attain some other, final objective. Air transport can facilitate, for example, in the economic development of a region or of a particular industry such as tourism, but there has to be a latent demand for the goods and services offered by a region or by an industry. Lack of air transport, as with any other input into the economic system, can stymie efficient growth, but equally inappropriateness or excesses in supply are wasteful.

Economies, and the interactions between them, are in a continual state of flux, and although economists' notions of equilibrium have some very useful intellectual content, and also validity in the very short-run, in reality the world is dynamic. This dynamism, of which the particular thrust of globalization is the concern here, has implications for industries such as air transport that service it. But there are also feedback loops, because, developments in air transport can shape the form and the speed at which globalization and related processes take place. In effect, while the demand for air transport is a derived, the institutional context in which air transport services are delivered have knock-on effects on the economic system. These feedback loops may entail direct economic, political, and social effects that, for example, accompany enhanced trade and personal mobility, but they may also be indirect, as for example through the impacts of air transport on the environment.

The analysis here is, by necessity, excessively simplistic given the multi-dimensional and dynamic nature of globalization, and focuses on one small sector, international commercial aviation, and on only one direction of causality, the implications of globalization for this sector. Some related considerations are embraced where particularly important. For example, there is an increasing blurring of international and domestic air transport as airlines form alliances and invest in each other to form global networks; indeed, the domestic and international air transport market within the European Union (EU) is de facto one market. Also, not all feedback loops are ignored, particularly when changes in air transport facilitate

global trends that then, in turn, feed back on the air transport industries; migration of labor is one example of this.

Business requirements:

The business requirement of the Global Air Transportation Network- Airports, Airlines, and Routes dataset is to provide stakeholders in the aviation industry with accurate, up-to-date information on the worldwide air transportation network. The dataset is intended to help stakeholders make informed decisions related to business growth, investment, capacity planning, and infrastructure development. Using data analytics and visualization tools like Tableau, the dataset can be analyzed to identify trends and patterns in the air transportation network, providing valuable insights into the state of the industry. This information can be used to optimize routes, improve operational efficiency, and enhance customer experience.

Ultimately, the business requirement of the dataset is to enable stakeholders in the aviation industry to gain a competitive advantage by making data-driven decisions. By providing a comprehensive collection of data related to the air transportation network, the dataset can help stakeholders stay ahead of the curve in a dynamic and rapidly changing industry.

Literature Survey:

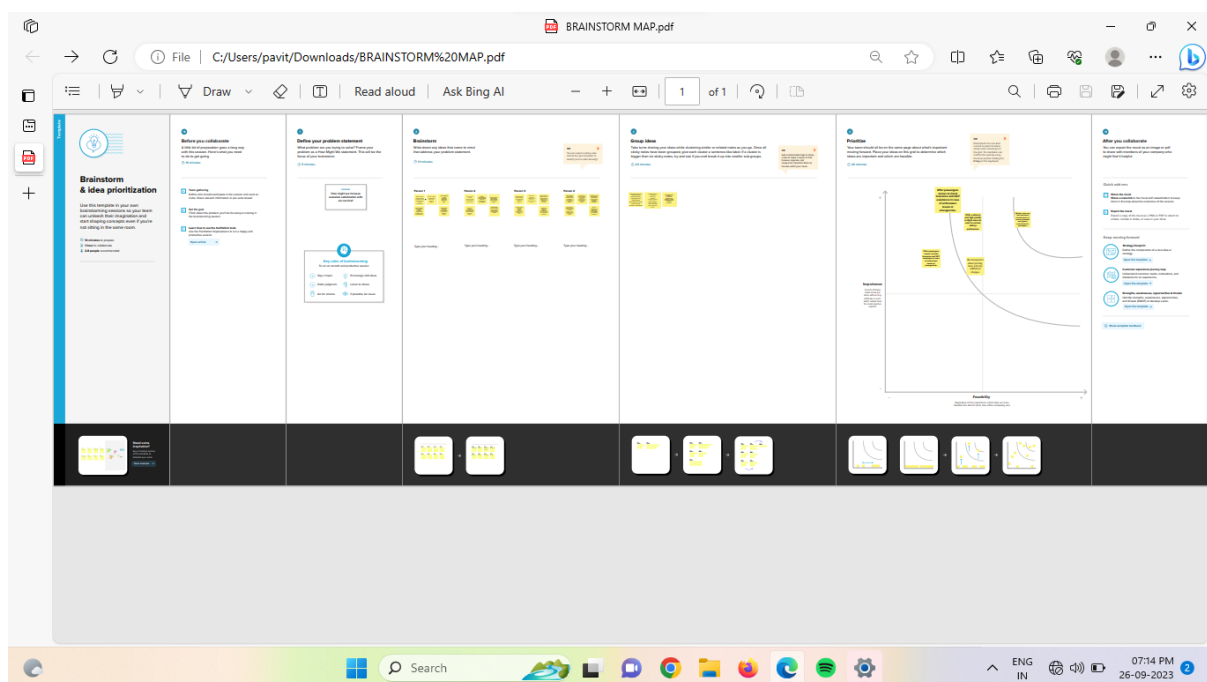
A literature survey for Global Air Transportation Network involves reviewing academic articles, books, and other sources related to the aviation industry including statistical, economic, financial models. It also discusses various factors that affect the flight delay, flight route etc. The survey can provide a comprehensive understanding of the significance, challenges, and opportunities associated with the aviation industry.

Social or Business Impact:

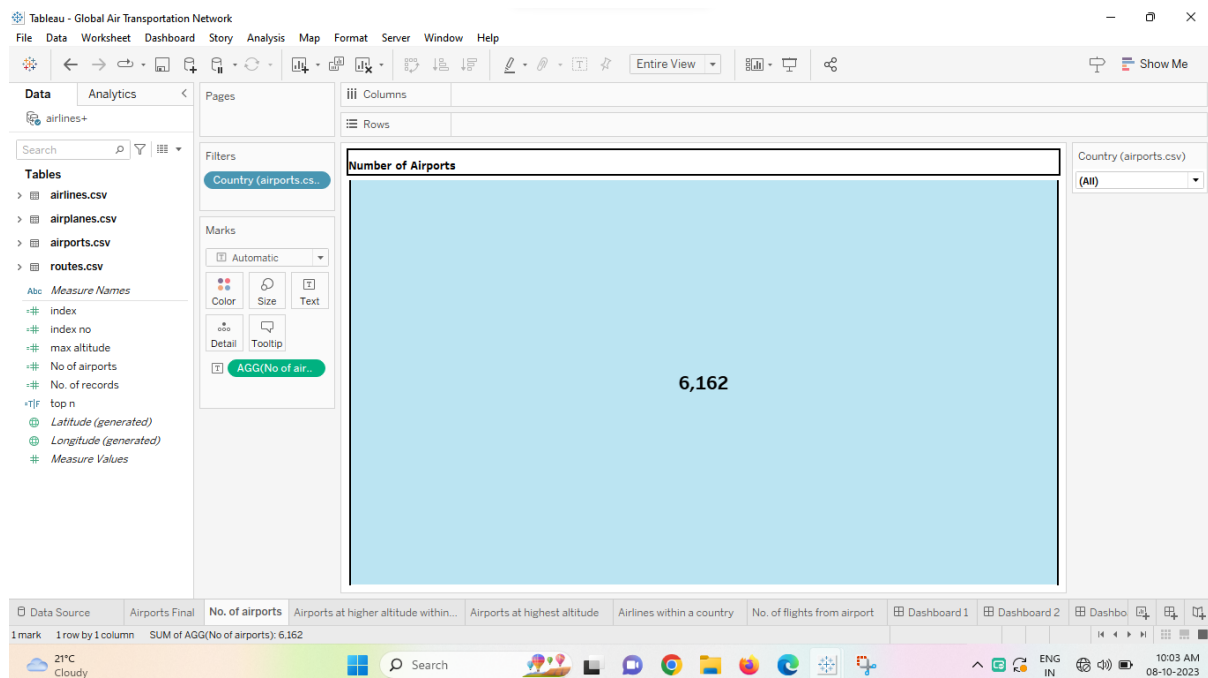
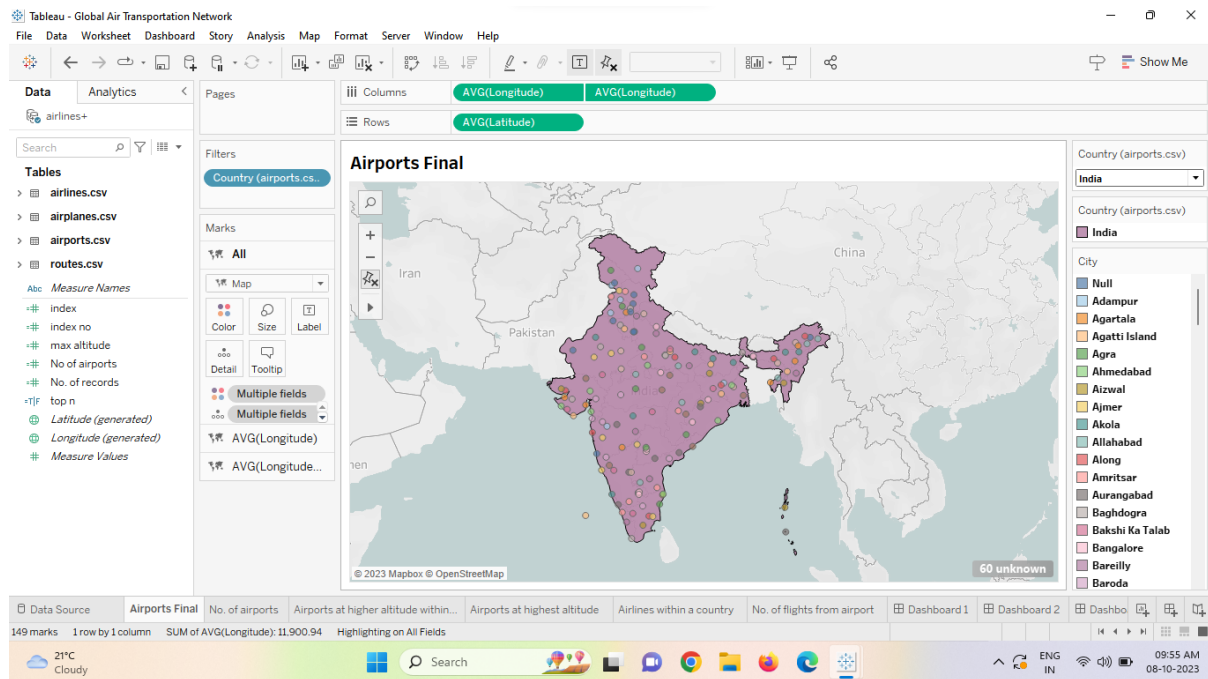
Socially, the dataset can contribute to the development of air transportation networks that are more efficient, safe, and environmentally sustainable. By providing stakeholders with a comprehensive understanding of the air transportation network, the dataset can help to optimize routes and reduce congestion in the air, leading to improved air quality and reduced carbon emissions. This can contribute to the overall well-being of communities around the world, by making air travel more accessible, affordable, and eco-friendly

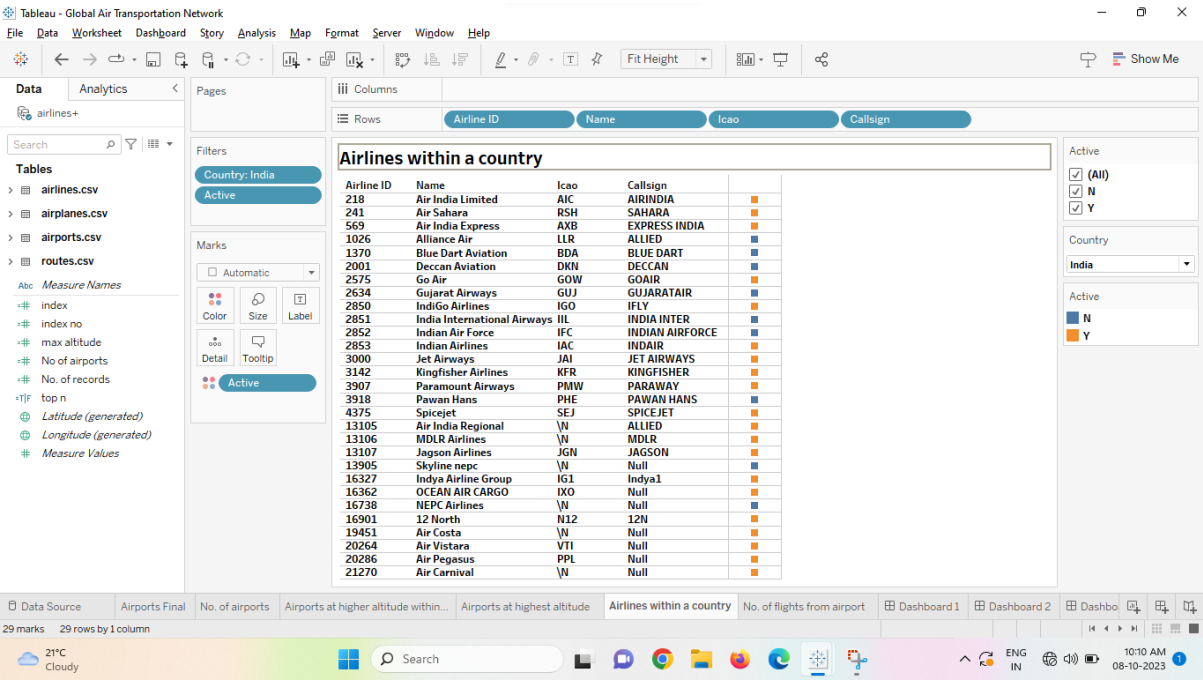
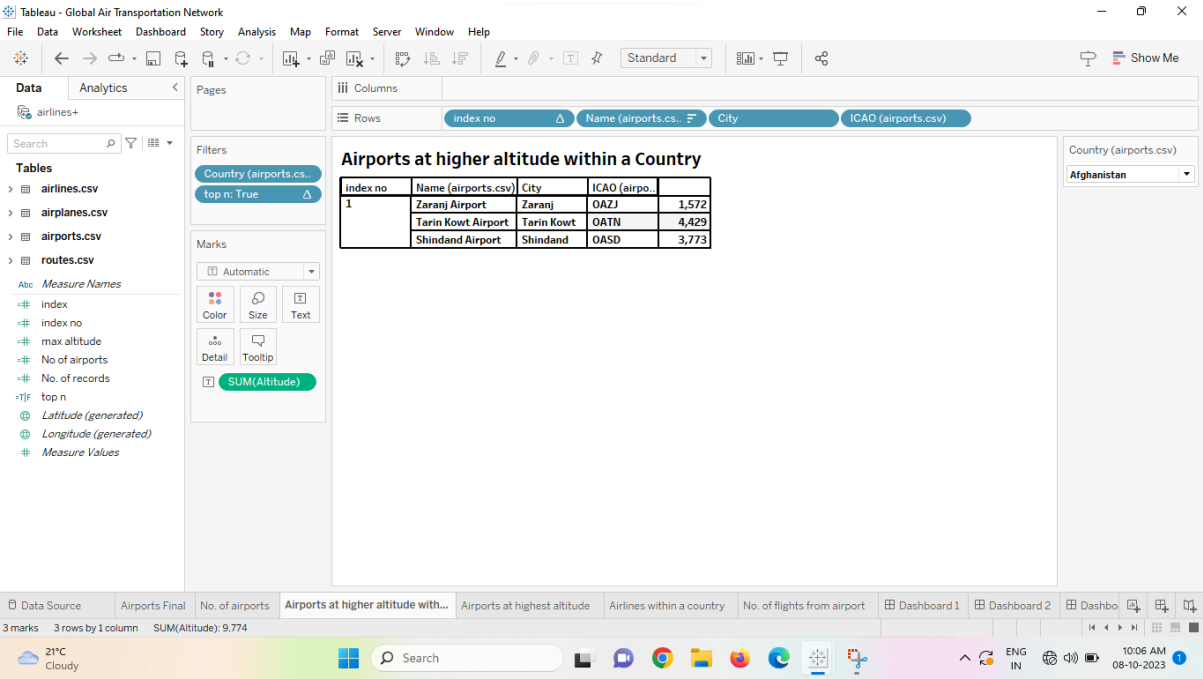
From a business perspective, the dataset can have a significant impact on the aviation industry. By enabling stakeholders to make data-driven decisions, the dataset can help airlines, airport authorities, tourism boards, and government agencies to identify new business opportunities, optimize capacity planning, and streamline operations. This can lead to increased profitability and competitiveness, as well as improved customer experience. Moreover, the dataset can be used by investors to identify promising sectors and geographic areas for investment in the aviation industry.

EMPATHY MAP



RESULTS





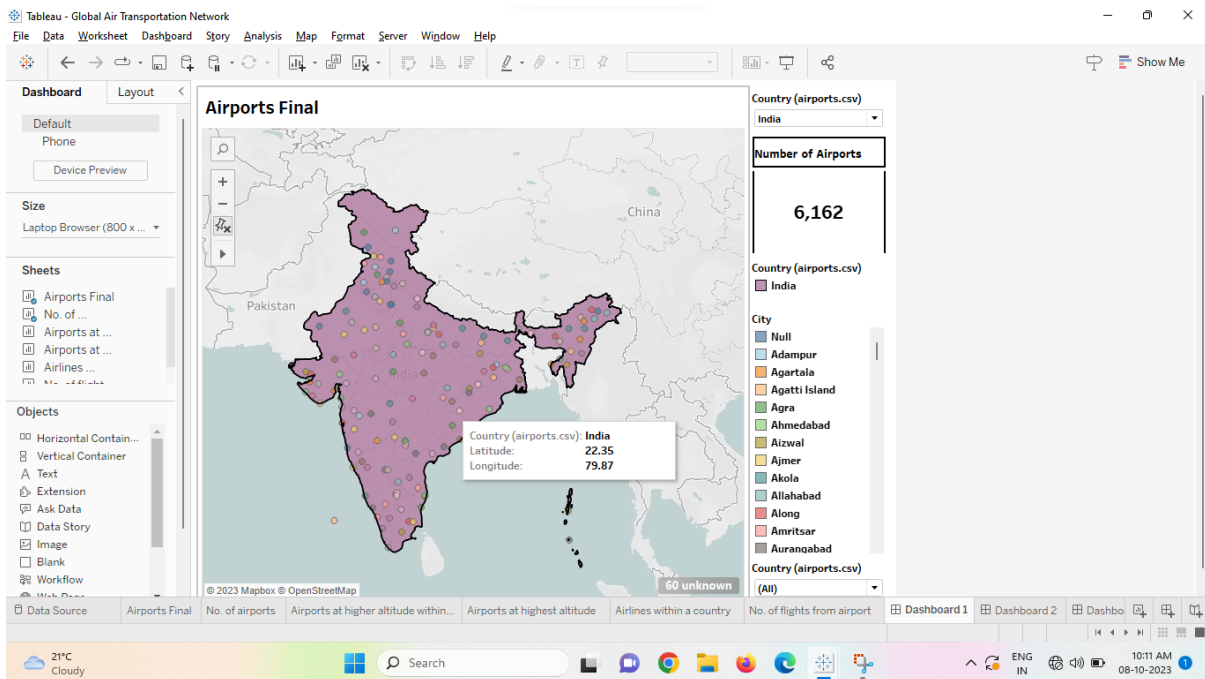
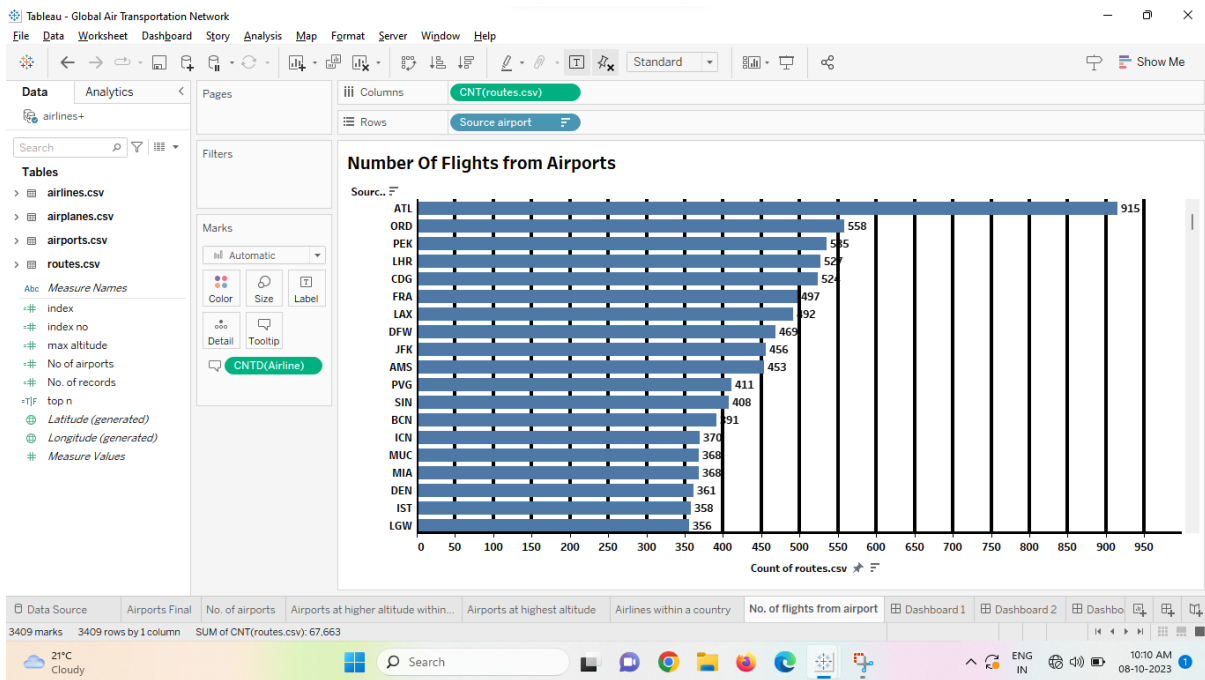


Tableau - Global Air Transportation Network

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Dashboard Layout

Default
Phone
Device Preview

Size
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Sheets

- Airports Final
- No. of ...
- Airports at ...
- Airports at ...
- Airlines ...

Objects

- Horizontal Contain...
- Vertical Container
- Text
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- Workflow

Airlines within a country

Airline ID	Name	Icao	Callsign	
218	Air India Limited	AIC	AIRINDIA	
241	Air Sahara	RSH	SAHARA	
569	Air India Express	AXB	EXPRESS INDIA	
1026	Alliance Air	LLR	ALLIED	
1370	Blue Dart Aviation	BDA	BLUE DART	
2001	Deccan Aviation	DKN	DECCAN	
2575	Go Air	GOW	GOAIR	
2634	Gujarat Airways	GUJ	GUJARATAIR	
2850	IndiGo Airlines	IGO	IFLY	
2851	India International Airways	IIL	INDIA INTER	
2852	Indian Air Force	IFC	INDIAN AIRFORCE	
2853	Indian Airlines	IAC	INDAIR	
3000	Jet Airways	JAI	JET AIRWAYS	
3142	Kingfisher Airlines	KFR	KINGFISHER	
3907	Paramount Airways	PMW	PARAWAY	
3918	Pawan Hans	PHE	PAWAN HANS	
4375	Spicejet	SEJ	SPICEJET	
13105	Air India Regional	IN	ALLIED	
13106	MDLR Airlines	IN	MDLR	
13107	Jagson Airlines	JGN	JAGSON	
13905	Skyline nepc	IN	Null	
16327	Indya Airline Group	IG1	Indya1	
16362	OCEAN AIR CARGO	IXO	Null	
16738	NEPC Airlines	IN	Null	
16901	12 North	N12	12N	
19451	Air Costa	IN	Null	

Active

- (All)
- N
- Y

Country

India

Active

- N
- Y

21°C Cloudy

Search

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Tableau - Global Air Transportation Network

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- Airlines ...

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- Horizontal Contain...
- Vertical Container
- Text
- Extension
- Ask Data
- Data Story
- Image
- Blank
- Workflow

Airports at Highest Altitude in World

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

Airports at higher altitude within a Country

index no	Name (airports.csv)	City	ICAO (airpo...	
1	Zaranj Airport	Zaranj	OAZJ	3,572
	Tarin Kowt Airport	Tarin Kowt	OATN	4,429
	Shindand Airport	Shindand	OASD	3,773

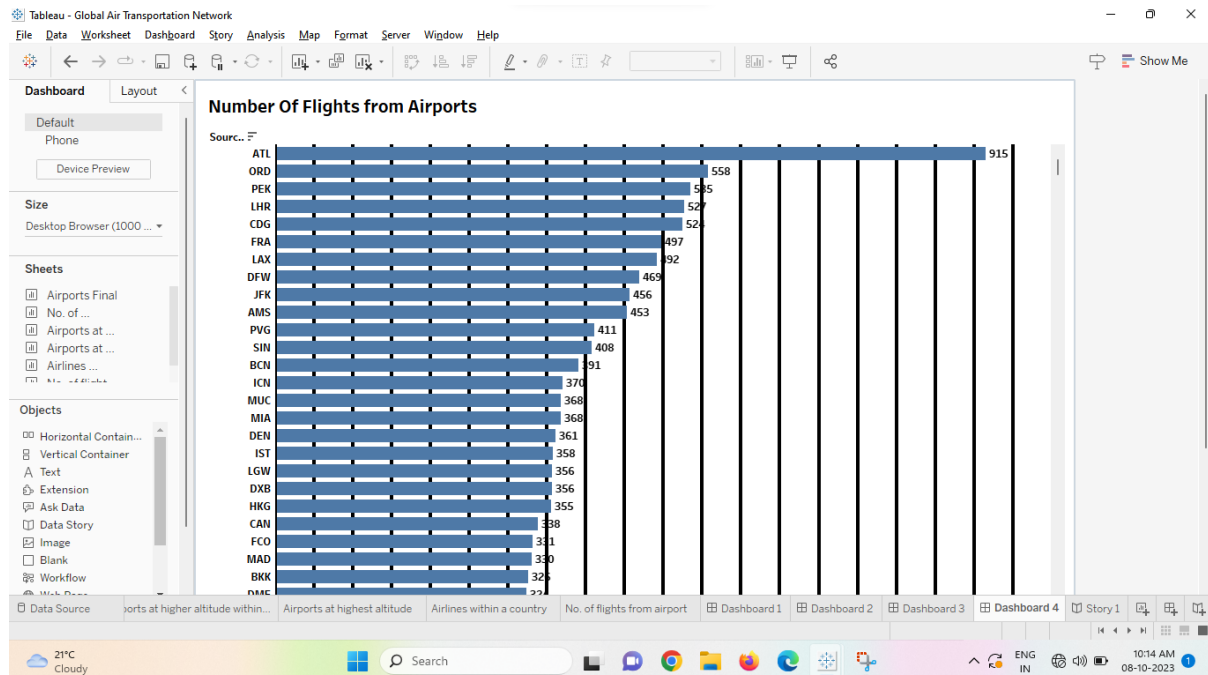
City: Yushu
ICAO (airports.csv): ZYLS
Name (airports.csv): Yushu Batang Airport
Altitude: 12,816

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Air Transportation Market Challenge:

The air transportation industry faces several challenges that can impact its operations, growth, and profitability. Here are some of the key challenges facing the industry:

COVID-19 pandemic: The COVID-19 pandemic has had a significant impact on the air transportation industry, leading to a sharp decline in air travel demand and revenue for airlines worldwide. The industry has had to adapt to changing travel restrictions, implement health and safety protocols, and seek government support to survive the pandemic's effects.

Rising fuel costs: Fuel costs are a significant expense for airlines, and fluctuations in fuel prices can impact their profitability. Volatility in oil prices and geopolitical tensions can lead to supply disruptions and increased fuel costs.

Environmental concerns: The air transportation industry is a significant contributor to greenhouse gas emissions, and as such, it is increasingly subject to environmental regulations and pressures to reduce emissions. The industry must invest in more fuel-efficient aircraft and sustainable aviation fuels to reduce its environmental impact.

Technological disruptions: Advances in technology, such as the development of supersonic and electric aircraft, and the use of drones for cargo delivery, can disrupt the air transportation market and create new competition for established players.

Competition from other modes of transportation: Air transportation faces competition from other modes of transportation, such as high-speed rail and car-sharing services, particularly for short-haul trips.

Safety and security concerns: Safety and security are critical concerns for the air transportation industry, and any incidents or accidents can have a significant impact on the industry's reputation and profitability. The industry must continue to invest in safety and security measures and comply with regulatory requirements to ensure the safety of passengers, cargo, and aircraft.

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Air Transportation Market Regional Analysis:

The air transportation market varies significantly by region due to differences in economic, political, and demographic factors. Here's a brief overview of the air transportation market in different regions:

North America: The North American air transportation market is the largest in the world, with the United States being the dominant player in the region. The market is driven by a strong economy, a large population, and a mature airline industry.

Europe: The European air transportation market is the second-largest in the world, with major airline hubs in cities such as London, Paris, and Frankfurt. The market is highly competitive, with many low-cost carriers and legacy airlines vying for market share.

Asia-Pacific: The Asia-Pacific air transportation market is the fastest-growing in the world, driven by expanding middle-class populations, economic growth, and increasing urbanization. China is the largest market in the region, with other major markets including Japan, South Korea, and Australia.

Latin America: The Latin American air transportation market is a growing market, with Brazil and Mexico being the largest markets in the region. The market is characterized by a mix of low-cost carriers and legacy airlines, with regulatory and infrastructure challenges limiting growth.

Middle East: The Middle East air transportation market is a significant hub for connecting traffic between Asia, Europe, and Africa, with Dubai and Doha being major airline hubs in the region. The market is dominated by three major airlines - Emirates, Etihad, and Qatar Airways.

Africa: The African air transportation market is a relatively small market, with limited infrastructure and regulatory challenges limiting growth. South Africa is the largest market in the region, with other markets such as Nigeria, Kenya, and Ethiopia showing potential for growth.

The Basic Features of International Air Transportation

Historical perspective

Air transport has always been seen to have an inherently strategic role. It has obvious direct military applications, but it is also highly visible and, for a period, and in some countries still, was seen as

Strictly, there are differences between globalization and internationalization. Internationalization refers to the importance of international trade, relations, treaties etc.; it refers to actions between or among nations. Globalization means erasure of national boundaries for economic purposes; international trade (governed by comparative advantage) becomes inter-regional trade (governed by absolute advantage). In practical terms, internationalization is technically what has largely been occurring in the World with the development of agencies such as the World Trade Organization. Perversely, globalization has been more narrowly geographically concentrated, for example within the EU area. We use the term „globalization“ here in its broader sense. a “flag carrier”, a symbol of international commercial presence. From its earliest days, airlines were seen as having potential for providing high-speed mail services, and subsequently medium and long-term passenger transport. Technology now allows the carriage of much larger cargo pay-loads in a more reliable way. These strategic functions were used to pursue internal national policies of social, political, and economic integration within large countries such as Canada, the US, and Australia, but also took on international significance from the 1930s within the Imperial geopolitical systems centered mainly on the UK, France, Germany, and other European countries when technology allowed for intercontinental services to be developed.

Air transport was highly regulated and protected in this environment with the intention of it being used as a lever for larger political and economic objectives. But even in these roles, its importance, largely because of the technology until after World War II, was small. British Imperial Airways, for example, only carried about 50,000 passengers to the colonies in the 1930s; a figure hidden in the public media coverage given to the importance of colonial air networks. Technology shifts as an offshoot of military developments in World War II changed this with the introduction of planes with far longer ranges, faster speeds, enhanced lift, and the increasingly ability to cope with adverse weather conditions. Air traffic control, navigation, communications, and airport facilities have also improved considerably, and more recently the underlying management structure of the supplying industries has enhanced efficiency.

The Chicago Convention of 1944 confronted the new international potentials of civil aviation and initiated an institutional structure that laid common ground rules for bilateral air service agreements (ASAs) between nationals. The result, however, while providing a formal basis for negotiation, was essentially one of protectionism with pairs of countries agreeing on which airlines could offer services between them, the fares to be charged and, often, how the revenues could be shared. Added to this, with the major exception of the US, most international airlines were state owned flag-carriers that operated to fulfill, often vague, national objectives of prestige, as well as linking colonies. Internal markets within countries were regulated in similar fashions, and it was not uncommon for wealthier countries to have an airline to provide primarily domestic and short haul services, and one for long-haul, international markets.

The breakdown of the domestic regulatory structure within the US from the late 1970s (Morrison, and Winston, 1995) provided both a demonstration for other countries to follow in deregulating their own domestic regimes, but also the US's, initially unsuccessful, initiatives from 1979 to liberalize international services on a bilateral basis based on a common “Open Skies” recipe began to bring about pressures to wider reforms. This was coupled with more generic moves towards a withdrawal of government in market-oriented countries such as New Zealand and the UK that saw airports and air traffic control being privatized, or at least operated on a more commercial footing. The move to a Single European Market within the EU from 1992 represented a broader trend, both

in terms of the sectors and the geography involved, towards market liberalization of air transport infrastructure, as did the collapse of the Soviet economic system. Not all countries moved completely in this direction, the US for example, rather perversely, continued with its traditional, strongly socialist policy of air traffic control being a state owned, tax financed monopoly and airports, with few exceptions, being owned by local governments (Button and McDougall, 2006).

Where there have been almost universal tightening of regulations that run counter to the market liberalizations, have been in what the US calls „social regulation” and Europe calls, “quality regulation”. This concerns such matters as the environment, safety, security, and consumer and labor protection. These are areas that have been traditionally dealt with at the international level by the International Civil Aviation Organisation (ICAO) set up under the Chicago Convention, and in accord with some peculiar international accords such as the Warsaw Convention that dates back to 1929 and deals with liabilities in the case of accidents². More recently, regional or national actions have also taken international significance; e.g. the extension of carbon trading within the EU to embrace all air transport, and the US’s introduction of stricter security measures, such as the provision on passenger information, for all flights into the country.

The modern industry

The modern air transport industry is thus one that increasingly operates within a liberal market context. While government controls over fares, market entry, and capacity continue in many smaller countries, they are gradually and almost universally being removed or relaxed. International controls under the bilateral ASA structure are increasingly moving towards broad Open Skies formulations, allowing free provision of services between the countries involved, although progress on open market, whereby nationality of ownership of airlines is unrestricted, is coming more slowly. The EU area³ has effectively been the largest international free market in air transport services in the world since 1997, and this has grown as the Union has expanded geographically. The supply and operation of air transport infrastructure is also becoming more market driven with on-going privatizations of airports and air traffic control systems, or the use of franchising mechanisms to involve private capital and expertise (Button, 2008). It is also becoming more coordinated. ⁴ ¹³. The air transport industry is now large – it accounts for about 1% of the GDP of both the EU and the US – and is vital in many industries such as tourism, exotics, and hi-technology⁵. It is an important transporter of high-value, low-bulk cargoes. International aviation moves about 40% of world trade by value, although far less in physical terms. The market is served by a diversity of carriers, some specializing in long-haul international routes and others in short-haul markets⁶. Table 1 offers some indication of the scale of larger airlines involved. To handle the interface between land and air transport the world’s major airports have grown to handle millions of international passengers (Table 2) and tonnes of cargo⁷ each year, and many have been significant catalyst facilitating, in particular, the growth of modern hitechnology industries and tourism about them. In 2008, passenger air services globally link around 15,500 airports; with the fastest growth in air services over the past two decades being in the Europe-Asian Pacific markets.

Airline profits

That the financial conditions of airlines are strongly influenced by international economic tradecycle effects is clearly seen in Figure 6, which shows net operating margins, although other financial measures exhibit similar patterns. There have been demonstrable downturns in the past coinciding with international financial crises (the early 1990s) and major international incidents (the terrorist attacks on New York and Washington and the SARS epidemic). The figure illustrates the consistency with which these types of factors affect all air transportation markets, albeit with different intensities. But, in addition, even during relatively good times, the returns earned do not compensate for the bad, even assuming a zero operating margin is viable, which is unlikely.

The financial situation of airlines at the time of writing, with serious macro-economic problems in the US economy and slowing of many other economies, has led to forecast by the IATA of potential global losses of \$6.1 billion for the airline industry in 2008 due to higher input prices and a downturn in the business cycle.¹⁴ Within these global trends, however, there have also been significant variations in profitability across macro-regional markets (Figure 7), which in part reflect the maturity of markets, but also the extent to which individual countries within them have liberalized their international ASAs.

Elementary economic theory tells us that, when there are no fixed costs, then bargaining between suppliers and customers will ensure that prices are kept to a minimal level that allows suppliers to recover all costs over the long term. When there are no fixed costs, the marginal cost of meeting customer demand represents the entire costs of production. The problems come when there are fixed costs.

The traditional view of fixed costs was developed when the bricks, steel, and mortar of industrial plants had to be paid for. The world has changed, and with service industries, and especially those involving scheduled services, the fixed costs are somewhat different. While airlines do use expensive hardware, this is not their underlying fixed cost problem. Indeed, the largest costs of airlines has traditionally been their labor, although rising fuel prices from 2007 have changed this somewhat. ¹⁵ These in the traditional sense are variable costs. Even aircraft are now seldom owned by the carriers, but are leased, sometimes (it is illegal in the US) on a wet-lease that includes crew. The result is that airlines are increasingly becoming “virtual carriers” that act to bring together packages of services owned by others and thus are encumbered with few fixed costs themselves in the traditional economic sense.

Fixed costs in a modern service industry, therefore, can take an entirely different form. An airline is committed to a particular scheduled service some 6 months or so before the flight – it is committed to have a plane, crew, fuel, gates, landing and take-off slots, etc., available at a scheduled time and designated place. This does have the advantage that fares are often collected before the airline has to provide the service, but in a highly competitive market, this is generally more than offset, by the limited amount of revenue that is ultimately collected.

Airlines in deregulated markets engage in price discrimination and charge passengers different fares to try to extract as much revenue as possible. In general, this means that lower fares are offered initially when a flight is some way off, because leisure travelers are willing to pay less for a seat and are more flexible in their scheduling and will seek lower fares if available. They are caught early by the airline. Towards the time of take-off, fares rise as last minute travelers, often business travelers, seek seats. These people are less sensitive to fares, meeting a last minute business deadline can make or break a deal, and tax deductions are normally allowed for the offsetting of higher fares. The problem is that with a fixed schedule in a competitive market, the various airlines set take-off times for each destination at about the same time. This leads to intense competition to fill seats and forces fares down to levels that do not allow all the costs of individual services to be met. ¹⁶ It is worth filling a seat once it is there with anyone willing to pay for the additional costs of handling.

The problem is exacerbated when taken over a business cycle, and when there is new entry to markets. In the longer-term, it leads to instability in the market as airlines enter and leave. It also leads to sub-optimal levels of investment, despite excess capacity during peaks in the cycle. When full costs are not recovered, and an airline ultimately withdraws a service or goes out of business, is known as the “empty core problem” in economic analysis. It is neither a new concept, it was developed in the 1880s by a largely forgotten Oxford economist, Francis Edgeworth (1881), nor is it one that has limited application. In the long-term, as potential investors become aware of this problem, they will reduce or cease to put new capital into the industry. However, the complexity of

the underlying economic model has hindered the communication of the issue to decision makers. 17 This situation also runs counter to some traditional, often ideological, views of competition policy that hold that there can “never be too much competition”. The idea that there can be „too much competition“ is something of an anathema in such circles.

The current situation, with large parts of airline industry hemorrhaging cash, while widespread, has impacted individual markets differently. The domestic US market, which is possibly the most competitive in the world, has been the hardest hit to date, and although low-cost domestic carriers, such as Southwest, has been adding some routes, the vast majority of airlines have been retracting, pulling services, and some, such as ATA Airlines and Skybus, and the legacy airline, Aloha, have simply vanished from the market. European airlines, although some like Ryanair, British Airways and Air France are recording profits, are also being badly hit financially by a rise in fuel cost, as are carriers elsewhere, such as Qantas, that, after predictions in June 2007 of a \$1.3 billion profit for 2008, in June 2008 anticipated a loss of \$1 billion.

The airlines have historically reacted to the situation in a number of ways, essentially trying to glean a degree of short-term monopoly power wherever and whenever the opportunity has arisen. Many of the initiatives have been extensions or modifications to existing strategies that have been used in previous market downturns, but which, as has been seen, have not prevented long-term financial problems for the market stability.

ADVANTAGES OF AIR TRANSPORT:

Speed and Efficiency: One of the key advantages of air transport is its unparalleled speed. Airplanes can cover long distances in a matter of hours, enabling businesses to deliver goods quickly, especially for time-sensitive orders. This swift transportation option is particularly beneficial for industries such as e-commerce, pharmaceuticals, and perishable goods.

GLOBAL REACH

Air transport provides extensive global coverage, connecting businesses to various destinations around the world. It allows companies to expand their customer base and reach new markets, irrespective of geographical barriers. This enables businesses to tap into international opportunities and access a broader range of customers.

RELIABLE TIMELINES

Air transport operates on fixed schedules, ensuring reliable timelines for delivery. Airlines maintain strict adherence to departure and arrival times, minimizing delays and enhancing supply chain efficiency. This reliability is crucial for businesses that require precise order preparation and fulfillment to meet customer expectations.

REDUCED INVENTORY HOLDING COSTS

The fast transit times offered by air transport help reduce inventory holding costs. With shorter lead times, businesses can maintain lower inventory levels while still meeting customer demands. This frees up working capital and minimizes storage expenses, contributing to overall cost savings.

ENHANCED SECURITY

Air transport offers enhanced security measures compared to other modes of transportation. Airports have stringent security protocols in place to ensure the safety of cargo, including thorough screening processes and restricted access. This helps protect valuable and sensitive products during transit, reducing the risk of theft or damage.

DISADVANTAGES OF AIR TRANSPORT

HIGHER COST

One of the significant drawbacks of air transport is its higher cost compared to other modes, such as sea or land transport. Air freight charges are generally higher due to factors like fuel costs, infrastructure investments, and handling fees. Businesses must carefully evaluate the cost-benefit analysis of air transport based on their specific needs and budget.

LIMITED CAPACITY

Airplanes have limited cargo space compared to ships or trains. This limited capacity can pose challenges for businesses dealing with bulky or oversized shipments. Air transport is best suited for high-value, time-sensitive goods that require swift delivery, rather than large-volume shipments.

RESTRICTIONS ON HAZARDOUS GOODS

Air transport has strict regulations regarding the transportation of hazardous goods. Certain hazardous materials or substances may be prohibited from being transported by air due to safety concerns. Businesses dealing with such goods need to comply with stringent regulations and find alternative transportation methods if necessary.

Understanding the advantages and disadvantages of air transport is crucial for businesses seeking efficient order preparation and global shipping solutions. The speed, global reach, reliable timelines, reduced inventory holding costs, and enhanced security make air transport an attractive option for many companies. However, it is essential to consider the higher cost and limited capacity associated with air transport.

For expert guidance and comprehensive logistics solutions, consider partnering with IFS [International Logistics Operator](#). With their extensive experience in air freight and supply chain management, they can provide tailored solutions to optimize your order preparation and ensure seamless transportation. Contact IFS International Logistics Operator today to discuss your logistics requirements and discover how they can enhance your supply chain operations.

APPLICATIONS OF GLOBAL AIR TRANSPORTATION

The infrastructure of the global aviation system consists of two principal elements, airports and air traffic management (ATM) systems. Airports can be further subdivided into airside facilities (runways, taxiways, aprons, aircraft stands) and landside facilities (pas-

senger and cargo buildings, curbside), while ATM systems are now viewed as being comprised of a tactical subsystem—air traffic control (ATC)—and a strategic one—air traffic flow management (ATFM). The design, development, and operation of all these facilities and systems has attracted extensive interest on the part of operations researchers, usually in response to ongoing developments in the field. For example, much of the fundamental work on airside capacity was performed during the 1960s and early 1970s, the time when it was first realized that runways constituted an important bottleneck of the air transport system. Overall, the body of work on aviation infrastructure has led to insights and models that have proved of critical importance in practice and have, in some cases, been adopted by airport and ATM service providers on a global scale. Because of space limitations, this section briefly reviews OR applications in airport airside operations and air traffic flow management—only two of the four major areas identified above. Surveys of OR models for the analysis of passenger terminal operations can be found in Tasic (1992) and de Neufville and Odoni (2002)

FUTURE SCOPE:

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.

CONCLUSION:

The key findings of this report are summarized in this chapter. The committee believes that the findings

#Justify the creation of a national research program focused on the needs of airport operators;

#Reveal how such a program can play a role in helping airport operators meet the many demands of federal agencies, state governments, local communities, and airport users; and

#Provide guidance on governing, funding, and administering an airport research program.