

# Coronavirus- aviation's biggest challenge

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**Abstract**— An airline is an organization that provides air transport services for travelling passengers and cargo. There are over 5500 airlines in the world with ICAO codes. Not all airlines are formed and work equally. Airlines have a different market positions and operating methods. But from some point of view, we can see the same obstacles and difficulties which all must face. We may look at the economic challenges, demand and world crises as a great example. The principal purpose of the presented article is to discuss briefly the dilemmas of airlines, particularly recent coronavirus pandemic. In our analysis, we looked at some breaking points in the recent history of aviation. The current state was analyzed in the first phase. We performed an overall review, and the available data were summarized as forecasts before and after the health crisis. The main part of discussion was extended by displaying various changes in airlines' operation during the pandemic. Many airlines were forced to change their strategy, reduced their flight capacity, cut the frequency of flights and put their planes into hibernation mode. These differences have significant outcomes as bankruptcies, financial and employee losses etc. However, the coronavirus has started slowing the spread and most airlines are restarting their operations.

## I. INTRODUCTION

The airline industry is just like any other business, meaning that there are many types of airlines because their customers have various needs. As in most businesses, there is a sort of stratification of airlines. Airlines are either publicly or privately owned, however, in many countries, the government owns the airlines. An airline's position is determined by the amount of revenue it generates. It is then classified and placed in one of three categories: major, national or regional. Some 100,000 flights take off and land every day across the world. About 500,000 people are estimated to be up in the air at any given time. If the average length of a flight is two hours, six million people fly somewhere every day. Nearly 0.1% of the entire world's population. Air transport demand is expected to double over the next 20 years, but tons of airlines have gone out of business. Bankruptcies caused by flawed business models, tight competition, bad management, and unexpected costs caused them to shutter operations and, in some cases, go into administration and completely sell off assets. The load factor is one of the significant considerations for the economic analysis of the airline. Load factor and break-

even point are the determining factors in the line profitability deterrence process and lead the company to optimize pricing policy based on those parameters [10]. Since the birth of flight in 1903, air travel has developed as a crucial means of transportation for people and products. The hundred-plus years following the invention of the first aircraft have brought about a revolution in the way people travel. The airline business is a major industry, relied upon by millions not only for transportation but also as a way of making a living [1], [14]. According to [7] air travel is often justified as 'necessary' or 'unavoidable', in the sense that trips have purpose and value. Yet it is evident that people travel for reasons that may include forced and voluntary movement, with motives ranging from visiting friends and family, to leisure, or business. One of the most important factors in choosing a mode of transport is currently the speed of transport and the price. From a price point of view, air transport is starting to be comparable to other types of transport, while at the moment it has no competitor in terms of speed [8]. Passenger handling is one of the most important activities any passenger is obliged to carry out prior to boarding the plane to depart. For the handling process to be safeguarded, it is inevitable to perform the services involved in it fast and efficiently so as to prevent idle times or delays during the procedures potentially resulting in delay of flight [12]. Due to maintain the flow of the processes of air passengers, it is essential that services that ensure these all processes have been carried as quickly and effectively [13]. The aviation industry is one of the largest fields, in terms of employment, capital investment, innovation, revenue generation and simply anything. The number of airlines in the world comes in the count of thousands. Many new airlines are entering the business every year. However, it not a safe business ground to play in by any regards. A large number of factors affect the overall functioning of this industry and airlines need to be constantly aware of that. Many of those have long term effects while some need to be acted upon immediately. There are sufficient examples in which those who couldn't or didn't make the right decisions in time faced the butterfly effect and eventually got wiped out [6]. As an illustration, we can mention the current situation at airports which is currently not very favourable for the operation of scheduled flights on smaller or also bigger airports. The reason is simple, but

not surprising: competition, economic challenges and the current pandemic [11].

## II. WHY DO SO MANY AIRLINES KEEP COLLAPSING?

There is a question with no only one answer of reason but a combination of factors that cause airlines to file for bankruptcy. The airline industry is a significant contributor to economic development. It has not only increased world trade activity by enabling faster and more comfortable movement of passengers and goods but has also provided jobs to millions of people. According to IATA's director general and CEO, aviation provides more than 58 million jobs and contributes approximately \$2.4 trillion in GDP. This is expected to increase to 105 million jobs and \$6 trillion in GDP in 2034. Airlines come and go all the time and every day. Demand for air transport is supposed to increase by an average of 4.3% per annum over the next 20 years. If this growth is achieved, by 2036 the air transport industry will provide more than 15 million direct jobs and \$1.5 trillion of GDP to the world economy, about 46 million jobs, including indirect and induced contributions, and about \$3 trillion in GDP. These estimates are based on the air transport sector growing at the predicted rate. There are around 5,000–5,500 airlines in the world, as this is the number ICAO/IATA airline codes in current circulation. However, perhaps a more relevant information is that there are in among 770 and 800 commercial airlines globally performing scheduled flights [2]. But a large number of airlines go out of business every year. It is some reasons why this happens. One of the most difficult things about running an airline is projecting accurately the costs involved. Fuel costs are a significant expense for airlines, and the natural variation in the cost of this can make budgeting very difficult indeed. Fuel costs constituted an average of 23.5% of airlines' total expenses over the course of 2018. This was lower than the 32.3% in 2012 but hit 25% in 2019. These unpredictable changes can affect airlines and end with collapse. Another reason can be demand. It's often the case in aviation that supply exceeds demand. Overcapacity means the weakest airline will not survive. According to the IATA, flights in Europe have grown by more than 40% over the past decade. Simultaneously fares have dropped, putting pressure on profit margins and reducing the amount of finance. Growth of networks, fleet and services is usually a good thing for airlines, but it has to be done in a measured way. When carriers try to do too much, too soon, stability is lost and things start to go wrong [6].

Not only economic reasons or demand but also various crises may be the reason for the airline's bankruptcy. As example, it is possible to mention Oil crisis, Gulf War and also financial crisis in 2009. In the Fig. 1, illustrated by the ICAO, we can see different changes in airlines income during the various crises. The most significant impact in history has been the 11 September attacks, but the current health crisis has dramatic consequences as well.

## Global airline earnings

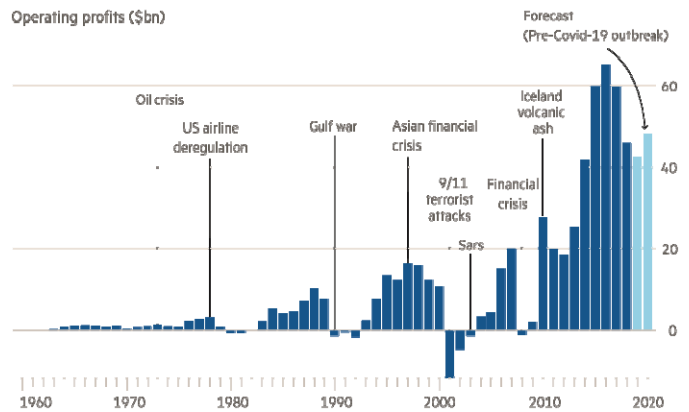


Figure 1 Operating profits of airlines  
Source: ICAO

For the airline industry, the last year-plus has been packed with highs and lows, and tough for airlines. Airlines around the world have experienced several bankruptcies, liquidations, and delays, with many being forced to close in 2019. Bankruptcies caused by dysfunctional business structures, airline rivalry, poor management and rising costs have forced them to close down operations or sell off assets entirely. Moreover, for many airlines, the costs associated with the Boeing 737 Max grounding and necessary inspections and repairs on some Boeing 787 Dreamliner engines were further issues. It seems that 2020 will be the same, particularly as the outbreak of coronavirus causes chaos in the travel industry [15].

## III. CORONAVIRUS AS THE AIRLINES INDUSTRY'S BIGGEST PROBLEM

Due to the current events related to coronavirus, air transport expects significant changes and an overall economic downturn. This situation can be considered one of the biggest crises in the world and will have a considerable impact on many airlines. Airports Council International (ACI) predicted that airport passenger traffic volume for the first quarter of 2020 will be down at least 12 percentage points compared to what it previously projected, with Asia-Pacific passenger traffic down 24% compared to previous forecasts. Before the coronavirus outbreak, global airport revenues for the first quarter of 2020 were forecast to reach almost \$39.5 billion. ACI now estimates a loss of revenue of at least \$4.3 billion [3]. Airlines around the world have cut capacity and suspended routes to many countries hit by the COVID-19 virus, beginning with the epicentre of the outbreak, China. Now, as the virus still spreads around the world, it has affected airlines in every region, including some of the industry's busiest transit points. Commercial flight cancellations due to COVID-19 began in January and were restricted primarily to Wuhan, a central China metropolis where the virus was first detected. Service suspensions quickly expanded across China—one of the world's busiest travel markets. Major

carriers like Delta, American Airlines, Qatar Airways and Air France went so far as to suspend all flights to mainland China, while dozens more stopped flying to some of its biggest cities. The list of places affected by flight suspensions has continued to grow, as the outbreak spreads in countries like South Korea, Japan, Italy, Iran, Spain, Germany and the USA. Travel has plunged due to an expanding number of travel limitations around the world, a near suspension of business travel and conferences and mass cancellations of events, including professional sports and concerts. The first airline which ends activity because of new virus is Flybe. Europe's largest regional airline has collapsed into administration with the loss of more than 2,000 jobs. The coronavirus' effect on flight bookings proved the beginning of the end for the Exeter-based airline, which operates nearly 40 percent of UK domestic flights. Lufthansa Group, for instance, reduced its capacity by up to 50% on all passenger airlines within its portfolio (Lufthansa, Austrian Airlines, SWISS and Eurowings) and is weighing up whether to place its entire Airbus A380 fleet of 14 aircraft into hibernation. In Australia, Qantas slashed capacity by 23% and delaying the planned inauguration of the carrier's Brisbane-Chicago route. Meanwhile, its low-cost subsidiary JetStar reduced flights from Australia to Vietnam and Japan by almost half. Qantas also have parked eight of its Airbus A380s until mid-September and use smaller aircraft instead. It's also cutting the frequency of flights to maintain overall connectivity and to protect its slots. Norwegian Air Shuttle and its numerous subsidiaries, known simply as Norwegian, are at risk to cease operations as the novel coronavirus continues to spread across Europe and governments across the world restrict travel to prevent future outbreaks. As demand for travel continued to plummet and the UK and Ireland Norwegian announced that 85% of its flights would be cancelled and thousands of employees would be let go, bringing the airline closer to the edge. The United Arab Emirates—where Dubai's Emirates Airline and Abu Dhabi's Etihad Airways connect passengers from as far afield as North America to Asia—informed its citizens and expatriate residents not to fly abroad until the outbreak subsides. Both airlines have helped staff to take time off to mitigate the need for layoffs while they reduce flying. Of all the regions affected by the virus, China and Asia-Pacific felt the first and still the most profound effects. For the month of February 2020, Chinese airlines cancelled about two-thirds of all their scheduled flights, and year-over-year traffic declined by 70 per cent during the period of the Lunar New Year celebrations. Despite the cancellations, continued overcapacity resulted in the grounding of some two-thirds of the entire Chinese fleet. Virgin Atlantic cut four-fifths of its flights and has asked staff to take eight weeks of unpaid leave. Ryanair and EasyJet grounded most of their fleets, while BA owner IAG is to cut capacity by 75%. Scandinavian airline SAS said it would temporarily halt most of its flights until conditions for commercial aviation improved. As a result, the airline said it would temporarily lay off up to 10,000 employees,

or 90% of its workforce. Among the U.S. carriers that have begun making massive flight suspensions is American Airlines, which recently said it will reduce its international flights by 75 percent into May and grounding its entire fleet of wide-body aircraft. Aeroflot, the Russian airline, announced that it was suspending flights to several international destinations [4].

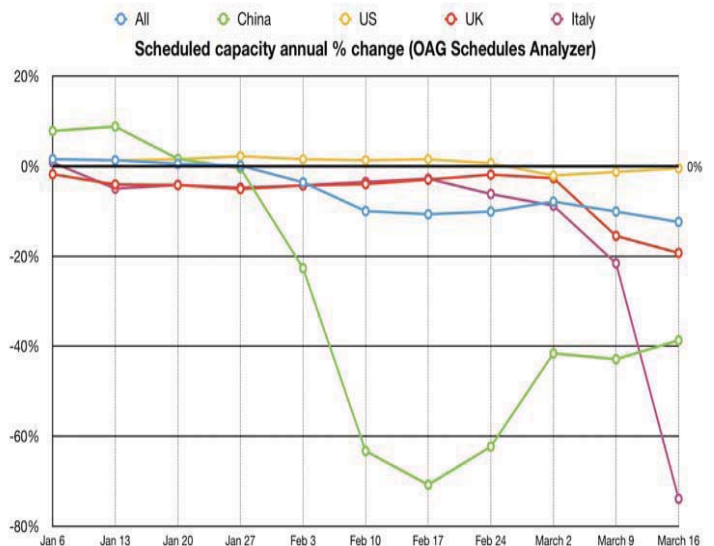


Figure 2 Airlines demand [5]

If we compare the flight volume between last year and this year in Fig.3, we will see a significant difference. Global air traffic is almost ten thousand low than in 2019. European skies were mostly quiet in March. The difference is a decrease in flights of 2,400. If we opposed flights in East Asia as flights in China and other surrounding countries we can see declines first in the third week in January. Traffic at the busiest airports in China is down about 60% from a normal situation. Flights in North America have decreased considerably, but a substantial number remain, especially in the United States. India has halted almost all passenger flights, providing just evacuation and relief flights. The major Middle Eastern carriers are operating dramatically reduced schedules as the UAE has stopped most passenger flights.

Because the coronavirus has begun to slow down the spread through April and May, especially in Europe, most of the airlines are restarting their operations. Airlines rebuild several domestic and European routes first, then intercontinental routes. As travel limitations unwind worldwide, airlines will return to the skies in time for Europe's summer with up to 400% more international flights in June compared to May. European airlines, in particular, are preparing for a full return to freedom of travel on the continent and an increase in demand as Europe's borders recede. Brussels Airlines restarted their flights in half of June, with Germany, Switzerland, Spain, Portugal and Greece. After almost two months of hibernation mode, routes were renewed, according to passenger demand and ongoing travel restrictions. As of the end of June, the German national carrier Lufthansa



made an ambitious plan to fly to 130 destinations around the world.

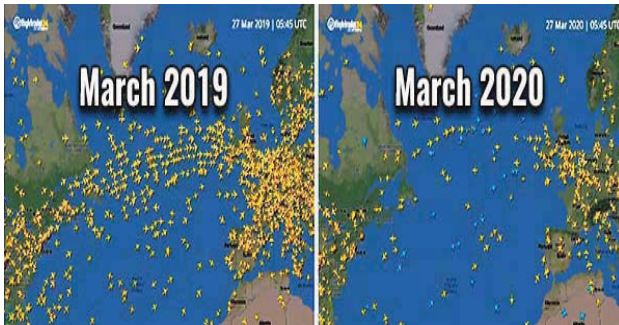


Figure 3 Air traffic comparison (2019-2020) [9]

Online bookings have started to above 100 German and EU destinations for flights. From Frankfurt and Munich, these include for instance destinations like Mallorca, Sofia, Prague, Budapest, Dublin, Riga, Krakow and Bucharest, Zurich and Vienna. Long-haul routes followed those in the second half of June including flights to Hong Kong, Los Angeles, Toronto, Dubai, Mumbai, Mexico City, etc. That's an almost 400% increase on long-haul connections operating in May too. Ryanair started to have around 40 per cent of flights operating from July, and 90% of schedules by late summer. That's approximately 1,000 flights per day with previous flights from Stansted to Porto and Lisbon for instance. The Swiss carrier restarted more than 150 flights from Zurich and Geneva to about 45 European destinations in June. Plus, some long-haul flights to the U.S., Asia and Africa. Emirates resumed flights to 9 international destinations through its Dubai hub from May. Among them, five in Europe: Paris, Milan, Madrid, Frankfurt and London. Qatar returned flights to up 20 European destinations at the end of June, as global travel restrictions ease. Qatar has never left the air and has continued to operate routes to several areas its competitors have not been flying in recent months. Nevertheless, it did wind back services, while still using 75% of its fleet into repatriation and cargo flights. For many other airlines, this equates to just 10 per cent.

### CONCLUSION

The situation caused by the new coronavirus shows us the tendency in the quick end of operation and for many airlines' also instability. The global situation concerning the new coronavirus outbreak is changing rapidly every day. Guidance on where to travel and whether airlines will be flying to some destinations around the world is evolving hour to hour. The travel industry has been badly damaged, with airlines cutting flights and tourists cancelling business trips and holidays. Governments around the world have introduced travel restrictions to try to contain the virus. The EU is banning travellers from outside the bloc for 30 days in an unprecedented move to seal its borders because of the coronavirus crisis. The analytics firms have estimated that up to 50,000 flights with approximately 10.2 million seats could be affected by the ban. Most airlines are urgently trying to preserve

cash. Besides cutting flights, many are asking or requiring staff to take unpaid leave. A steep fall in oil prices should help, but many airlines will feel the benefit only later, having locked in higher-priced purchases to protect themselves against the risk of higher fuel prices. Plenty of carriers are also scaling back capital expenditure by suspending the purchase of new aircraft. Some airlines had continued to operate near-empty flights to protect their rights to take-off and landing slots. Under EU "use it or lose it" rules they were required to run services on busy routes or forfeit them to other operators. However, airlines were and will be still allowed to keep their slots even if they are not flying routes.

As the situation with virus spread is changing every day, airlines need to be careful during the restarting flights. Passengers need to fulfil every safety measure, like wearing a face masks, using disinfection and social distancing. Furthermore, the WHO (World Health Organisation) warns from the second wave of coronavirus spreading, with more dramatic consequences. Compliance with these rules and changes will be a big challenge and will also cost money, but airlines need to be prepared for any situation in the future.

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