

A Research Report
On
**“IMPACT OF COVID-19 ON CIVIL AVIATION
SECTOR IN INDIA”**

**Submitted in fulfillment for the award of the degree of
BACHEOLARS OF BUSINESS ADMINISTRATION IN
AVIATION MANAGEMENT**

CONDUCTED BY
GALGOTIAS UNIVERITY, GREATER NOIDA

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GALGOTIAS UNIVERSITY, GREATER NOIDA (2019-2022)

Certificate of Approval

The following Project Report titled “**IMPACT OF COVID-19 ON CIVIL AVIATION SECTOR IN INDIA**” is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Bachelor of Business Administration** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the Research Project Report only for the purpose it is submitted to the Research Project Report Examination Committee for evaluation of Project Report.

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Signature

1. Faculty Mentor

Dr.Gaurav Gupta



SCHOOL OF BUSINESS

BONAFIDE CERTIFICATE

This is to certify that **Jai Sagar and Ishita Mohanty**, are students of the **Bachelor of Business Administration in Aviation Management** has worked under my guidance and supervision. This Research Project Report has the requisite standard and to the best of my knowledge no part of it has been reproduced from any other project, monograph, report or book.

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Last of all but not the least We would like to acknowledge our gratitude to the respondent without whom this survey would have been incomplete.

Thanking you

Jai Sagar & Ishita Mohanty

(Group C)

Executive Summary

To analyze the impact of COVID-19 on the worldwide Aviation Sector and most importantly Indian Aviation Industry. To kthe now circumstances of the Airline markets, must f in these pandemics. To know deeply how the Airlines are worldwide coping up h the situation.



- **COVID-19**

Corona viruses are a group of related viruses that cause diseases in mammals and birds. In humans, corona viruses cause respiratory tract infections that can range from mild to lethal. Mild illnesses include some cases of the common cold (which has other possible causes, predominantly rhinoviruses), while more lethal varieties can cause SARS, MERS, and COVID-19. Symptoms in other species vary in chickens, they cause an upper respiratory tract disease, while in cows cause diarrhea There are yet to be vaccines or antiviral drugs to prevent or treat human corona virus infections.

Droplet transmission occurs when a person is in close contact (within 1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing) and is therefore at risk of having his/her mouth and nose or conjunctiva (eyes) exposed to potentially infective respiratory droplets. Transmission may also occur through fomites in the immediate environment around the infected person. Therefore, transmission of the COVID-19 virus can occur by direct contact with infected people and indirect contact with surfaces in the immediate environment or with objects used on the infected person

(e.g., stethoscope or thermometer). Airborne transmission is different from droplet transmission as it refers to the presence of microbes within droplet nuclei, which are generally considered to be particles $<5\mu\text{m}$ in diameter, can remain in the air for long periods of time and be transmitted to others over distances greater than 1 m.

In the context of COVID-19, airborne transmission may be possible in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed, i.e., open suctioning, administration of nebulizer treatment, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, non-invasive positive-pressure ventilation, tracheotomy, and cardiopulmonary resuscitation.

India aviation industry promises huge growth potential due to large and growing middle class population, favorable demographics, rapid economic growth, higher disposable incomes, rising aspirations of the middle class, and overall low penetration levels (less than 3%

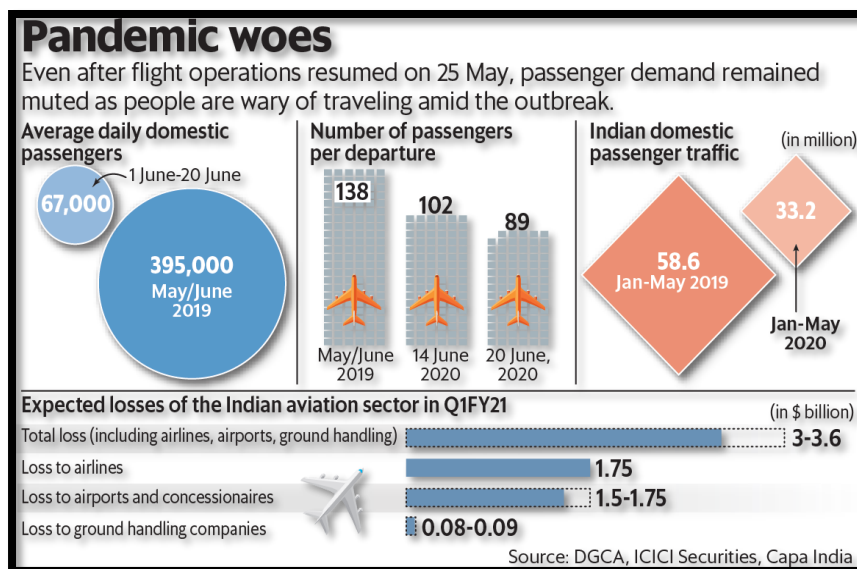


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CHAPTER -I

INTRODUCTION

Around 7,900 employees in India's aviation sector have lost jobs due to the pandemic in the last one year. "Total number of employees of domestic carriers has declined from around 74,800 as on 31 Mar 2020 to around 66,900 as on 31 Mar 2021, a decline of over 7,900 employees,".

- Problems Statement:

The COVID-19 pandemic had a massive impact on the Indian aviation sector in 2020 and major airlines facing losses and challenging times laid off employees, sent them on leave without pay, or cut their salaries. The government also had to extend the deadline for submitting bids for Air India five times during the year.

When the pandemic started spreading across the country, all scheduled international flights and domestic passenger flights were suspended from March 23 and March 25, respectively. Scheduled domestic flights were restarted in a limited manner from May 25. The effect of this disruption can be gauged by the loss figures of India's two largest airlines. IndiGo incurred net losses of ₹2,884 crores and ₹1,194 crores in Q1 and Q2 of this fiscal respectively. SpiceJet posted net losses of ₹600 crores and ₹112crorese in Q1 and Q2, respectively.

The government, meanwhile, permitted special international passenger flights under Vande Bharat Mission since May and air bubble arrangements were formed with around 24 countries since July. However, scheduled international flights remain suspended in India. "The revival of overseas travel is expected to be slower and more challenging than domestic. This will hurt Air India in particular as around 60 per cent of its revenue was earlier generated from international operations," said aviation consultancy firm CAPA in October.

It estimated that just 50-60 million passengers -- 40-50 million domestic and less than 10 million international -- would travel in 2020-21. In 2019-20, approximately 205 million air passengers -- 140 million domestic and 65 million international -- travelled in India.

CAPA India projected in October that the Indian aviation industry will lose a

combined USD 6-6.5 billion in FY21, of which airlines will account for USD 4-4.5 billion. As a result, the government's plan to sell Air India has been hit. After its unsuccessful attempt to sell the national carrier in 2018, the government in January restarted the divestment process but the pandemic forced it to extend the date for submission of expression of interest (EOI) five times. The last date of EOI submission was December 14. The government has received multiple EOIs and it will announce the name of qualified bidders by January 5.

In order to make debt-laden Air India more attractive, the government changed the bidding parameter in October - bidders will now quote enterprise value instead of equity value. This means that the bidder will be able to quote how much cash it would give and how much debt of the airline it would be able to carry. However, the government made it clear that minimum 15% of the bid amount has to be in cash while the remaining would be the debt component.

Air India's debt was ₹58,255 crore as on March 31, 2019. Later in 2019, ₹29,464 crore of this debt was transferred from Air India to a government-owned special purpose vehicle called Air India Assets Holding Company Limited (AIAHL). While Air India was unable to get a private owner in 2020, bankrupt airline Jet Airways was able to find one.

A consortium of UAE-based businessman Murari Lal Jalan and London's Kalrock Capital won the bid on October 17 to revive Jet Airways. It expects to start operating the airline by the summer of 2021. The consortium said it is awaiting the NCLT and other regulatory approvals, including reinstatement of slots and bilateral traffic rights by the civil aviation ministry and Directorate General of Civil Aviation (DGCA).

Slots -- which is the time zone at which a flight can land at the airport -- as well as bilateral traffic rights -- the number of flights an airline can fly to another country's city -- are precious commodities in the aviation sector.

When Jet Airways went bankrupt in April 2019, its slots and rights were temporarily given to other Indian carriers by the government so that they can start new flights and fill the supply gap. Now, as other airlines have added planes and started flights considering these slots and rights will remain with them, it is not clear what decision the government will take on this matter in 2021.

Meanwhile, the process to build the second international airport in Delhi moved

ahead in 2020.

Ten months after winning the bid for greenfield international airport in Jewar, Zurich Airport International signed a concession agreement with the Uttar Pradesh government on October 7, 2020, to begin its construction. The Swiss developer has selected a four-company consortium to design its passenger terminal.

The first phase of construction of the airport is likely to be completed by 2024. Air cargo traffic in India has been showing faster recovery in 2020 as compared to passenger traffic. This has given some respite to the aviation sector.

However, Anupama Arora, Vice President and Sector Head, ICRA Ratings, said, "In FY2021, total cargo volumes are expected to decline by 17-20% in FY2021 with meaningful recovery in cargo volumes expected only in FY2022."

To survive the pandemic-induced crisis, all airlines took cost cutting measures like firings or pay cuts in 2020. In April, GoAir sent the majority of its employees on leave without pay. Air India had in April cut the salaries of its employees by 10 per cent.

At the same time, SpiceJet and IndiGo cut the salaries of all employees by 10-30 per cent and 5-25 per cent, respectively. In July, IndiGo also laid off 10 per cent of its workforce.

AirAsia India in April has cut the salaries of its senior employees by up to 20 per cent. Starting April, Vistara implemented a leave without pay program for its employees based on seniority.

Currently, the Indian airlines are operating domestic flights at around 80 per cent of their pre-COVID levels. The domestic services are expected to reach their pre-COVID levels by March 2021.

With the anti-coronavirus vaccination likely to begin from 2021, the Indian aviation sector is hoping for a much better year as compared to 2020.

However, after a new and more infectious coronavirus strain emerged in the UK recently, India announced on December 21 that all passenger flights connecting that country will be suspended from December 23 to December 31.

- **Need for the Research:**

This research is going to primarily focus on the effects of COVID-19 on the Transportation and Aviation Market, Stock Exchange in the world and various other markets. People have been locked down in their homes and those who don't have the savings and live on a daily wage are suffering. They have been forced to walk long miles on foot because of non-availability of vehicles.

So, this research is very important to be done to find out what are the consequences of the COVID-19 Virus. And how is the world fighting with the situation.

- **Objectives of the Research**

- To understand the effect of COVID-19 Virus on Aviation Market.
- To find out how agencies worldwide are coping up with the situation.

- **Sources of data**

- My research is completely based on secondary data.
- In my opinion, secondary data is very useful as we get very informative pieces of interest that encourages to explore for more data.

- **Research Methodology**

- My report is majorly based on secondary data.

- **Sampling**

- There are some primary sources such as feedback of employees and reports collected at airport as did internship in Air India on 2021

- **Expected Outcome of the Study**

- Better understanding of operational aspect of different airlines.
- On which basis services are being provided at various Airports.
- To understand the work culture at airport in this alarming situation.
- Obtaining a thorough knowledge of each aspect of Airlines Counterattack and Planning to achieve safe transportation both on ground and in Air.

CHAPTER-2

LITERATURE REVIEW

WHAT IS CORONA VIRUS?

Corona viruses are a group of related viruses that cause diseases in mammals and birds. In humans, corona viruses cause respiratory tract infections that can range from mild to lethal. Mild illnesses include some cases of the common cold (which has other possible causes, predominantly rhinoviruses), while more lethal varieties can cause SARS, MERS, and COVID-19. Symptoms in other species vary in chickens, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea. There are yet to be vaccines or antiviral drugs to prevent or treat human corona virus infections.

Droplet transmission occurs when a person is in close contact (within 1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing) and is therefore at risk of having his/her mouth and nose or conjunctiva (eyes) exposed to potentially infective respiratory droplets. Transmission may also occur through fomites in the immediate environment around the infected person. Therefore, transmission of the COVID-19 virus can occur by direct contact with infected people and indirect contact with surfaces in the immediate environment or with objects used on the infected person (e.g., stethoscope or thermometer). Airborne transmission is different from droplet transmission as it refers to the presence of microbes within droplet nuclei, which are generally considered to be particles <5µm in diameter, can remain in the air for long periods of time and be transmitted to others over distances greater than 1 m. In the context of COVID-19, airborne transmission may be possible in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed, i.e., open suctioning, administration of nebulizer treatment, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, non-invasive positive-pressure ventilation, tracheotomy, and cardiopulmonary resuscitation.

India's aviation industry promises huge growth potential due to its large and growing middle-class population, favorable demographics, rapid economic growth, higher disposable incomes, rising aspirations of the middle class, and overall low penetration levels (less than 3%).

Operational considerations for managing COVID-19 cases or outbreak in aviation

Airport operators, aircraft operators, airlines, and airports should provide guidance to crew and ground staff on the recognition of signs and symptoms of COVID-19. Crew and ground personnel should be further reminded about measures to prevent transmission of COVID-19, including social distancing, hand hygiene, respiratory etiquette, environmental cleaning, waste disposal, when and how to use a mask, avoidance of contact with people presenting respiratory symptoms, and seeking medical advice early if signs and symptoms develop.

Medical face masks should be reserved for persons with respiratory symptoms (and who can tolerate them) to avoid contamination to others. Personnel should be trained on hand hygiene and how to put on and remove personal protective equipment (PPE). Personnel in close contact with symptomatic persons (e.g., when providing first aid) should wear a medical mask, eye protection (face shield or goggles), gloves, and gown.

India Airlines market despite of being the fastest growing market, has been one of the toughest aviation markets in the world, due to high fuel prices, overcapacity and intense price competition. Notwithstanding the extensive infrastructural development supported by government, airlines in India often combat financial distress with the changing dynamics of internal and external environment. Indian aviation industry in India has undergone rapid transformation with the liberalization of Indian aviation sector. India began to relax controls on its airline industry in 1986, allowing willing entrants to add system's capacity. However, financial performance of the airlines remains challenging owing to inappropriate policies, restricted capacity allocation on profitability basis Liberalization of air travel services and the advent of low-frill airlines have changed the panorama of Indian Civil Aviation in terms of demand as well as supply. Reformation of regulatory policies resulted in three-fold increase in the number of scheduled airlines and a five-fold increase in the number of aircraft operated. The increased interconnectivity within the global airline markets has altered the dynamics of external environment and internal operations. Success and survival in this milieu warrants for coherent strategies adapting with market flavor.

Entry of the LCCs in India in 2003, with first 'no-frills' airlines- Air Deccan has changed the dynamics of Indian domestic aviation market. Low-cost carrier (LCC) by enhancing affordability of air travel has stimulated the demand for air travel in India. Undoubtedly, low-frill operation has proved to be a successful

business model in the industry. Budget airlines and small chartered airlines witnessed more efficient in the system and dominated the Indian airline market. The LCC in India have managed to achieve significant operational efficiencies with the rigid cost structure, heavy taxes, high landing and parking charges, undesirable regulatory factors. India's low cost carriers show better scale efficiency vis-à-vis their full service competitors. Low Cost Airlines have been witnessed advantageous in utilizing their capacity compare to the full service airlines which strives hard to attain break-even capacity. However, the inexorable rise of LCC has made the industry more volatile. Intense competition and enhanced capacity have made cost effectiveness as the daring need for survival and sustainability.

Financial performance of airlines is vulnerable to both internal conditions of the company and as well the external environment. Operating factors, namely, operating revenue per air kilometers, capacity, cost structure, load factor dictate the operational output of the airlines and their commercial stability. From the external environment, ATF prices largely affect airlines profitability in India. Also, annual inflation and GDP growth rate in the country has a major influence on the sustainability of the airlines in India. With uncontrollable cost behavior, tight margins and cut-throat market, survival and subsistence of airlines largely depends on its ability to maximize their customer base. Fierce competition compel the airlines to optimizes their revenues . In the backdrop of covid pandemic outbreak, the globally airline industry has been adversely affected. Airlines in India which have been observed vulnerable to withstand the cyclic economic disruption (of fuel prices, inflation, devaluation of currency and demand shock), certainly be entering into a tough time with extremely low demand and ever mounting losses. Present study attempts to analyze the financial impact of covid pandemic on airlines in India and possible impact of their financial strengths and weakness. Further study suggests possible way-outs of sustaining operating viability.

Advice for crew and ground staff working or staying in areas where local or community transmission is being reported

- Be familiar with local protocols for the reporting and management of ill travellers and their possible contacts, in the context of COVID-19
- Take precautionary measures to reduce the possibility of infection: – Avoid rush hours in public transport and use private transport when possible, minimizing contact with other people while moving between the airport and ground transportation.

Minimize time spent in public areas, applying social distancing whenever out in public by maintaining a distance of at least 1 meter (3 feet) from other people.

Wash hands frequently with soap and water or use an alcohol-based hand rub if hands are not visibly dirty.

Avoid touching eyes, nose, and mouth

Self-monitoring: If you develop fever, cough, or difficulty breathing, immediately isolate yourself according to local health procedures, wear a mask, report the situation to your employer, and seek medical attention. The aircraft operator or airline concerned should report it to the local health authority immediately.

If you develop fever, cough, and difficulty breathing during flight, discontinue your work duties as soon as it is safe to do so, inform other crew, and follow the measures required for a suspected case, as described in Global Surveillance for human infection with corona virus disease (COVID-19).

Suspected case on board an aircraft

Activating the on-board procedures for cabin crew to manage ill travelers
Universal precaution kits should be carried on aircraft that are required to operate with at least one cabin crew member, as prescribed in the International Civil Aviation Organization ICAO Standards and Recommended Practices (SARPs) and guidelines.

They include:

- Dry powder that can convert small liquid spills into a sterile granulated gel
- Germicidal disinfectant/wipes for surface cleaning
 - Face/eye mask (separate – goggles and medical mask or combined – face shield)
- Gloves (disposable)
- Protective apron
- Full-length long-sleeved gown (if available)
- Biohazard disposable waste bag (if available)

If a traveler develops symptoms of acute respiratory infection or shows signs or symptoms compatible with a communicable disease, including COVID-19, as documented in the Aircraft General Declaration (the IHR Annex 8, ICAO Annex 9, Appendix 1), efforts should be made to minimize contact of passengers and cabin crew with the ill person. Crews should follow the International Air Transport Association (IATA) procedures.

- Separate the ill person from the other passengers by minimum of 1 meter (usually about two seats left empty in all directions, depending on the cabin design) from

the seat occupied by the suspected case. Where possible this should be done by moving other passengers away.

- Ask the ill person to wear a medical mask and practice respiratory hygiene when coughing or sneezing. If the medical mask cannot be tolerated by the ill person, provide tissues to cover mouth; discard tissue immediately into a biohazard disposal waste bag carried in the Universal Precaution kit. If no biohazard disposal waste bag is available, place it into an intact plastic bag, seal it, and consider it “biohazard” waste; wash hands with soap and water or alcohol-based hand rub.
- Designate one crew member to serve the ill person, preferably a crew member trained in infection prevention and control measures and not necessarily the crew member that has already been attending to this traveler.
- If possible, designate one toilet for use only by the ill person.
- When attending to an ill traveler coming from an area with local or community COVID-19 virus transmission who displays fever, persistent cough, or difficulty breathing, always use personal protective equipment (PPE) (provided in the Universal Precaution Kit), including a mask, eye protection, gloves, and a gown.
- Wear disposable gloves when tending to an ill traveler or touching body fluids or potentially contaminated objects and surfaces. Remove gloves carefully to avoid contaminating yourself, dispose of them and other disposable items that had contact with the ill person in a biohazard, bag, and wash hands with soap and water or an alcohol-based hand rub.
- Crew should make sure not to touch other service utensils or cutlery after tending to an ill traveler.
- Crew members should be provided with instructions for communicating with an ill person suspected of COVID-19 (see Annex 1). It is also important for crew members to be aware that it is ok to touch or comfort a suspected or a confirmed COVID-19 case on the condition that they are wearing appropriate PPE.

Obligations for aircraft operators, airlines, and aircraft with suspected case(s) on board Reporting In accordance with the International Health Regulations (2005), pilots shall make known to airport control as early as possible before arrival at the

airport of destination any cases of illness indicative of a disease of an infectious nature or evidence of a public health risk on board as soon as such illnesses or public health risks are made known to the pilot in command.

Crews should follow the procedures in accordance with ICAO Annex 9 and Procedures for Air Navigation Services - Air Traffic Management when reporting a suspected case on board. Implementing public health measures Aircraft operators/airlines shall comply with the health measures recommended by WHO and national authorities and inform travelers of the health measures implemented by ground personnel and crews on board. Aircraft operators/airlines may be required to provide to the airport health authorities the health part of the Aircraft General Declaration, as per Annex 9 of the International Health Regulations, upon arrival to conduct preliminary risk assessment.

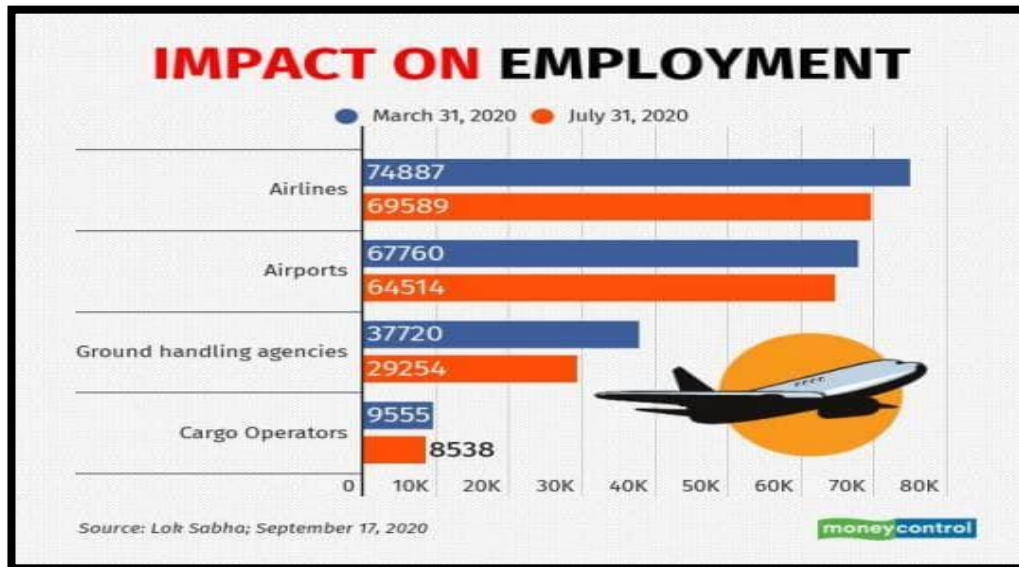
A written plan for enhanced cleaning and disinfection should be agreed between the airport health authority, airport operators, and service providers, according to the standard operating procedures outlined in the WHO Guide to Hygiene and Sanitation in Aviation.

If no symptomatic passengers were identified during or immediately after the flight, routine operating procedures for cleaning aircraft, managing solid waste, and wearing PPE should be followed. If symptomatic passengers were identified during or immediately after the flight, cleaning procedures should be followed. The following should be implemented:

- Service providers should be trained in the preparation, handling and application, and storage of these products.
- Service providers should wear gowns, heavy-duty gloves, face shield/goggles and medical mask when cleaning.
- Surfaces should be cleaned with detergent followed by regular household disinfectant containing 0.1% sodium hypochlorite (that is, equivalent to 1000 ppm). Surfaces should be rinsed with clean water after 10 minutes contact time for chlorine.
- In case a surface has been soiled with respiratory secretions or other body fluids, wipe the surfaces with absorbent (paper) towels first, dispose of towel, and then clean and disinfect as described above.
- Any contaminated items must be handled appropriately to mitigate the risk of transmission; disposable items (e.g., hand towels, gloves, masks,

tissues) should be placed in a disposable bag and disposed of according to national regulations for infectious waste.

- Ventilation systems should be kept running while cleaning crews are working aboard the airplane.



WHO advises the following procedures for cleaning and disinfection in case a public health event has occurred on board:

- Ensure any disinfection is conducted using products licensed for use in the country. The disinfection products should have a label claim against corona viruses. The disinfectants must be tested by a certified laboratory according to the specifications of the aircraft manufacturers for material compatibility tests, and not be corrosive or detrimental to aircraft components. The disinfectant should be applied according to the label instructions (e.g., concentration, method, and contact time).
- Any contaminated items must be handled appropriately to mitigate the risk of transmission: Disposable items (hand towels, gloves, masks tissues) should be put in the biohazard bag or double plastic bags and disposed of according to national regulations for infectious waste.
- Ensure that the cleaning and other measures meet the conditions required by the airport health authority to address the public health risks.

CHAPTER-3

ECONOMIC IMPACTS OF COVID-19 ON CIVIL AVIATION

In light of the rapidly spreading disease named as COVID-19, the International Civil Aviation Organization (ICAO) actively monitors its economic impacts on civil aviation and regularly publishes updated reports and adjusted forecasts. The latest version can be viewed and all full reports are available further below.

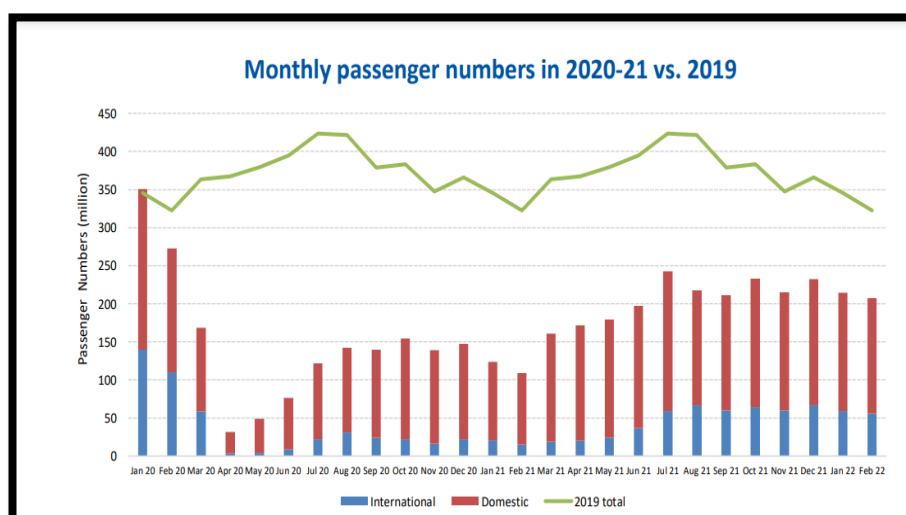
The analytical timeframe has now been extended to **Dec 2022** and therefore covers **the full year of 2022**.

The COVID-19 impact on world scheduled passenger traffic for year 2020 (estimated actual results), compared to 2019 levels:

- Overall reduction of 50% of seats offered by airlines
 - Overall reduction of 2,703 million passengers (-60%)
 - Approx. USD 372 billion loss of gross passenger operating revenues of airlines
- Year 2020/2021 results: World total passenger traffic

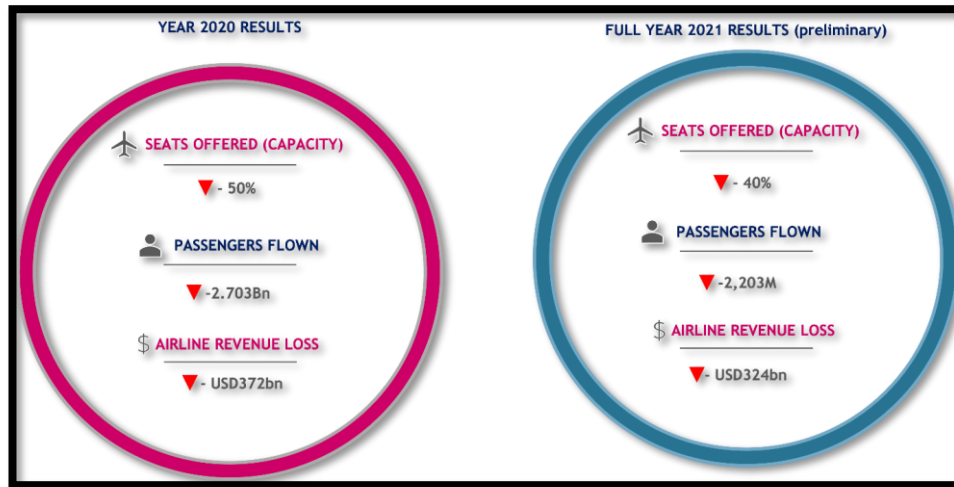
The COVID-19 impact on world scheduled passenger traffic for year 2021 (preliminary estimates), compared to 2019 levels:

- Overall reduction of 40% of seats offered by airlines
- Overall reduction of 2,201 million passengers (-49%)
- Approx. USD 324 billion loss of gross passenger operating revenues of airlines.



ICAO has also worked alongside the DGCA of Turkey to develop interactive dashboards to monitor four key aspects of the impact of COVID-19 on civil aviation - operational impacts, economic impacts, aircraft utilizations and impacts on country-pair traffic.

Global Economic Impact in brief

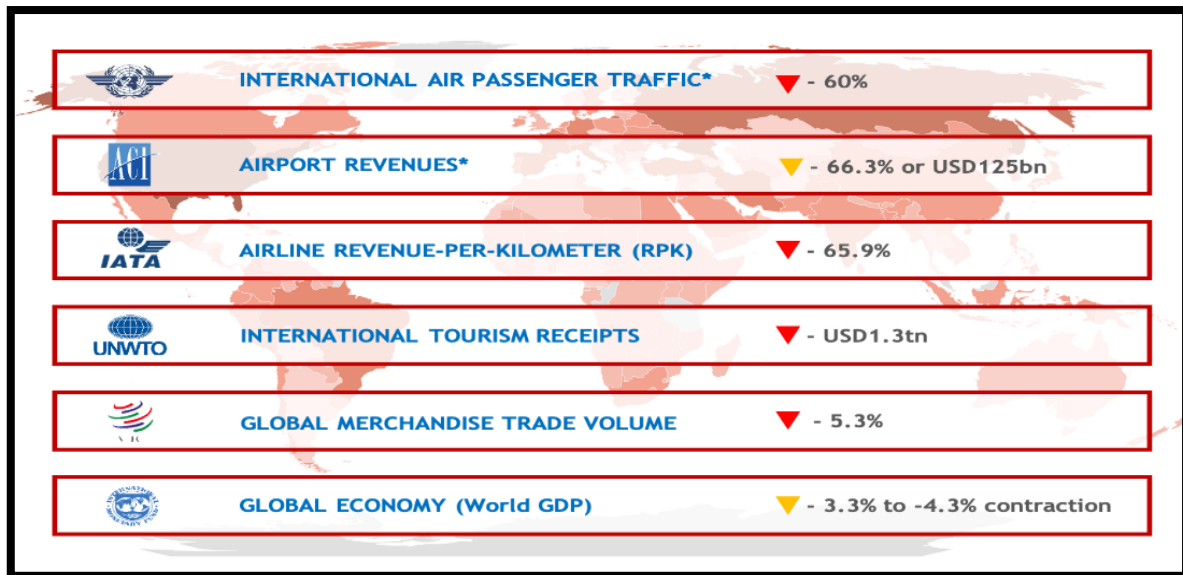


Impacts of COVID-19 across industries

The COVID-19 virus has spread worldwide without acknowledging borders. It has impacted all industries, all sectors, and all aspects of our lives with devastating economic and financial losses and significant uncertainties.

Within the spirit of collaboration, the below chart gathers information from international organizations representing the impacted industries. This information is subject to frequent change, and you are invited to visit the official website of each organization for most up-to-date figures.





The passenger footfall across AAI airports saw a significant drop from 14.5 million in January 2020 to 27,687 in April 2020. With the economy opening and public mobility resuming, this has now started picking up (2.97 million in August 2020).

With regards to the revival of the industry, Hooda said: “We expect pre-COVID traffic recovery by FY23. The domestic sector may recover early, but international recovery is unlikely till mid- or end-FY23.”

Travelling by air has been safe and that has given confidence to people, which is evident from the weekly traffic increase from 45,000 per day at the end of May to over 150,000 per day in October.

Some measures taken by the government to support the aviation industry:

- 1) Domestic air services resumed: Initially only 33% of the summer schedule for 2020 was operationalized. This was subsequently increased to 45% on June 26, and to 60% on September 2.
- 2) Operation of Regional Connectivity Scheme: UDAN flights were allowed without many restrictions.
- 3) Exclusive air-links (temporary arrangements) established with countries like Afghanistan, Bahrain, Canada, France, Germany, Qatar, Maldives, the UAE, the UK and the US for restarting passenger services as regular international flights remain suspended.
- 4) Promoting private investments in existing and new airports through the PPP route.

5) Adequate care taken to ensure that cargo terminals at all major airports were operational, whenever required.

6) GST rate reduced to 5% for domestic Maintenance, Repair and Overhaul (MRO) services.

7) Encouraging Indian carriers to increase their share in international air-cargo traffic.

8) Route rationalization in the Indian airspace in coordination with Indian Air Force for efficient airspace management, shorter routes and reduced fuel burn.

“Post-COVID, we need an aviation reform agenda, which must be well-directed and result in a sustainably profitable aviation industry,”

“This must include reducing negative fiscal regime, including aviation turbine fuel in the GST and ensuring that the Directorate General of Civil Aviation and Bureau of Civil Aviation Security turn into independent institutions. Privatization of Air India and more AAI airports, and dismantling of government ownership of aviation assets, except for ATC, should also be expedited” she suggested. Further, strategic reforms like long-term airport master plan and remote airport infrastructure to deliver tangible results under the ‘flexible use of airspace’ should be envisaged”

The situation isn’t much different in other parts of the world. A potential loss of \$388-400 billion is estimated with regards to gross operating revenues of airlines worldwide in the year 2020, **According to the International Civil Aviation Organization’s report** released on October 8, 2020. Of these, international passenger airlines expected to witness a potential loss of US\$ 257-264 billion and domestic passenger airlines worth US\$ 131-136 billion.

Impact of suspended operation amid lockdown

The Indian aviation industry is characterized by high fixed costs of nearly 35 to 40%. These costs include lease rental, employees cost, interest charges. Per day of suspended operations has hit the industry at the rate of ₹ 75–90 crore loss per day. Exhibits fixed-cost information pertaining of four key airlines of India for last three years (FY 2017 to 2019). The costs mentioned signify the charges that are to be met irrespective of the business operations. The increasing pattern of expenses over years, *prima-facie*, signify the expanded operations’ size over years. Ceteris paribus, no significant change in the operations size and cost for the FY 2019–2020, per day loss of suspended operations for Interglobe Aviation accounts for ₹ 24 crores, followed ₹9.2 crores for SpiceJet, ₹5.83 crores for Go Airlines and ₹ 3.1 crores for Air Asia (based on the 2018–2019 estimates).

Drying cash reserves

In capital intensive industries, such as airlines, liquidity plays an important role in boosting profits. Perhaps the cash rich airlines are in better position to negotiate with the suppliers-oil companies, lessor, bankers, employees for favorable deals and heavy discounts. Airlines in India suffers from weak liquidity. Cash burn rate of airlines in India during the years 2015 to 2019 is provided in. The cash burn rate indicates the number of days for which a company can sustain its operations with the available cash reserves. The data contained, suggests few days of cash back-up available to most of the airlines, excluding Interglobe Aviation which is exhibiting consistent pattern of satisfactory cushion of more than a quarter. The aggregated cash reserves of Interglobe Aviation as on December 2020 were reported to be ₹ 20068.7 crores. Assuming, ₹ 24.16 crores of daily fixed cost, the reserves of ₹ 1789 crores possibly have been wiped out amid seventy days of lockdown. Remaining cash balance of ₹ 18339.7 crores suggest the probability of 228 days of survival, based on estimated burn rate of ₹ 80.6 per day. However, for other airlines resuming operations with insufficient operating cash seems to be a challenge.

Deteriorating solvency

In the backdrop of tight liquidity, thin margins and high burn rate, the airlines have always been fragile to withstand the normal demand shocks, oil price fluctuation, depreciating currency, etc. Industry has vouched the devastating impact of these events ranging deep losses to airlines bankruptcy. Table below exhibits 2015 onwards financial performance of airlines in India in terms of profits margins, rate of returns, assets turnover ratio and interest coverage ratios. As provided, the profit margins of the airlines are highly thin and unsatisfactory to insulate the firms from sudden shocks. Median net profit margin – 0.73, prima-face, corroborate that net profits of all the airlines in India are occasionally positive. There appears only three airlines, Interglobe, Go Air, and Blue Dart (Cargo airline) with positive net profit margin in all the five years. In terms of magnitude, the net profit margin 0.5 to 9% and EBIT margin of 1 to 15% does not seems satisfactory to justify the corpus invested and the risk involved there in. Oil price hike of 2018 has plunged the sector into deep losses. Interglobe Aviation that appears to be best performer of the industry has experienced deep shrinkage in its net profit margin of 2019 from 9 to 0.5%. Unable to take the hit, loss running Jet Airways blown out of the race with its operations meeting grinding halt in April 2019. Previously also, Industry has a history of several starts and may failures; East West Airlines and Damania Airways in 90 s, Kingfisher Airlines in 2012 are classic instances of airlines financial failure.

Company Name	Year	X1 Net CA/T A	X2 Retaine d earning s/TA	X3 Operatin g profit/TA	X4 Market cap/De bt	X5 Sales/ TA	Model A 1.2X1 + 1.4 X2 + 3.3 X3 + 0.6 X4 + 1.0 X5	Model B 3.25 + 6.56 X1 + 3.26 X2+ 6.72 X3 +1.05 X4	
AirAsia (India) Ltd.	2019	-1.22	-1.63	-0.79	4.31	3.19	-0.26	-10.93	
Go Airlines (India) Ltd.		-0.35	-0.12	0.02	-0.13	1.55	0.99	0.59	
Interglobe Aviation Ltd.		0.40	0.26	0.05	19.04	1.14	13.52	26.87	
SpiceJet Ltd.		-0.47	-0.20	0.03	5.21	1.90	4.34	5.16	
AIR India Express Ltd.	2018	-0.93	-0.46	0.22	0.24	0.97	0.17	-2.64	
Air India Ltd.		-0.60	-1.09	0.02	0.51	0.47	-1.18	-3.55	
AirAsia (India) Ltd.		-0.35	-0.81	-0.13	0.00	2.39	0.55	-2.62	
Blue Dart Aviation Ltd.		-0.20	0.05	0.21	0.08	1.42	1.99	3.62	
Go Airlines (India) Ltd.		-0.40	-0.15	0.11	0.01	1.32	1.04	0.91	
Interglobe Aviation Ltd.		0.40	0.31	0.19	17.48	1.09	13.06	26.36	
Jet Airways (India) Ltd.		-0.57	-0.59	0.06	0.66	1.86	1.05	-1.35	
Jet Lite (India) Ltd.		-0.23	-7.74	0.04	0.47	4.02	-5.13	-22.72	
SpiceJet Ltd.		-0.54	-0.16	0.23	5.65	1.92	5.23	6.60	
TATA SIA Airlines Ltd.		0.21	-1.78	-0.47	0.00	2.44	-0.99	-4.34	
AIR India Express Ltd.		2017	-0.92	-0.53	0.23	0.22	0.89	0.04	-2.74
Air India Ltd.	-0.59		-1.12	0.04	0.53	0.51	-1.08	-3.42	
AirAsia (India) Ltd.	-0.47		-1.20	-0.31	0.00	2.32	-0.71	-5.81	
Blue Dart Aviation Ltd.	0.00		0.06	0.22	0.00	1.67	2.49	4.96	
Go Airlines (India) Ltd.	-0.41		-0.03	0.15	0.06	1.10	1.10	1.53	
Interglobe Aviation Ltd.	0.27		0.20	0.18	12.84	1.08	9.93	20.21	
Jet Airways (India) Ltd.	-0.50		-0.52	0.24	0.49	1.70	1.55	0.35	
Jet Lite (India) Ltd.	-0.52		-10.87	0.05	0.59	6.02	-7.14	-34.69	
SpiceJet Ltd.	-0.59		-0.40	0.23	5.22	2.07	4.76	5.01	
TATA SIA Airlines Ltd.	-0.17		-2.51	-1.12	0.00	3.10	-3.80	-13.54	
AIR India Express Ltd.	2016		-0.85	-0.54	0.25	0.24	0.76	0.05	-2.20
Air India Ltd.		-0.37	-0.86	0.05	0.39	0.42	-0.65	-1.23	
Blue Dart Aviation Ltd.		-0.23	0.08	0.34	0.15	2.22	3.25	4.44	
Go Airlines (India) Ltd.		-0.69	-0.11	0.09	0.04	0.93	0.30	-0.97	
Interglobe Aviation Ltd.		0.14	0.16	0.26	8.55	1.14	7.49	15.32	
Jet Airways (India) Ltd.		-0.45	-0.16	0.15	0.44	1.11	1.15	1.29	
Jet Lite (India) Ltd.		-0.39	-11.62	0.09	0.33	4.03	-9.88	-36.21	
SpiceJet Ltd.		-0.68	-0.58	0.24	3.03	1.79	2.90	1.68	
TATA SIA Airlines Ltd.		0.10	-1.54	-0.99	0.00	1.76	-3.25	-7.79	
AIR India Express Ltd.		2015	-0.88	-0.63	0.15	0.27	0.68	-0.47	-3.30
Air India Ltd.			-0.50	-0.82	0.00	0.32	0.44	-0.95	-2.37
Blue Dart Aviation Ltd.	-0.10		0.07	0.34	0.12	2.33	3.50	5.29	
Go Airlines (India) Ltd.	-0.69		-0.21	0.11	0.04	1.33	0.64	-1.16	
Interglobe Aviation Ltd.	0.02		0.03	0.20	-0.50	1.19	1.61	4.28	
Jet Airways (India) Ltd.	-0.51		-0.22	0.03	0.30	1.07	0.48	-0.27	
Jet Lite (India) Ltd.	-0.39		-8.66	-0.63	0.30	3.82	-8.94	-31.46	
SpiceJet Ltd.	-0.70		-0.85	-0.18	0.86	2.01	0.10	-4.37	

Table above exhibit the Altman Z-score of select four airlines. Altman Z-score model was developed by Edward Altman in 1968. It gauges the likelihood of bankruptcy of business concern within two years, using multiple corporate income and balance sheet values. Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies. The Z-score is calculated using liquidity, profitability, leverage and turnover parameters..

Altman Z – score= $1.2X_1+1.4X_2+3.3X_3+0.6X_4+1.0X_5$, Altman
Z – score= $1.2X_1+1.4X_2+3.3X_3+0.6X_4+1.0X_5$,
here X_1 working capital/total asset, X_2 retained earnings/total
asset, X_3 EBIT/total X_4 Market capitalization/ book value of debt, X_5 total
sales/total assets.

Score below 1.81 signifies high probability of bankruptcy; 1.81 to 2.99 is
considered as grey zone and score of above 2.99 is considered as safe zone.

This model was applicable for manufacturing sector. For predicting the
bankruptcy of service sector firms in emerging market modified Atman score was
proposed (Altman [2013](#)). As per the model,

Z – score= $3.25+6.56X_1+3.26X_2+6.72X_3+1.05X_4$, Z – score= $3.25+6.56X_1+3.26$
 $X_2+6.72X_3+1.05X_4$,

here X_1 Working capital/total assets, X_2 retained earnings/total
assets, X_3 EBIT/total assets, X_4 Market capitalization/book value of debt.

Score above 2.6 is considered safe zone, 1.1 to 2.6 as moderate risk and score
below 1.1 indicates high risk of bankruptcy.

Company name	Year end	EBIT margin	Net profit margin	EBITDA margin	ROTA	ROE	ROCE	Asset turnover	Interest coverage	
AirAsia (India) Ltd.	2019	-25.96	-26.71	-24.82	-87.14	0.00	0.00	3.26	-18.70	
Go Airlines (India) Ltd.		4.22	1.97	1.43	3.26	0.00	17.47	1.66	1.19	
Interglobe Aviation Ltd.		1.45	0.55	4.12	0.68	2.24	4.38	1.24	0.74	
SpiceJet Ltd.		-1.67	-3.47	1.83	-7.16	0.00	-15.11	2.06	-0.93	
Air India Ltd.	2018	-2.93	-23.20	4.80	-11.58	0.00	-2.33	0.50	-0.14	
AirAsia (India) Ltd.		-6.17	-6.89	-5.64	-21.46	0.00	0.00	3.11	-8.50	
Blue Dart Aviation Ltd.		4.13	0.38	14.56	0.61	5.31	9.36	1.60	1.23	
Go Airlines (India) Ltd.		9.45	3.27	8.35	4.53	0.00	22.75	1.38	2.17	
Interglobe Aviation Ltd.		15.38	9.74	17.27	11.72	41.73	44.51	1.20	8.57	
Jet Airways (India) Ltd.		0.32	-3.30	2.99	-6.10	0.00	4.00	1.85	0.09	
Jet Lite (India) Ltd.		0.96	-24.48	1.00	-120.94	0.00	0.00	4.94	0.04	
SpiceJet Ltd.		8.88	7.31	11.86	16.14	0.00	76.24	2.21	5.65	
TATA SIA Airlines Ltd.		-20.09	-20.17	-19.26	-65.09	0.00	0.00	3.23	-244.64	
Air India Ltd.		2017	-8.41	-28.78	8.76	-13.83	0.00	-5.78	0.48	-0.41
AirAsia (India) Ltd.	-14.33		-15.02	-13.40	-34.79	0.00	0.00	2.32	-20.75	
Blue Dart Aviation Ltd.	3.65		0.51	13.39	0.99	6.86	9.77	1.95	1.25	
Go Airlines (India) Ltd.	14.40		5.65	13.27	6.66	0.00	22.99	1.18	2.41	
Interglobe Aviation Ltd.	13.73		8.93	16.19	10.62	52.01	41.33	1.19	6.28	
Jet Airways (India) Ltd.	10.83		6.88	13.94	9.32	0.00	46.27	1.36	2.74	
Jet Lite (India) Ltd.	0.71		-24.35	0.76	-123.86	0.00	0.00	5.09	0.03	
SpiceJet Ltd.	8.49		6.96	11.08	14.76	0.00	142.68	2.12	5.53	
TATA SIA Airlines Ltd.	-37.25		-37.30	-36.12	-123.15	0.00	0.00	3.30	-707.17	
Air India Ltd.	2016		3.58	-19.19	12.93	-8.24	0.00	2.01	0.43	0.16
Blue Dart Aviation Ltd.		4.63	0.91	15.23	1.95	12.05	12.59	2.15	1.42	
Go Airlines (India) Ltd.		13.58	5.28	9.51	5.79	0.00	20.13	1.10	1.97	
Interglobe Aviation Ltd.		19.66	12.31	22.80	15.40	129.29	61.54	1.25	9.06	
Jet Airways (India) Ltd.		9.59	5.51	13.90	6.17	0.00	27.26	1.12	2.35	
Jet Lite (India) Ltd.		4.02	-1.84	2.34	-6.35	0.00	0.00	3.45	0.69	
SpiceJet Ltd.		11.32	8.84	13.60	16.50	0.00	197.86	1.87	4.56	
TATA SIA Airlines Ltd.		-57.88	-57.99	-56.42	-101.88	-3058.15	-3052.65	1.76	-555.27	
Air India Ltd.		2015	-8.84	-29.59	0.89	-13.01	0.00	-5.07	0.44	-0.43
Blue Dart Aviation Ltd.			4.30	0.67	14.69	1.31	10.24	10.70	1.96	1.21
Go Airlines (India) Ltd.	7.59		0.91	7.89	1.49	0.00	17.19	1.63	1.24	
Interglobe Aviation Ltd.	14.33		9.37	16.51	12.25	317.71	49.28	1.31	13.34	
Jet Airways (India) Ltd.	-4.62		-9.01	2.94	-9.74	0.00	-12.07	1.08	-1.05	
Jet Lite (India) Ltd.	-15.92		-19.68	-16.09	-65.23	0.00	0.00	3.32	-4.24	
SpiceJet Ltd.	-9.96		-13.10	-8.71	-24.74	0.00	-94.41	1.89	-3.16	
Median			3.62	-0.73	6.35	-2.75	0.00	4.19	1.71	0.72
Mean			-1.52	-9.19	1.66	-21.67	-65.28	-61.77	1.93	-39.27

Table above exhibits the Altman Z-score of Airlines in India computed using traditional Altman model and modified Altman model for emerging market. In the backdrop of unavailability of market capitalization information of all the airlines, the enterprise value *minus* book value of debt is considered as value of equity. The findings of both the models lend credence to the sustainability of Indigo Aviation and SpiceJet. Nevertheless, the decline in the scores is very likely, due to deteriorated finances amid lockdown and grim prospect of passenger demand ahead.

Post-lockdown traffic

• Grim passenger traffic

Covid-19 pandemic has proven highly disruptive. It has wreaked havoc with the

global economy, economically, socially and financially. The aftermath of the disasters is perhaps more threatening, endangering the survival and sustainability of various businesses. Airline industry is worst hit sector, which is expected to lose USD 84.3 billion in 2020, the highest loss the sector has ever witnessed (IATA). Owing to the restricted movements and destinations, the industry expects severe decline in its passenger load, perhaps, a significant parameter of airlines profitability. As provided in , month of March has witnessed sharp decline in PLF of airlines all across the globe.

Other than the loss amid suspended operation, the future prospect of the industry seems more dreadful for sustainable operations of airlines. In the backdrop of aggressive multiplication in covid cases, the likelihood of normal passenger traffic seems distant. Restricted movements, fear psychosis, declined tourism, reduced commercial activities, curbed disposable income is expected to have significant impact on passenger airlines demand. Tourism sector is considered as significant driver/ stimulator of airlines business. An important aspect of international traffic to and from India pertains to trend in foreign tourist arrivals in India. The months from April to July are generally observed as peak season for the airlines, with the maximum Passenger load factor (PLF). In the FY 2018–2019, YoY growth in PLF is positive only in the month of April & July. As per the DGCA report, 33% of international passenger traffic during FY 2019 was attributed to tourism sector. In view of expected decline in tourism amid covid pandemic, the airline business foresees a major disruption ahead. According to ICAO united Aviation study, depending upon the duration and intensity of outbreak, control measures and economic and psychological impact, the global airlines industry may witness decline of 33 to 60% seats offered, reduced passenger traffic from 1878 to 3227 million and gross operating revenue loss of approximately USD 244 to 420 million for the year 2020. As per the report, the estimated decline is the worst ever observed before during any of the crisis, economic or otherwise.

Airlines in India are vulnerable to high operating leverage. Operating leverage signifies an ability of a firm to use its fixed operating expenses to magnify the impact of change in its sales on its operating profit. Degree of operating leverage (DOL) is calculated as Total Contribution /Total EBIT. High the degree of operating leverage, higher will be the magnifying impact of increased operations/sales on EBIT. For instance, 2 times of DOL implies that if sales increase by 10% than EBIT will increase by 10×2 , i.e., 20 times. It is worth mentioning, that use of fixed operating cost signifies the risk in operations; the risk of repaying the fixed charges in case income fall short of expectations. Performance of high levered firms significantly reduced compared to their competitors in industry downturns due to enhanced cost of financial distress. In the backdrop of severe downturn expected in the industry, the highly levered airlines in India are likely to suffer heavy losses. It exhibits the degree of operating leverage of four airlines in India and the consequences on the EBITDA of the airlines, with the different expectations of possible decline in sales amid covid impact. The rationale

of including select airlines for analysis is the unavailability of the data for the year 2019. As provided, Air Asia (India) is in losses; Go Air, SpiceJet and Interglobe are reflecting alarming degree of operating risk. High the DOL, higher will the expected losses. With 14.76 times of DOL, EBITDA of Interglobe Aviation is expected to decline by 7.38 times with 50% dip in its revenue, i.e., from ₹ 1173.94 lac crores of EBITDA to negative—₹ 7488.06 lac crores.

- **Cost of social distancing**

Social distancing practices initiated by regulatory authorities and airlines to prevent infection outbreak will be financial hit on airlines pocket. Declined PLF coupled with cost of social distancing is expected to threaten the commercial viability of airlines operations. Measures such as leave empty seats between passengers in the aircraft will reduce the seating capacity by 30 to 50%. In India, DGCA laid down social distancing norms and sanitization norms for airlines to be followed during passengers handling, sanitizing aircrafts, check-points and baggage, PPE kits, medical team, etc. This cost will further dig the profitability of the airlines. The DGCA advisory of blocking middle seat, will compressed the seat offering capacity of airlines 60 to 70%. PLF is an important driver of airline financial performance. Based on a sample of 122 airlines, on average, airlines break even at a load factor of 77%. Notwithstanding the high PLF of 70 to 75%, airlines are witnessed struggling for break-even. As per IATA analysis, out of the sample of 122 airlines across globe, only 4 airlines will manage break-even below 62%. In the present scenario, where airlines PLF is expected to decline by 30 to 50%, the financial feasibility of airlines operations seems scary. Additionally, the cost of implementing other social distancing and sanitization norms will further enhance the airlines' costing. Airlines perhaps find it difficult to cover the variable cost of their operations.

- **The Road ahead**

Post-lockdown world will be not be the business as usual. The airline industry combat with Covid-19 and its after effects seems taxing and perhaps long drawn-out. The sustainability and survival of airlines warrants for turnaround changes in their strategies and business model to strengthen their financial stamina. Overcapacity, intense competition and high operating cost are the major factors affecting airlines performance. To overcome the present challenge of covid crisis, optimal utilization of resources, cooperation rather than competition, and cost optimization seem to be the possible way-outs for sustaining with commercially viable take-off on rough terrain.

- **Cargo-cum-passenger traffic**

Air cargo business despite of being a least preferred choice of airlines compared to passenger business, has an important role to play in the airline's profitability. Threatening subsistence with the growing challenges of the industry warrants for

major structural changes in the present business model. Accommodating the cargo business in the existing business model perhaps be an effective steps towards the improved performance. The globalization of the supply chain has resulted in competitive pressure on the air cargo industry. With independent and improved supply chain strategies, airlines can positioned themselves in the global supply chain market. High degree of cargo business is evident to improve the operational efficiency of combination as well as cargo airline. Airlines with a high share of cargo business in their overall operations are significantly more efficient than airlines. However, challenges for handling cargo makes it less attractive to airlines compared to passenger business. Combination airlines use the belly space of passenger aircrafts to substantiate the cargo. These airlines often experience the problem of freight orders exceeding the airline's fixed capacity, particularly for hot selling routes.

In present scenario, where a severe decline in passenger traffic as well as restricted destinations is expected amid infection paranoia, cargo business perhaps can be used a rescue boat to safeguard the airlines from expected the crash landing. It is a saying in management accounting, that in short-term if profits can't be maximized, focus should be on minimizing the losses. For optimum capacity utilization, cargo-cum-passenger model can be an effective way-out. At present nearly 8% of freight business in India is done through belly cargo. Only Blue Dart is fully dedicated airlines for freight cargo business. In view of restricted passenger movements, from January onwards airlines across the globe have started engaging passenger aircrafts entirely for cargo. Indigo followed by SpiceJet have also joined the race.

It portray the average seat capacity of scheduled airlines in Indian during FY 2018–2019. As provided, most of the airlines have the average capacity of 160 to 180. With the expected 30–35 decline in passenger traffic in current fiscal, accommodating cargo load for unutilized seats can mitigate the revenue losses of the airlines. Amid low passenger traffic, dedicating small aircrafts (with less seating capacity) for passenger business relatively will be more financially viable for the airlines. Big aircrafts can be temporarily converted in cargo planes for carrying supplies. Depending upon the cargo load, large capacity planes can be fully dedicated or utilized as passenger cum cargo planes. In view of DGCA advisory to leave middle seat vacant, some temporary arrangements for accommodating cargo in provided space can be worked out. For instance, vacant seat can be used for carrying passenger's luggage and the side carriers can be utilized for lesser weights parcels. Also, the space used for accommodating passengers' check-in luggage can be utilized for cargo business. The passenger cabin can be restructured in such a manner that its front and back seats can be used for passenger traffic and middle space can be utilized for cargo services.

- **Alliance for resource sharing**

Airline industry is known for ugly competition and fare wars that perhaps has been the prime reason for their meagre profit margin. In the backdrop of trimmed passenger traffic expected for upcoming months, pooling of resources perhaps can be useful step in this direction. Airlines industry needs to adapt cooperation model instead of competition. Alliance in the airline industry is a widely used strategy to stimulate competition. Alliances are useful rescue for the firms with vulnerable strategic positions either because of competition or when they are attempting pioneering technical strategies. They enhance value by facilitating optimal utilization of pooled resources. The alliance, perhaps, can be better way-out for balancing these demand and supply fluctuations. Alliance for aircraft sharing can possibly assist the airlines in optimizing their aircraft capacities and mitigating their operating losses.

- **Dues waiver**

The covid economic impact on aviation is extreme and perhaps uncertain. Higher the reduction in PLF, more difficult will be the attainment of break-even for the airlines. The lockdown of two months with zero revenue and spiraled fixed charges, particularly, loan instalments and lease rental, perhaps has drained out the liquidity of airlines. With the trimmed air traffic estimated in the coming months, there seems meagre probability of recovering the past losses. With the reduced PLF the recovery of variable cost of operating a flight will be challenging, threatening the operation viability of airlines. It portray projection done by ICAO regarding commercials of aviation sector. As provided, in all the situations the operating losses are confirmed, with the only difference in the magnitude of losses from high to low. In the given situation, bailout package, particularly, waivers of interest charges pertaining to lockdown period, reduced landing and parking charges, ATF taxes, seems essential for the stability of the sector. The cost waivers by reducing operating cost of airlines will enhance the airlines probability of attaining break-even. In fact, in view of dipped consumable income, the reduced cost possibly be a relief for passengers in terms of affordable flying. Air travelers rate assurance and financial conditions of airlines significantly affect the quality of air travel. Product quality decreases when airlines are in financial distress. Given the deteriorating finances and demand crunch ahead, airlines service quality and safe operations may be compromised. Further, the reasonable ticket cap as a safeguard to airlines as well as passengers' interest may be implemented.

CHAPTER-4

RESEARCH DESIGN, METHODOLOGY AND PLAN

DATA SOURCES

I have collected some valuable information related to the procedures and precautions taken by the Govt. to fight with COVID-19. IATA, WHO, DGCA, ICAO and many other organizations such as EACCC, FAA, ACI, TIACA, CANSO and several others collaborated in order to fight Corona Virus together standing united as one. So, the information collected is from:

- *Financial reports of companies involved in the market
- *Whitepapers, research-papers, and news blogs
- *Company websites and their product catalog
- *Government Organizations Reports

RESEARCH DESIGN

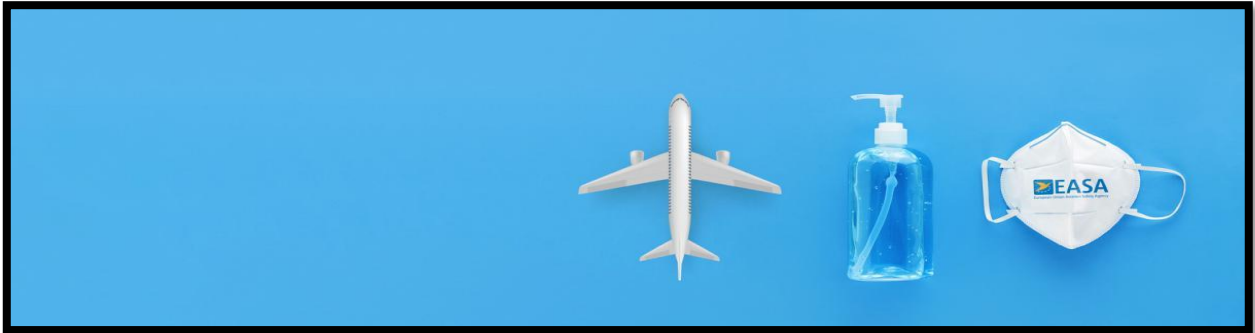
My research is descriptive research. I have collected information from secondary sources such as the annual Passenger movement Statistics from various agencies such as IATA, CAPA.

This is to basically highlight the downfall of the market from a very growing graph with a steep high in demand to reaching a sunken graph line. Who are the major stakeholders in the market? How the Market is going to respond to such a strange stimulus.

In secondary research, different approaches have been adopted to derive the market value, market growth rate and analyze trends in the industry due to the COVID-19 pandemic. In the report, the analysis of the country is provided by analyzing various regional players, laws & policies, consumer behavior, macro-economic factors, and impact of the pandemic.

Numbers extracted from secondary research have been authenticated by conducting proper primary research. It includes tracking down key people from the industry and interviewing them to validate the data. This enables the analyst to derive the closest possible figures. Besides, an expected recovery timeline of the industry will also be provided with the best- and worst-case scenario which will aid the

companies to take their future steps in the global aviation industry.



SURVEY QUESTIONS

Q1. How often do you fly?

Q2. How have this Pandemics affected you?

Q3. Which is the most reliable source of travelling from one place to another?

Q4. What precautions are you going to take while commuting daily on a regular basis.

Q5. Do you think Personal Protective Equipment (PPE) should be held compulsory for stepping out?

Q6. Any advice for Public.

Q7. How do you see change in yourself after this Lockdown?

DATA ANALYSIS PROCEDURES

We must adhere to respective procedures and precautions led down by the highest of the authorities related to Aviation. Also, in our daily lives we must use PPE, keeping in mind the necessities to be followed in today's era.

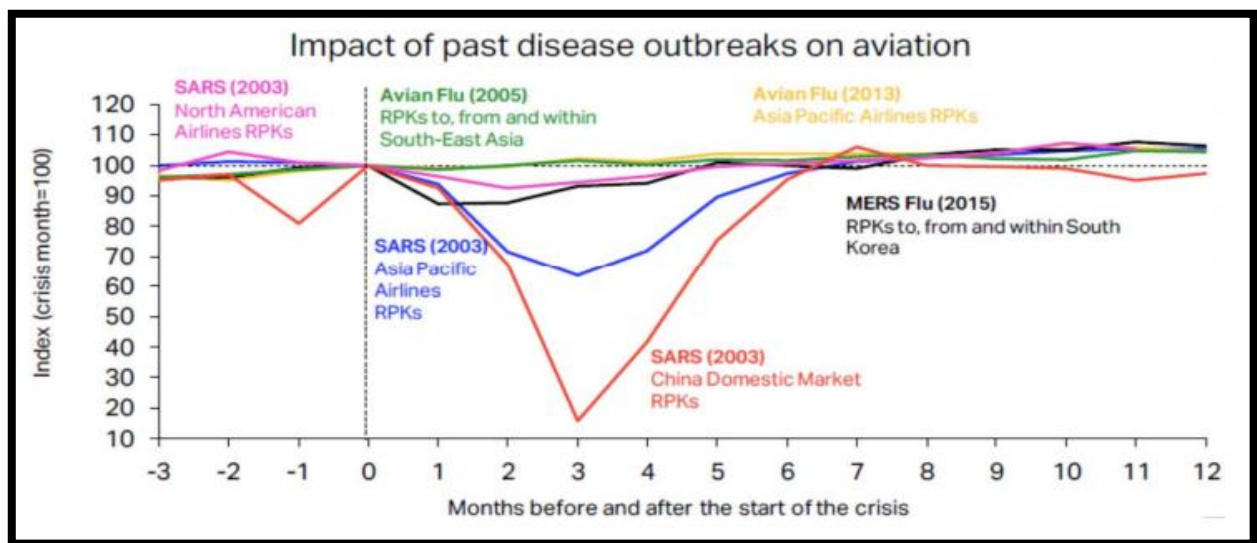
This Virus is a deadly virus and has already taken a toll to a very high count. Even the Big Nations Fully Developed ones are struggling to come out of this pandemic. The whole world is mourning for the left ones, fighting with COVID-19 in order to survive substantially and world's economy has come to stake.

CHAPTER-5

FINDINGS AND ANALYSIS

ESTIMATED RESULTS IN BRIEF

The latest estimates indicate that the possible COVID-19 impact on scheduled international passenger traffic for the first 9 months of 2020, compared to Baseline (business as usual, originally planned), would be:



V-shaped path (a first sign of recovery in late May)

- Overall reduction ranging from 41% to 56% of seats offered by airlines
- Overall reduction of 705 to 963 million passengers
- Approx. USD 160 to 218 billion potential loss of gross operating revenues of airlines

U-shaped path (restart in third quarter or later)

- Overall reduction ranging from 57% to 67% of seats offered by airlines
- Overall reduction of 961 to 1,117 million passengers
- Approx. USD 218 to 253 billion potential loss of gross operating revenues of airlines

The impacts depend on duration and magnitude of the outbreak and containment measures, the degree of consumer confidence for air travel, and economic conditions, etc.

Illustrative scenarios: Baseline, V-shaped and U-shaped

3 scenarios to assess the possible economic impact of COVID-19:

– **Baseline:** counterfactual scenario, in which the COVID-19 pandemic does not occur, that is, originally-planned or business as usual.

– **Scenario 1:** V-shaped path, normal shape for recession, a brief period of contraction followed by quick/smooth recovery

– **Scenario 2:** U-shaped path, prolonged contraction and muted recovery, possibility of not to return to trend line growth (L-shaped)

UNCERTAINTIES AROUND THE OUTLOOK

How long will the pandemic last and what will be the severity levels?

How deep and how long will the global recession be?

How long will lockdowns and travel restrictions continue?

How fast will consumer confidence in air travel be restored?

How long can the air transport industry withstand the current financial adversity?

Due to extreme uncertainty, 6 different paths up till 3rd Quarter 2020 are considered

Baseline (counterfactual, no COVID-19 pandemic)

– Originally-planned or business as usual: trend line growth from 2019 level

• **Scenario 1** (V-shaped path, a first sign of recovery in late May)

– **Path 1:** Smooth capacity recovery to 75% of Baseline level by September but weak demand return

– **Path 1a:** Strong capacity rebound to 90% in tandem with quick demand return

– **Path 1b:** Slow progression to recover 50% capacity by September with downside risk in demand

• **Scenario 2** (U-shaped path, restart in 3Q or later)

– **Path 2:** Slow progression of capacity recovery to 40% of Baseline with sluggish demand growth

– **Path 2a:** Strong capacity rebound to 70% by September, outpacing demand

recovery

– **Path 2b:** Prolonged downturn towards September or later with marginal summer adjustments

DATA USED FOR SCENARIO ANALYSIS

- **Seat capacity (Baseline):** OAG airlines schedule data; Route Online; and airline websites
- **Seat capacity (actual):** ICAO ADS-B operational data
- **Load factor:** ICAO long-term traffic forecasts (LTF); ICAO statistical reporting forms; IATA economics data; and airline news release
- **Average fare (yield):** ICAO-ICM MIDT passenger origin-destination data; and ICAO cost studies
- **Macroeconomic factors:** Income elasticity of demand estimated for ICAO LTF; and IMF economic outlook data.

As the number of global COVID -19 corona virus cases continues to grow, world airline capacity declines are accelerating weekly.

Asia Pacific has been hardest hit, although the rate of seat decline has slowed, mainly reflecting a flattening of the curve of COVID-19 cases in China. By contrast, the rate of fall in Europe, Middle East and Africa is accelerating. North America is relatively stable so far, while Latin America capacity is still growing (but growth has slowed).

Current OAG schedules data (combined with seat configuration data from the CAPA Fleet Database) show a year-on-year fall in global seat capacity of -14.7% for the week of 16-Mar-2020 – the fastest drop so far this year. They also project that the decline will narrow to -4.0% by the end of Apr-2020.

However, these statistics inevitably lag reality, and will do so until forward looking schedules data fully reflect recent (and still evolving) airline plans to shrink further. Moreover, demand is falling faster than capacity.

World Health organization data on COVID -19 cases are likely to remain the best (and only) lead indicator for aviation while the current crisis lasts.

CHAPTER-6

INTERPRETATION OF RESULTS

At first, COVID-19 looked like previous crises: a hit to traffic and revenue followed by a return to normal, even if there was uncertainty about the depth and duration of the hit.

The revenue reduction faced by airlines this year as a result of COVID-19 far exceeds the impact from previous crises. It has the dimensions of a world war. Furthermore, a global recession is now coming in 2020/21 and this means that a recovery will take longer.

Moreover, even after recovery, 'normal' will not be the same as before. There are likely to be lasting impacts on demand for air travel. As a result of lockdowns, or near lockdowns, across the planet, people are fast learning new ways to live their lives, both at work and at leisure.

More than ever before, technology is now a more realistic and more widely used substitute instead of business travel by air. Even after COVID-19 has passed, aviation may also face a residual loss of confidence from passengers over travel, for fear of close contact with others.

In addition, the crisis may give an additional push to environmental campaigns against aviation.

Air cargo traffic tends to be more sensitive to economic growth than passenger demand and also a lead indicator. Already showing negative growth in 2019, cargo contributed only 12% of world airline revenue last year.

However, given air cargo's usual added sensitivity to economic downturns, it is ironic that it is currently proving more robust than passenger traffic. Crucial for keeping supply chains open, particularly for food, pharmaceuticals and other essential sectors, air freight is not subject to the same COVID-19-related restrictions as passengers.

Freighters in service are relatively stable compared with passenger aircraft, particularly among wide-bodied aircraft. However, passenger belly space is a massive contributor to cargo capacity. Reduced passenger networks mean that cargo capacity has fallen heavily year on year in all regions, but less so than passenger capacity.

According to an IATA analysis published on 31-Mar-2020, airline industry revenue for 2Q2020 is expected to fall by 68% year-on-year. This is less than the anticipated 71% drop in RPKs, thanks in part to cargo revenue, but not by much.

Cargo revenue certainly helps but is not enough.

The global Aviation Industry is concerned with the manufacturing and operations of all types of aircraft and related services during transportation. According to the World Bank Organization, in 2018, around 4.2 billion passengers were carried around all across the globe. Factors that were driving the aviation industry before the COVID-19 pandemic include increasing disposable income all across the globe, the introduction of low-fare airlines, increasing global economic activities, new travel trends, and many more. Moreover, replacement of aging commercial aircraft has also contributed significantly to the market growth.

The key factors affecting the aviation industry after the pandemic include the decline in tours and travels as many international as well as domestic flights are getting cancelled across the globe to curb the transmission of the virus. The government across the globe are cancelling the visa of foreign people and locking down affected area which is also one of the major reasons behind the slowing down of the aviation industry.

The global Aviation industry report is segmented into passenger airlines, cargo airlines, aircraft manufacturing companies, airports managing companies, and catering & other service providing companies. Out of which, passenger airline segment is expected to get affected most along with catering & other service providing companies. Cancellation of airplane order may also be witnessed soon by the airline companies affecting the airplane manufacturing companies.

Effect of COVID-19 on the aviation industry can be observed in each region including North America, Europe, Asia-Pacific, and Rest of the World. For instance, in the US, since the national health emergency due to the COVID-19 outbreak, most of the region is on complete lockdown, which is in turn restricting the domestic travel in the country. Countries such as Italy, France, Spain, and India are under complete lockdown and all kinds of flights are stopped until further notice.

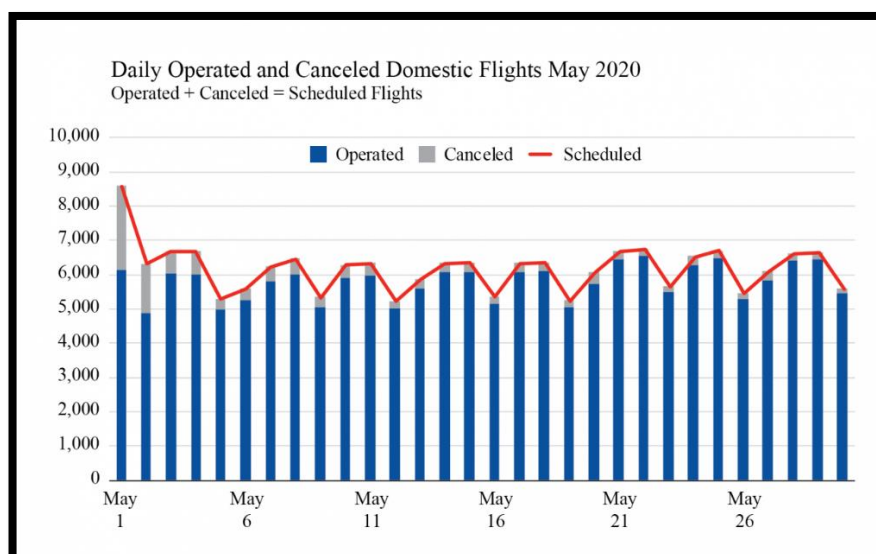
Key companies of the aviation industry that are getting affected globally include

Qatar Airways, Emirates, China Eastern Airlines, Lufthansa, Boeing, Airbus, American Airlines Group Inc., and Delta Air Lines. For instance, Qatar Airways suspended all of its flights to and from Italy that was one of the worst-hit countries by the pandemic of COVID-19. Additionally, the company has also decided to scale back its operation which includes cutting flights and removing less economical aircraft. Qatar Airways grounded all its ten A380 aircraft until 31 of May 2020, as a precautionary measure of the COVID-19 outbreak.

Moreover, Emirates also halted most of its passenger operations because of the pandemic. Now, airlines and airport managing companies are seeking bailout packages from the government. For instance, airport management companies in Europe are expected to incur a loss of \$15.4 billion due to the pandemic. It is estimated that airports in Europe will receive 700 million fewer passengers which is 28% less than expected earlier.

FLIGHT CANCELLATIONS

Government regulations in Europe and the United States mandate airlines to refund fares when flights are cancelled, but in many cases, airlines have instead offered vouchers or travel credits that must be used by the end of the year. (Some airlines have extended the voucher window to May 2022). Despite pleas from industry lobbyists to expand the regulations to allow travel credits, the US Department of Transportation has reiterated that airlines are obligated to provide refunds for cancelled flights. Travel vouchers are currently allowed when passengers cancel travel plans due to travel warnings, stay-at-home orders, and other restrictions.



As passenger flights were canceled, the cost of sending cargo by air changed rapidly. The cost of sending cargo across the Pacific Ocean tripled by late March. Adjusted cargo capacity fell by 4.4% in February while air cargo demand also fell by 9.1%, but the near halt in passenger traffic cut capacity even deeper as half of global air cargo is carried in passenger jets' bellies. Air freight rates rose consequently, from \$0.80 per kg for transatlantic cargoes to \$2.50-4 per kg, enticing passenger airlines to operate cargo-only flights, while cargo airlines bring back into service fuel-guzzling stored aircraft helped by falling oil prices.

At the end of March, cargo capacity was down by 35% compared to the previous year: North America to Asia Pacific capacity fall by 17% (19 % in the opposite direction) Asia-Pacific to Europe was down by 30% (reverse: -32%), intra-Asia was down by 35%. Lagging the capacity reductions, demand was down by 23% in March, resulting in higher freight rates: from China/Hong Kong, between March 2 and April 6, +158% to Europe and +90.5% to North America.

CONCLUSION AND SCOPE FOR FUTURE WORK



Present paper attempts to analyze the vulnerability of airlines in India to withstand Covid-19 after effects. Lockdown of two months has been drastic for the fragile airlines business distressed with thin margins, liquidity crisis, over mounting fixed cost and debt. Zero revenue, albeit spiraling fixed expenses has been a drain on the cash reserves of airlines dragging them towards insolvency. Above all, the sector is viewing grim recession ahead. In this backdrop, the operation viability of airlines seems conditional on the recovery of variable expenses. Sustainability of airlines warrants of turnaround changes in their revenue strategies and operating models. Focus on minimizing losses rather than profit maximization possibly can help the airlines to combat current situation.

On 5 March 2020, the International Air Transport Association estimated that the airline industry could lose between US\$63 to 113 billion of revenues due to the reduced number of passengers. IATA had previously estimated revenue losses of around US\$30 billion two weeks before their 5 March estimate. By 17 March, IATA had stated that its 5 March estimate was "outdated", and that airlines would require \$200 billion in bailouts to survive the crisis. IATA further revised their revenue loss estimate in 24 March to be \$252 billion globally, a 44 percent drop.

Due to the sudden and large losses of revenue, airlines began to hold out against refunding cancelled flights and tickets to conserve cash, despite government

regulations. In Europe, airlines had successfully negotiated to defer some \$1.2 billion in air traffic control charges.

Oliver Wyman reported that Asian airlines reduced their available seat miles by 23 percent in March 2020. In Europe, the impact of the outbreak is expected to accelerate ((corporate consolidation in the airline industry. According to consultancy CAPA Centre for Aviation, most airlines would be bankrupted by the end of May 2020.

Air travel demand rose 2.4 percent year-on-year in January 2020, the lowest it has been since the April 2010 eruptions of though travel disruptions due to coronavirus only began in late January. By March, the number of flights had plummeted, with about 280,000 flights reported between 24 and 30 March 2020 compared to around 780,000 in a similar period the previous year. Despite a lack of passengers, regulations regarding flight slots initially compelled British airlines to fly empty planes to European airports in order to avoid losing their slots.

Fuel prices dropping (due to an oil price war between Russia and Saudi Arabia) by around a quarter could not compensate for the fall in demand. Google Trends indicates that airline customer service departments have received the largest rise in online searches between February and March 2020 than any other customer service department over that time period. Analysts expect airlines to reduce the size of their fleets as a result of the downturn and point out that this could be done either by modernizing fleets – hastening the retirement of older aircraft and maintaining planned deliveries of new, more fuel-efficient models – or by retaining older planes and reducing capital expenditure on new aircraft.

By mid-April, the inactive fleet ballooned to almost 14,400, over two-thirds of the 22,000 mainline passenger airliners, leaving 7,635 in operation stood: predominantly in Europe, where less than 15% are operating, than in North America (45%) or Asia (49%); and affecting narrow body aircraft (37%) less than wide body aircraft (27%). Consequently, demand for aircraft storage increased to the point where runways and taxiways in normally busy airports such as Frankfurt Airport and Atlanta Airport were closed to make room for storage.

In April global passenger capacity is down 91%; the ICAO anticipates 1.2 billion fewer travelers by September 2020 compared to a typical year, a revenue fall of

\$160-253 billion for the first nine months of 2020.

While European airlines owe \$10 billion for canceled flights, IATA is predicting a 55% fall in revenue compared to 2019, an \$89 billion hit, costing \$452 billion to the wider economy.

Most of the global airline industry is currently grounded. Although some routes are still managing to operate, and there is evidence of a gradual domestic air market rebound in China, 2020 will certainly not see the 4.6 billion annual passengers of 2019. The long-term trend of ever-rising air passenger numbers year on year has been brought to a dramatic and rapid halt.

What this means for the global airline industry is vividly on display at airports around the globe as terminals remain empty and aircraft occupy any available parking space.

Like the predominately national response to the virus, so the airline industry is also seeing a wide range of policies and practices tailored and implemented almost exclusively at the national level. This means that some airlines, thanks to well-chosen national policies, will fare better, while others will flounder.

This is because, beyond the multilateral single air market of Europe, the global industry remains firmly structured on a bilateral system. This web of country-to-country air service agreements is basically made up of trade treaties that governments sign with one another to determine the level of air access each is willing to permit. Even in Europe, the single air market essentially acts as one nation internally, while externally, individual European countries continue to deal with many countries on a bilateral basis.

The economic impact of the 2019–20 corona virus pandemic in India has been hugely disruptive. World Bank and credit rating agencies have downgraded India's growth for fiscal year 2021 with the lowest figures India has seen in three decades since India's economic liberalization in the 1990s. However, the International Monetary Fund projection for India for the financial year 2021-22 of 1.9% GDP growth is the highest among G-20 nations. Within a month unemployment rose from 6.7% on 15 March to 26% on 19 April. During the lockdown, an estimated 14 crore (140 million) people lost employment. More than 45% of households across the nation have reported an income drop as compared to the previous year.

The Indian economy is expected to lose over ₹32,000 crore (US\$4.5 billion) every day during the first 21-days of complete lockdown which was declared following the corona virus outbreak. Under complete lockdown less than a quarter of India's \$2.8 trillion economy is functional. Up to 53% of businesses in the country will be significantly affected. Supply chains have been put under stress with the lockdown restrictions in place; initially there was a lack of clarity in streamlining what is an "essential" and what isn't. Those in the informal sectors and daily wage groups are the most at risk. Many farmers around the country who grow perishables are also facing uncertainty. Various businesses such as hotels and airlines are cutting salaries and laying off employees. The live events industry has seen an estimated loss of ₹3,000 crores (US\$420 million).

Major companies in India such as Larsen and Toubro, Bharat Forge, UltraTech Cement, Grasim Industries, Aditya Birla Group, Tata Motors and Thermax have temporarily suspended or significantly reduced operations. iPhone producing companies in India have also suspended a majority of operations. Young startups have been impacted as funding has fallen. In the third week of March, ((Amazon and Walmart-owned Flipkart stopped the sale of non-essential items in India so that it could focus on essential deliveries. Other fast-moving consumer goods companies in the country have significantly reduced operations and are focusing on essentials. Some defense deals have been affected/delayed due to the pandemic such as the delivery of Dassault Rafale fighter jets. Stock markets in India posted their worst losses in history on 23 March 2020. However, on 25 March, one day after a complete 21-day lockdown was announced by the Prime Minister, SENSEX and NIFTY posted their biggest gains in 11 years, adding a value of ₹4.7 lakh crore (US\$66 billion) crore to investor wealth.

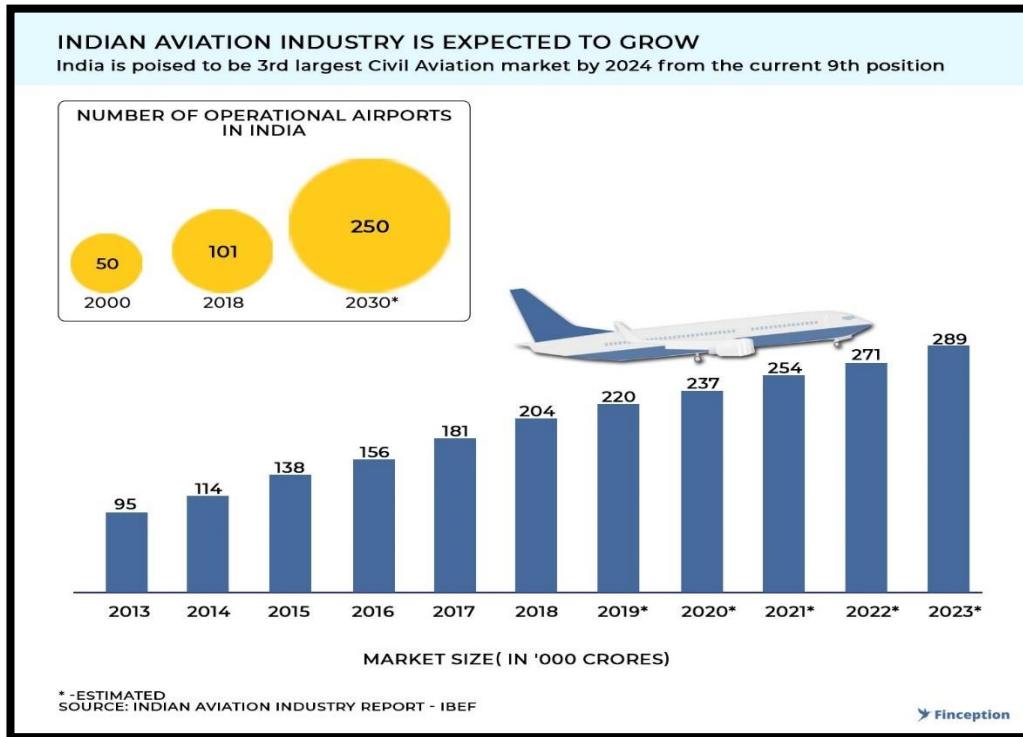
As per the recent report by the International Air Transport Association (IATA), the Covid-19 crisis is expected to impact over 29 lakh (2,932,900 to be precise) jobs in India's aviation sector.

A 47 percent decline in passenger traffic has been noticed in India amid the pandemic crisis. The impact on airlines' revenue would be US\$ 11.221 billion, indicating a fall in passenger revenue compared to 2019.

The IATA report shows that airlines in the Asia Pacific region will see the largest revenue drop of US\$ 113 billion and a 50 per cent fall in passenger demand in 2020 compared to last year.

Conrad Clifford, IATA's regional vice president, Asia Pacific has identified India, Indonesia, Japan, Malaysia, the Philippines, Republic of Korea, Sri Lanka, and

Thailand as priority countries that need to take action.



“Providing support for airlines has a broader economic implication. Jobs across many sectors will be impacted if airlines do not survive the Covid-19 crisis. Every airline job supports another 24 in the travel and tourism value chain. In the Asia Pacific, 11.2 million jobs are at risk, including those that are dependent on the aviation industry, such as travel and tourism,”

IATA is calling for a combination of direct financial support, loans, loan guarantees and support for the corporate bond market and tax relief to contain the situation.

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