Chapter 4
COVID-19 and Implications for the Aviation Sector: A Global Perspective

Abstract  In recent years we have witnessed several disasters and extreme events that have carried a variety of negative socio-economic and environmental impacts. These events and disasters threaten the attainment of the ambitious targets outlined in the 2030 Agenda for Sustainable Development. While intense tropical cyclones, extreme floods, fires, droughts and record polar ice melting characterised 2019, the year 2020 ushered in COVID-19, a global pandemic that has left a trail of untold suffering and economic disruption. Although the pandemic is known to have shaken citizens around the globe, to date, there is very little knowledge of how this has affected various economic sectors. Nevertheless, the tourism industry appears to have suffered a serious blow. This study investigated how one subsector of tourism, namely, aviation, was affected by and responded to the COVID-19 pandemic. Using critical document analysis, the study found that the aviation sector was brought to a halt, costing billions of dollars in losses around the world. COVID-19 also resulted in job losses along the entire aviation industry’s value chain and in related sectors; these were due to losses in passenger revenue, cargo revenue, air ticket refunds, fixed costs and increased parking fees for grounded aircraft, among other things. The study identified various strategies that were used to provide relief, including private and public funding through bailouts, tax deferment, waiver of individual taxes, provision of grants and low-interest loans. They also recommend additional documentation of impacts as they continue unfolding, thus providing valuable lessons for handling any future disasters.

Keywords  COVID-19 · Aviation · Disaster · Tourism · IATA · Airline bailouts

4.1  Background and Introduction

Globalisation and continued aviation efficiency mean that many people can reach distant places within a relatively short period. It is established that global mobility efficiency has been a critical factor in supporting human civilisation and commerce for a better world (Dube and Nhamo 2020). As such, the aviation industry is credited with being central to human development and its capacity to bring people together. The sector employs 165 million people across the world, and its net worth is approximately US$ 2.7 trillion (International Air Transport Association (IATA) 2020a).
Despite substantial crucial economic contribution made by the aviation sector, there are some challenges posed by the aviation industry, including the industry’s contribution to greenhouse gas (GHG) emissions, which contribute to climate change (Dube and Nhamo 2019). The aviation sector is also blamed for contributing to the spreading of pandemics and diseases (Grais et al. 2003), such as COVID-19. Hall (2006) argues that, for some time, travel and trade have been a significant transmission vehicle for infectious diseases, as they facilitate the movement of infected people. With 8.3 billion passenger trips in 2018 (International Airport Review 2019) alone, the risk of people’s spreading diseases as they move across the world remains very high.

On 1 April 2020, the United Nations warned that the impact of COVID-19 was likely to surpass all previous pandemics and trigger a worse economic recession than that of 2008–2009; indeed, it was likely to have a greater impact than that of World War II and plunge the world into an economic recession (United Nations 2020a). They also expressed a real concern that such a development would have a drastic impact on the attainment of the Sustainable Development Goals (SDGs). As a result, the United Nations (2020b) proposed a set of measures to assist in defeating the world pandemic and building a better world. As part of that proposal, the United Nations called for an examination of the impacts of the coronavirus at the regional level to start the process of resource mobilisation for reconstruction.

This study is, therefore, a response to the United Nations’ call and examines the impact of COVID-19 on the global aviation industry.

### 4.2 Literature Review

Disease outbreaks are often problematic and disruptive to businesses, leading to disruption of mobility between destinations (Joo et al. 2019). Such a phenomenon is most evident in the aviation industry and the tourism industry. This is particularly true when the pandemic restricts people’s movement, thereby crippling the aviation industry in several ways. The industry depends on people, cargo movement and other travel-related products to generate the bulk of its revenue (Wolf et al. 2016; Konttinen 2017). Ordinarily, the aviation industry has huge fixed and semi-fixed expenses that they incur, even when the industry is grounded. Some of these expenses include depreciation, insurances, leases, station expenses, ticketing, administrative costs, crew costs and commercial aircraft maintenance, repair and overhaul (MRO). According to IATA (2020b), the fixed and semi-fixed costs constitute about 49% of an airline budget, while variable costs for fuel, user charges and passengers constitute about 51%. Hence, any disruption to traffic movement has dire consequences for the budget and viability of commercial airlines.

It could be argued, therefore, that the aviation industry is a fickle industry that is sensitive to internal and external shocks (Senbeto and Hon 2020), whether these are natural or human-induced. Hyndman and Hyndman (2016) distinguish and categorise various threats that face the aviation industry by pointing out that a crisis is an internal threat to the business, while a disaster is an external environmental threat.
Inasmuch as crises, pandemics and disasters affect people’s movement, evidence suggests that various tourist typologies are affected differently. From Fuchs and Reichel’s (2011) perspective, first-time visitors are usually sensitive to health-related issues. However, repeat visitors are sensitive to financial meltdowns. Women, on the other hand, are said to be more sensitive to health and food issues than men (Bodosca et al. 2014). Consequently, each disaster would shape the travel patterns of tourists differently. Given that such disasters are different in terms of extent and nature, there is often a need to evaluate and understand each on its own merits and demerits with regard to impacts. Senbeto and Hon (2020) argue that regardless of the frequency and magnitude of disaster events, such typically bring about fear and cause tourists to avoid affected areas and destinations.

The outbreak of pandemics often affects the aviation business negatively, including the share price and financial performance. This has severe implications for shareholders. Loh (2006) notes that the airline stocks were more sensitive to the severe acute respiratory syndrome (SARS) outbreak than were other stocks. The reason for this could be that human beings tend to adopt defensive mechanisms, such as avoidance of certain activities, as they face personal threats. Such defence mechanisms include, but are not limited to, journey postponements and/or trip cancellations. All these also affect revenue streams for tour operators. A study by Fenichel et al. (2013) found that tourists had foregone air tickets to the value of approximately $50 million through cancellations during the outbreak of SARS, as they feared to contract the deadly disease. SARS thus had a devastating impact on tourist arrivals. Such shocks to the system can result in the industry’s taking months to recover.

The year 2020 started with the pronouncement of a deadly virus that originated in Wuhan, China, in December 2019. Given the virulence and rate of spread of the disease, which came to be known as 2019-nCoV (COVID-19) acute respiratory disease, the World Health Organization (WHO) declared the outbreak a public health emergency. This was after 19 countries had confirmed infections among 9826 citizens, with the bulk of them being in China; of those infected with COVID-19 at that time, a staggering 9720 were in China (WHO 2020a). The WHO declared COVID-19 a pandemic on 11 March 2020 (2020b). At that stage, there were 118,319 people infected and 4292 deaths across the world.

Following this announcement, there was a frenzy of activity, marked by confusion, misinformation and – at times – half-hearted attempts to contain the disaster. However, by 31 March 2020, much of the world was in lockdown, as both death and infection figures skyrocketed: globally, the infections had soared to 823,626 and 40,598 deaths were reported (WHO 2020c). Following the pandemic declaration, many countries closed their borders and ports of entry, thus imposing lockdowns that threatened the tourism and travel industry. Many states and corporate organisations were warning that inaction would collapse national and global economies, as the lockdowns posed the threat of an economic recession. There were also additional calls in many countries for social distancing as a measure of curbing the spread of the disease (IATA 2020c; the United Nations World Tourism Organization (UNWTO) 2020a).
Tourism was subsequently singled out as one of the sectors that were being – and would be – affected severely by the pandemic; this would result in negative economic growth for the sector itself, as well as at national, regional and global level. In what could be considered a conservative estimate, the United Nations World Tourism Organization (UNWTO 2020b) stated that there would be between a 20% and 30% annual decline in tourist arrivals due to the impact of COVID-19. This decline was estimated to lead to a decline in international tourism receipts (exports) of between US $300 and $450 billion. The United Nations International Labour Organization (ILO) estimated that the pandemic would result in between 5 to 25 million jobs being lost and a further loss of labour income of between $860 billion and $3.4 trillion by the end of 2020 (ILO 2020). The next section looks at the research methodology applied in the chapter.

4.3 Research Methodology

Given the context and nature of this research, critical document analysis was selected as the most appropriate methodology because it is fast becoming a preferred method in the era of big data and the Internet of Things. Most public and private organisations generate data in the form of reports, articles, media statements and pictures, which can be used in answering specific research questions. Critical document analysis has been in use for a long time as a qualitative way of conducting research and offering numerous advantages to the researcher, as it is a rich source of data (Bowen 2009). In this research study, data generated by various authoritative aviation companies and organisations were therefore retrieved for use.

The researchers used reports from 290 airlines in 120 countries, airport companies, regional and international aviation organisations (such as IATA), the International Civil Aviation Organization (ICAO) – a United Nations agency for aviation – and the European Organisation for the Safety of Air Navigation (EUROCONTROL), comprising 41 member states. Additional data were retrieved from the International Airport Review, Airport Council International (ACI), Uniting Aviation, the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) and flight tracking systems, such as Flightradar24. Critical document analysis provided additional advantages, given that the aviation industry is heavily regulated, and obtaining primary data would have taken a long time. However, the aviation industry remains one of the most organised industries, with much of the necessary data being archived and available publicly on Internet databases. This method was also preferred because it was cheaper and convenient for the researchers.

The data that was sought for the study include departures, costs and volumes between 2019 and 2020. In addition, multiplatforms were utilised to triangulate and corroborate the data. This was necessary to ensure reliability, authenticity and credibility in the generated data and findings. The qualitative data were analysed through content and thematic analysis, while the numerical data were analysed using the Microsoft Excel Analysis ToolPak.
4.4 Presentation of Data and Results

Given the sensitivity of the aviation industry, it emerged that the industry was closely monitoring the disease from very soon after it received media attention. IATA presented weekly and monthly updates, providing insight into the likely impact of COVID-19 on the aviation industry. These updates were given by using previous disease outbreaks, such as SARS, as the basis for their projections. The impact was subsequently revised upwards to give credence to observations as the situation unfolded. Many aviation regulatory organisations created dedicated website panels for COVID-19, where updates were given as and when these were deemed necessary.

China subsequently implemented travel restrictions on 23 January 2020. According to IATA (2020d), this led to the slowest air traffic in nearly a decade. Consequently, the passenger demand for January 2020 was 2.5%, compared with 3.7% recorded for the same month in 2019. Much of the impact was caused by less demand for air traffic in the Asia Pacific, which recorded a growth rate of only 2.5%, compared with a rate of 3.9% in 2019. In January and February 2020, China – the COVID-19 epicentre – reported a decline of 6.8% in domestic air travel due to restrictions that were imposed. Between late January 2020 and early February 2020, the Chinese Ministry of Transport reported that they had witnessed an 80% decline in air traffic volumes.

4.5 Impact of COVID-19 on Global Air Traffic

The study found that the disease outbreak had a significant impact on flight operations (Figs. 4.1 and 4.2). On 11 March 2020, when the WHO declared COVID-19 a pandemic, Italy and other European countries seemed to take the lead in the number of infected people and recorded deaths. As a result, on 13 March 2020, the US government suspended all aircraft from Europe, with the exception of traffic from Britain and Ireland. This was done to protect its territory, as most infected people that were being reported at the time had a history of travel either to China or Europe. These restrictions were later expanded to include the two countries that had initially been excluded, namely, Britain and Ireland. This meant that the whole of Europe was prevented from flying to the USA to curb any further spread of the disease. By that time, only 50 people had died from the disease in the USA, and there were 2200 confirmed cases of people with coronavirus. This marked the beginning of extensive restrictions across the world as various countries affected inward travel bans to protect their territories.

The flight restrictions into the USA had a devastating global impact, but most prominently to the European market given the significance of the size of the USA market. For instance, the IATA that the travel restrictions between the USA and Schengen region plus the UK and Ireland had impacted approximately 5.5 million passengers. In this mix, the USA–Schengen travel route alone accounts for about
550 flights per day roughly, which is equivalent to 125,000 travellers a day. The UK alone has a market size of 47,000 passengers per day. Broadly this region has an annual revenue market to US$10.4 billion (IATA 2020e). As such, a disturbance in traffic has direct implications on revenue and a knockdown effect on supporting industries such as airport companies, air traffic navigation companies and shops that...
operate at airports. The adverse impact on the aviation industry worsened as more countries imposed inward bound passenger air traffic. The ban led to a series of diversion (Fig. 4.3) and rescheduling, all of which were costly to the industry (IATA 2020f). This led to a decline in flights, and as restrictions increased, more and more flights were cancelled in Europe and across the world – as can be seen by the sharp decline in air traffic in Figs. 4.1 and 4.2 but especially in Fig. 4.3. According to data from EUROCONTROL, the industry continued a downward spiral, from a decline rate of about 20% to about 86% at the end of February.

As more countries imposed travel restrictions, passenger aircraft were operating, within the African airspace being almost emptied by the beginning of April 2020. Only a few cargo flights, distributing mainly medical supplies, could be observed on the radar by the beginning of April 2020. The restrictions and grounding of many airlines resulted in distress signals from several airlines, which feared collapse due to the unexpected grounding that cut off ticket sales as tourists became increasingly anxious about the situation.

Table 4.1 highlights how some of the major airline companies in Europe responded to COVID-19 restrictions. According to reports from IATA, the increased number of cases of COVID-19 at the end of February 2020 led to an 8% loss of passenger capacity, particularly among those countries that had a stronger connection with China. By March 2020, the pandemic had affected almost the entire world. This led to a reduction of passenger traffic, not only among countries that had reported early infections but the entire aviation region, with the industry witnessing a 33% decline in passenger capacity.

![Fig. 4.3 Air traffic deviation from 2019 base traffic. Source: authors; data from EUROCONTROL](image-url)
### Table 4.1 State and airline response to COVID-19 as of 3 April 2020

| Airline            | Response to COVID-19 restrictions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Airline market share in 2019 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Lufthansa Group    | Adapted flight schedules for returnees between 23 March and 19 April: ~ 40 daily connections Grounded 700 out of its 763 aircraft fleet Lufthansa Cargo was still flying its regular programme, except to mainland China Retired 6 Airbus A380 double-deckers, 7 Airbus A340–600, 5 Boeing 747–400 and 3 Airbus A340–300, which were operated by Lufthansa CityLine                                                                                                                                                                                                                                   | 11.1%                       |
| Ryanair Group      | Cut 80% of flights between 18 and 24 March Suspended all flights from 24 March until April/May RYR has a limited schedule: 13 routes from IE and 12 routes from GB (27 March–9 April) Instituted 50% pay cut for its staff                                                                                                                                                                                                                                                                       | 8.5%                        |
| IAG                | Cut capacity by a minimum of 75% in April and May, with effect from 16 March                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 7.3%                        |
| easyJet            | Suspended all flights on 30 March                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.2%                        |
| Lufthansa          | Reduced hours for 60% of staff from 2 April                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.1%                        |
| Turkish Airlines   | All international flights suspended between 27 March and 17 April. Domestic flights operated between 13 airports only, with effect from 29 March to 17 April As of 28 March, flights down by 93%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4.3%                        |
| Air France         | Flights’ capacity cut by 90% from 23 March for 2 months Nationalisation proposed on 18 March All A380 grounded on 16 March                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |
| British Airways    | Suspended all flights to and from London Gatwick Airport as of 30 March On 3 April, flights were down by 89% 80% of staff were suspended on 2 April Furloughed 30,000 of the airline’s workers for the months of April and May; a modified version of the UK’s COVID-19 Job Retention Scheme grants furloughed employees 80% of their pay and specific allowances. The deal allows workers to divert pension contributions to their pay                                                                                                                                                                                                 | 3%                          |
| SAS                | Flights down by 87%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3%                          |
| KLM                | Cut 90% of flights between 29 March 29 and 3 May Grounded its 5 B747s on 16 March                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2.4%                        |
| Air New Zealand    | Made 387 of its new and young pilots redundant (which is 30%) Slashed its capacity by 95% Negotiated a debt funding agreement of US$538 with its government, which owns 52% of the share value                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |

Source: authors; data from EUROCONTROL
4.5.1 COVID-19 Impacts on Global Passenger and Cargo Markets

Given the anxiety of passengers and the ensuing restrictions by various governments, the pandemic has had severe implications for global passenger movement. This has negatively affected the revenue and operations of airlines. After lower-than-expected passenger numbers for January 2020, particularly in the Asia Pacific region, the industry witnessed a record low performance in February 2020, which was only seen previously following the September 2011 attack in the USA. The industry-wide revenue passenger kilometres (RPKs) contracted by 14.1% on a year-on-year basis in February 2020, with industry-wide capacity (ASKs) declining by 8.7% year on year. The industry performance for February 2020 was far worse than the January 2020 performance. This was primarily as a result of a double-digit decline in RPKs for the Asia Pacific region, which declined −30.4%, and in Latin America, which reported infections in December 2019 and January 2020. At that time, the epicentre of the pandemic was China. Figure 4.4 shows the impact of the pandemic in January and February 2020. There was a severe impact of COVID-19 on RPK growth in both months as the epicentre of the virus which started in January and extended all the way to February 2020. Evidence shows that the main driver for the losses was the Asia Pacific region and China. The domestic arrivals were down nearly 84% at the backdrop of lockdown and restricted movements in that country. As a result of the lockdown and restricted movements in China, domestic arrivals decreased by nearly 84%. China recorded declines in both January and February 2020.

![Performance of regional and major domestic markets in response to COVID-19](image)

Fig. 4.4 Performance of regional and major domestic markets in response to COVID-19. Source: authors; data from IATA
As mentioned earlier, the aviation industry is critical for trade and industry. This industry transports about 52 million metric tonnes of goods annually, which accounts for about 35% of global trade by value. Daily, the aviation industry transports $18.6 billion worth of goods. According to reports from IATA, the pandemic has also harmed air cargo demand. The decline in cargo demand has been caused by three factors, namely, (i) a decline in manufacturing production in mainland China due to company closures and travel restrictions; (ii) falling global orders due to a contraction in the Purchasing Managers Index (PMI); and (iii) the reduction in airline passenger operations due to travel restrictions as a measure to contain COVID-19.

The developments have resulted in a decline in cargo tonne kilometres (CTKs) of 1.4, compared with the same period in 2019, as illustrated in Fig. 4.5. The cargo capacity (measured in available cargo tonne kilometres (ACTKs)) dropped by 4.4% on a year-on-year basis in February 2020. Fig. 4.5 shows that the highest declines were recorded in Asia Pacific, Europe, Latin America and North America, which account for the most significant portion of global decline.

4.5.2 Impact of COVID-19 on Weather and Climate Observations

The aviation industry plays a pivotal role in providing weather data that are crucial in weather forecasting and making high-resolution observations through the Aircraft Meteorological Data Relay Programme (AMDAR). The World Meteorological
Organization (WMO) (2020) noted that the AMDAR observation system typically produces over 700,000 high-quality observations per day, consisting of air temperature and wind speed and direction, together with the required positional and temporal information. The decline in air traffic has negatively affected their data collection capability, which has implications for weather forecasting. This could put certain countries in hydrometeorological danger, requiring areas where climate monitoring could not take place due to shortage of aircraft monitoring to increase their national hydrometeorological stations’ monitoring, as continued disruption of aviation traffic will have an impact on the quality of weather forecasting.

### 4.5.3 Impact of COVID-19 on Aviation Employment

Apart from the pandemic’s posing a threat to the liquidity of several airlines, another challenge for airline executives was how to sustain a large number of the aviation industry and related sector employees, totalling 65.5 million (IATA 2020i). Owing to constrained liquidity globally, most aviation employees found themselves facing an uncertain future. Several airlines laid off their staff, reduced working hours and suspended staff – with and without pay in some instances – and also introduced (forced and voluntary) salary cuts (Table 4.1). Other airlines outside of the Eurozone instituted similar measures to contain their company expenses. In Africa, Air Ethiopia gave its employees 90 days’ paid leave and suspended services of all the outsourced contract workers for 3 months. Emirates instituted a temporary pay cut of between 25% and 50% for its employees (Emirates 2020). However, junior employees’ salaries were left unchanged, while the president of Emirates took a 100% pay cut for 3 months. In all these scenarios, the employees’ allowances remained unchanged. The staff affected the most were the contract and casual employees.

### 4.6 Discussion

The study showed that both from a passenger and a cargo perspective, the pandemic has had negative impacts. The magnitude of the impact will only be discernible when the pandemic is under control. However, one of the most immediate challenges was that of fiscal liquidity in the industry.

Given that about 49% of the airlines’ expenses are fixed, this presented a challenge for a number of airlines. Grounding meant airlines were burning cash without generating any income. At best, most airlines were operating below capacity or were grounded. Under normal circumstances, airlines ordinarily require at least 3 months of cash flow for them to be considered to have a reasonable safety buffer. A report by IATA (2020g) shows that most airlines across the world had a median cash flow ranging between 1 and 2 months, with airlines in Europe and the Asia Pacific taking severe strain. This meant that the airlines in those regions and globally had to
rely on an external cash injection if they were to survive the pandemic. The pandemic also hurt investor returns and those along aviation’s supply chain. These findings are in line with observations made by Loh (2006), who found that disasters had a negative impact on airline stocks.

Of real concern, however, was the impact of COVID-19 on the return on invested capital (ROIC) for those airlines that had not been performing well in general. Such airlines were particularly evident in Africa, Asia Pacific, Latin America and the Middle East, as they have a tendency to damage investor value on aggregate. The ROIC for airlines reached a peak in 2015 when fuel prices declined. While the bulk of the airline industry had modelled their business on a $100-per-barrel price mark, the decline in fuel price during COVID-19 was expected to provide much relief. The price of jet fuel dropped from the beginning of 2020 and was at about $31.01/bbl at the beginning of April 2020. IATA argued that, at that price, it would have translated to an expenditure reduction of $36.9 billion for global aviation (IATA 2020h).

Nonetheless, on 9 April 2020 – around the time this article was being finalised – the Organisation for Petroleum Exporting Countries (OPEC) and other countries were in a meeting to review an oil pumping war between Saudi Arabia and Russia, which resulted in a significant cutback on production. Oil prices were expected to rise again, although not to the pre-COVID-19 levels in short to medium term.

The year 2020 had seen record aircraft deliveries for the European market. By March 2020, Europe had taken delivery of 105 narrow-body aircraft and 318 wide-body jets; other aviation regions had also received a significant number of aircraft. On the other hand, by April 2020, two of the largest air manufacturers of Boeing had made 30 deliveries (Boeing 2020), while Airbus had made 55 deliveries (Airbus 2020), pointing to the huge capitalisation by airlines. This meant that some airlines had incurred enormous expenses in acquiring new and efficient airlines, which had a bearing on their future liquidity. Most importantly, the pandemic affected orders for 2020 – and will most likely also affect those for 2021. This could be dire for Boeing, which had been dealing with the fallout of the 737 MAX aircraft type. Consequently, there is a possibility that the company would request a bailout or file for bankruptcy.

Also worrying is that some airline was expecting to receive new aircraft from manufacturers. With current closures in many production firms, it was highly unlikely that, with quarantines and social distancing, the air manufacturing companies would be able to reduce their backlog. Puget Sound facility, which accounts for 80% of Boeing’s overall commercial and defence aircraft production activity, had to close for 14 days in March 2020 owing to COVID-19. As a result, they anticipated that the delivery backlog would increase by the end of 2020, given the disruptions caused by the pandemic.

At the beginning of 2020, Airbus had a backlog of 7482 aircraft, or about 7 to 8 years of production (Bellamy 2020). In the same period, Boeing had a backlog of 5351 jets (Hemmerdinger 2020). As of February 2020, some airlines had started cancelling their orders, which might have indicated the financial squeeze they were already facing or anticipated would follow. One of the cancellations for the orders for both Airbus and Boeing was from Avon, a leading leasing company that had a fleet of 549 aircraft at that time. Avon cancelled its order of 75 Boeing Max and four Airbus Neo aircraft, citing the challenges associated with COVID-19 as the reason.
Furthermore, easyJet – a company that operates a fleet of 340 aircraft – argued that the coronavirus was a *force majeure* and they were pushing for a cancellation of their $5.5 billion order with Airbus to ensure that they had adequate liquidity to withstand the impact of the pandemic.

On a different note, the grounding of a large fleet from airlines presented an unusual problem, namely, a shortage of parking space. The usual requirement is that aircraft be checked every 1 to 2 months if grounded. Regular checks of avionics, hydraulics and some other operating systems had to be conducted during the process. This meant additional storage and parking costs for the already struggling airlines. Most affected airports were in North America, Europe and other regions that have a large number of flights. Under normal circumstances, parking fees account for about 2% of an airport’s revenue. However, the parking problem led some companies to contemplate putting their old fleet on early retirement. IATA reports singled out American, Delta and KLM as some of the airlines that were contemplating retiring their old Boeing 747 fleet.

In addition to parking, there was also a challenge of maintenance as the hangers were not sufficient to handle all the aircraft in these facilities. The usual requirement is that the aeroplane is checked on a constant basis if grounded. Regular checks of avionics, hydraulics and some other operating systems had to be conducted during the process.

4.6.1 Aviation and Relief Packages

As the aviation industry suffered huge losses due to flight cancellations by no-show passengers, border closures and other restrictions, airlines left many customers stranded when they shut down operations or cancelled routes. This also meant that the airlines held about $35 billion in unutilised customer tickets that needed to be refunded (IATA 2020g). Most airlines were simply reluctant to refund passengers, although in most cases they did not have the means or capacity to provide the service that passengers had paid for. Other airlines offered free booking date changes of between 6 months to about a year, with a few extending the period to 2 years. In March, IATA made two global financial appeals that were revised in less than a month, as the situation changed rapidly, requesting governments and corporates to extend a helping hand to the struggling airline industry.

In order to ensure sustainability, there was a need to find the means to provide liquidity for the ailing airline industry, since the industry was critical in the provision and distribution of medicine and protective equipment across the world at the height of the pandemic. Some passenger aircraft were being turned into a cargo fleet, although the cargo fleets were not as severely affected as the passenger airlines in terms of revenue losses. Most countries allowed cargo airlines access into their territories. The sustenance of the aviation industry and its continuity was crucial for the global developmental agenda in facilitating industry and commerce. While grounding aircraft was one of the strategies that were used by the aviation industry to avoid so-called ghost flights, that measure alone was not adequate to safeguard
the industry’s future. According to IATA, the airline industry needed about $252 billion in bailouts (IATA 2020b).

After that call by the global aviation body (IATA), several governments and private entities made an effort to respond to the appeal to assist the aviation industry to survive the fallout from the pandemic. On 7 April 2020, when about 90% of the fleet of most airlines were grounded, EUROCONTROL announced €1.1 billion to defer air traffic control fees in support of the airline industry (EUROCONTROL 2020). The Australian government also indicated that it was putting together a $430 million relief package for the aviation industry and introducing a range of waivers aimed at providing relief for the ailing aviation sector (Australian Government 2020). Other significant relief packages included a package from the US government’s Coronavirus Aid, Relief, and Economic Security Act (H.R. 748). This provided $61 billion to assist specific airlines to navigate their businesses in the post-COVID-19 era. It remains to be seen how far this amount will go in providing the much-needed relief. Reports indicated that American Airlines had withdrawn more than $2.7 billion from a credit account they had created in 2014 (Arnold 2020), but the airline also had plans to apply for $12 billion government aid, which was approved by Congress. Fortunately, the American bailout had conditions attached, namely, that the airlines maintain their labour force. This provided some much-needed financial relief for airline employees.

Some of the weaknesses in the airline industry included leased aircraft, as airlines had obligations to pay according to their lease agreements. Therefore, there was a need for grounded airlines to seek and negotiate terms of payment that did not cripple the airline. By April 2020, Avon Leasing had received requests from more than 80% of its clients for relief from payment obligations. Such requests included short-term rent deferrals, which seemed likely to be granted.

Various airlines responded to the distress call by IATA and provided different interventions, such as the nationalisation of the airline, as illustrated in Table 4.1. Thus it would seem that state-owned airlines were protected somewhat from the financial consequences of the pandemic since there was a strong likelihood that they would receive a state bailout. The three largest airlines in the Middle East, namely, Qatar Airways, Emirates and Etihad, were also promised state bailouts. Furthermore, Emirates indicated its intention to seek private funding in the form of a loan. Other airlines that received funding from their government included Norwegian Air Shuttle, which was set to receive $270 million, Finnair (€600 million), SAS AB ($300 million) and Alitalia ($647 million) (Kammel 2020). Although state intervention was welcome, there were fears among industry players that the crisis would see the industry’s reversing the privatisation efforts that had transformed the industry over a number of years.

In addition to the global cash burn of $61 billion in the second quarter of 2020 by the US government, there was a need for all role players to come on board to assist the airlines to survive the pandemic phase. The government could assist by waiving/forgoing certain taxes or deferring the payment of taxes to ensure that airlines have enough liquidity to operate. The private sector could also help by extending loans at reduced interest rates to ensure viability.
IATA projected huge direct job losses in the aviation and tourism industries, amounting to 25 million jobs and a cost of $252 billion to the industry (IATA 2020i). (See the details in Table 4.2.) A loss of jobs in the tourism and aviation industries would have a ripple effect on the market. Therefore, there was a need for the aviation industry to consider the plight of employees carefully.

The subject of offering relief to airlines – or any other business – is contested in business literature. While some authors advocate state bailouts as a measure to ensure business viability during turbulent times, Nulsch (2014) argued that state bailouts of private companies were controversial. At best, these serve to postpone the failure of affected companies; therefore, Nulsch advocated a long-term restructuring of firms instead. De Rugy and Leff (2020) strongly opposed the proposed state bailout of airlines in the USA, claiming that the airlines had sufficient leeway to raise money independently, without relying on state payouts, as this was not sustainable in either the short or long term. These authors argued that the airline industry had the capacity to raise cash from financial institutions, such banks, with whom they have credit card deals. Besides, they alleged that any airline seeking a bailout should have gone through the bankruptcy process, as required by law in the USA; the authors claimed that companies that had gone through this process in the past had emerged stronger, citing American Airlines, Delta Airlines and United Airlines as examples. They rebutted the argument that failed airlines would have a knock-on effect on the economy by pointing out that no failure of an airline had an adverse knock-on effect on the economy. Other critics of state bailouts argued that it was not prudent to use the job losses narrative, as some companies had already shut down, job losses were not unique to airlines and any measure to assist employees should not be done through such companies since aviation companies had enough assets to sell to weather the COVID-19 pandemic.

De Rugy and Leff (2020) further argued that there are challenges associated with state bailouts; for instance, they distract airline executives from focusing on their role of making prudent management decisions in favour of pleasing politicians as a way of creating relations for future bailouts. In addition, they claimed that some of the conditions attached to bailouts were detrimental to the future efficiency of airlines and could result in airlines’ investing in technologies that would lead to job losses in any case. Conditions such as setting up the minimum wage and curbing executive salaries were not regarded as the best way to ensure operational efficiency. Any bailout offered by the government must, therefore, be the last resort that is given in the form of a loan or loan guarantee.

| Region         | Job losses in millions |
|----------------|------------------------|
| Asia Pacific   | 11.2                   |
| Europe         | 5.6                    |
| Latin America  | 2.9                    |
| North America  | 2.0                    |
| Africa         | 2.0                    |

Source: authors; data from IATA
4.7 Conclusion and Recommendations

This study aimed to examine the impact and extent of COVID-19 on global aviation, as one of the tourism sectors significantly affected. The study found that the pandemic was one of the most devastating disasters to have affected the aviation industry in living memory. The impact of COVID-19 was global and affected every aviation region, thus affecting both international and domestic routes. The closure of borders and restrictive measures that were put in place, including airport closures and lockdowns, had a devastating impact on the aviation industry. This resulted in record cash burn, threatening more than 25 million of the 65.5 million jobs in the aviation industry and supporting sectors. The pandemic threatened the survival of most airlines across the world and resulted in demands for bailouts to cover the fixed costs. The unprecedented nature of the disaster resulted in order cancellations, thereby negatively affecting those in the supply chain too.

Given the impacts of COVID-19 on aviation, the researchers believe that there is a need to rethink how the aviation industry operates. This could include the revision of policy on the median cash availability, which – if allowed to be as low as the levels were in 2020 – would prove to be unsustainable in the future. While a 2-month cash threshold could be adequate for regular times, the COVID-19 pandemic shows how this cover is inadequate when lengthy and severe challenges emerge. Thus suggests a need to extend the financial safety threshold. Noting, cash flow challenges in the industry in the industry demands innovative financial solutions. This is important so that government concentrates on other social issues instead of bailing out private enterprises. It is important that these safety measures also cover the welfare of employees. This removes the argument that state interventions seek to manage unemployment. Lessons and practices from such actions could inform policy and practice in the entire tourism industry.

The scope and form of intervention will definitely differ in countries and regions as we anticipate the impacts of COVID-19 and as indeed adverse impacts of past pandemics have and will vary across regions and nations, to this end country- and region-specific empirical impact studies.

References

Airbus. (2020). The month in review: February 2020. Airbus. Retrieved April 6, 2020, from https://www.airbus.com/aircraft/airport/orders-deliveries.html
Arnold, K. (2020). American Airlines pulls $2.7 billion from credit lines as it prepares for lean months ahead. The Dallas Morning News. Retrieved April 9, 2020, from https://www.dallasnews.com/business/airlines/2020/04/01/american-airlines-pulls-27-billion-from-credit-lines-as-it-prepares-for-lean-months-ahead/
Australian Government. (2020). Aviation. Department of Infrastructure, Transport, Regional Development and Infrastructure. Retrieved April 9, 2020, from https://www.infrastructure.gov.au/aviation/
Bellamy, W. (2020). Airbus, Boeing make production decisions amid COVID-19 Pandemic. Avionics International. Retrieved April 6, 2020, from https://www.aviationtoday.com/2020/03/24/airbus-boeing-make-production-decisions-amid-covid-19-pandemic/

Bodosca, S., Gheorghe, G., & Nistoreanu, P. (2014). Tourist consumption behaviour before and after the crisis from 2008. In Proceedings of the 21st international economic conference (pp. 77–87). Sibiu: Procedia Economics and Finance.

Boeing. (2020). Current year deliveries through February 2020. Retrieved April 6, 2020, from http://www.boeing.com/commercial/#/orders-deliveries

Bowen, G. A. (2009). Document analysis as a qualitative research method. Qualitative Research Journal, 9(2), 27.

De Rugy, V., & Leff, G. (2020). The case against bailing out the airline industry. Mercatus Center George Mason University. Retrieved April 8, 2020, from https://www.mercatus.org/system/files/de-rugy-leff-airline-bailouts-mercatus-v1.pdf

Dube, K., & Nhano, G. (2019). Climate change and the aviation sector: A focus on the Victoria Falls tourism route. Environmental Development, 29, 5–15.

Dube, K., & Nhano, G. (2020). Major global aircraft manufacturers and emerging responses to the SDGs agenda. In G. Nhano, O. Odularu, & V. Mjimba (Eds.), Scaling up SDGs implementation emerging cases from state, development and private sectors (pp. 99–113). Cham: Springer International Publishing.

Emirates. (2020). The Emirates Group’s business response to COVID-19. Emirates. Retrieved April 6, 2020, from https://www.emirates.com/media-centre/the-emirates-groups-business-response-to-covid-19-updated/

EUROCONTROL. (2020). EUROCONTROL States agree a €1.1 billion deferral package to assist airlines. EUROCONTROL. Retrieved April 9, 2020, from https://www.eurocontrol.int/press-release/eurocontrol-states-assist-airlines-11bln-deferral

Fenichel, E. P., Kuminoff, N. V., & Chowell, G. (2013). Skip the trip: Air travelers’ behavioral responses to pandemic influenza. PLoS One, 8(3), 1–10.

Fuchs, G., & Reichel, A. (2011). An exploratory inquiry into destination risk perceptions and risk reduction strategies of first time vs. repeat visitors to a highly volatile destination. Tourism Management, 32(2), 266–276.

Grais, R. F., Ellis, J. H., & Glass, G. E. (2003). Assessing the impact of airline travel on the geographic spread of pandemic influenza. European Journal of Epidemiology, 18(11), 1065–1072.

Hall, C. M. (2006). Tourism, disease and global environmental change: The fourth transition? In S. Gössling & C. Hall (Eds.), Tourism and global environmental change (pp. 173–193). Routledge.

Hemmerdinger, J. (2020). Boeing’s order book declines as customers cancel and modify new-jet orders. FlightGlobal. Retrieved April 6, 2020, from https://www.flightglobal.com/airframers/boeings-order-book-declines-as-customers-cancel-and-modify-new-jet-orders/137193.article

Hyndman, D., & Hyndman, D. (2016). Natural hazards and disasters. Boston: Cengage Learning.

IATA. (2020a). What can we learn from past pandemic episodes? IATA. Retrieved April 3, 2020, from https://www.iata.org/en/iata-repository/publications/economic-reports/what-can-we-learn-from-past-pandemic-episodes/

IATA. (2020b). COVID-19 Cashburn Analysis. IATA. Retrieved April 2, 2020, from https://www.iata.org/en/iata-repository/publications/economic-reports/covid-19-cash-burn-analysis/

IATA. (2020c). IATA Economics’ Chart of the Week Liquidity is crucial for airlines to overcome COVID-19 pandemic. IATA. Retrieved April 2, 2020, from https://www.iata.org/en/iata-repository/publications/economic-reports/liquidity-is-crucial-for-airlines-to-overcome-covid-19-pandemic/

IATA. (2020d). IATA economics’ chart of the week COVID-19 pandemic puts employment at risk. International Air Transport Association. Retrieved April 02, 2020, from https://www.iata.org/en/iata-repository/publications/economic-reports/covid-19-pandemic-puts-employment-at-risk/
IATA. (2020e). *Evolution of COVID-19 travel restrictions 12–23 March 2020.* IATA. Retrieved April 5, 2020, from https://www.facebook.com/iata.org/photos/a.647512395314902/3027979637268154/?type=3&theater

IATA. (2020f). *Potential Impact of US-Schengen Travel Ban.* IATA. Retrieved April 3, 2020, from https://www.iata.org/en/iata-repository/publications/economic-reports/infographic-impact-of-the-us-travel-ban/

IATA. (2020g). *Liquidity is crucial for airlines to overcome COVID-19 pandemic.* IATA. Retrieved from https://www.iata.org/en/iata-repository/publications/economic-reports/liquidity-is-crucial-for-airlines-to-overcome-covid-19-pandemic/

IATA. (2020h). *Jet Fuel Price Monitor.* IATA. Retrieved April 6, 2020, from https://www.iata.org/en/publications/economics/fuel-monitor/

IATA. (2020i). *25 Million Jobs at Risk with Airline Shutdown.* IATA. Retrieved April 7, 2020, from https://www.iata.org/en/pressroom/pr/2020-04-07-02/

ILO. (2020). *COVID-19: Protecting workers in the workplace.* International Labor Organization. Retrieved April 2, 2020, from https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_738742/lang--en/index.htm

International Airport Review. (2019). *In the balance: Global air transport demand in 2018 and 2019.* International Airport Review. Retrieved March 31, 2020, from https://www.internationalairportreview.com/article/101952/world-airport-traffic-report-preview-aciworld/

Joo, H., Maskery, B. A., Berro, A. D., Rotz, L. D., Lee, Y. K., & Brown, C. M. (2019). Economic impact of the 2015 MERS outbreak on the Republic of Korea’s tourism-related industries. *Health Security, 17*(2), 100–108.

Kammel, B. (2020). *Desperate airlines turn to European Governments for support.* Bloomberg Businessweek. Retrieved April 9, 2020, from https://www.bloomberg.com/news/articles/2020-03-25/desperate-airlines-turn-to-european-governments-for-support

Koittinen, J. (2017). How can airports and airlines better integrate their retail business in the future? *Journal of Airport Management, 11*(3), 238–242.

Loh, E. (2006). The impact of SARS on the performance and risk profile of airline stocks. *International Journal of Transport Economics/Rivista internazionale di economia dei trasporti, 33*(3), 401–422.

Nulsch, N. (2014). *Is Subsidizing Companies in Difficulties an Optimal Policy? An Empirical Study on the Effectiveness of State Aid in the European Union (No. 9/2014).* IWH discussion papers. Retrieved April 8, 2020, from https://www.econstor.eu/handle/10419/98743

Senbeto, D. L., & Hon, A. H. (2020). The impacts of social and economic crises on tourist behaviour and expenditure: An evolutionary approach. *Current Issues in Tourism, 23*(6), 740–755.

UN. (2020a). *Shared Responsibility, Global Solidarity: Responding to the socio-economic impacts of COVID-19.* United Nations. Retrieved April 2, 2020, from https://www.un.org/sites/un2.un.org/files/ss_report_socio-economic_impact_of_covid19.pdf

UN. (2020b). *UN launches COVID-19 plan that could ‘defeat the virus and build a better world’.* UN. Retrieved April 2, 2020, from https://news.un.org/en/story/2020/03/1060702

UNWTO. (2020a). *COVID – 19: Putting people first.* UNWTO. Retrieved April 2, 2020, from https://www.unwto.org/tourism-covid-19-coronavirus

UNWTO. (2020b). *International tourist arrivals could fall by 20–30% in 2020.* UNWTO. Retrieved April 2, 2020, from https://www.unwto.org/news/international-tourism-arrivals-could-fall-in-2020

WHO. (2020a). *Novel Coronavirus (2019-nCoV) Situation Report – 10.* World Health Organization. Retrieved March 29, 2020, from https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports

WHO. (2020b). *Coronavirus disease 2019 (COVID-19) Situation Report – 51.* World Health Organization. Retrieved March 29, 2020, from https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports
WHO. (2020c). *Coronavirus disease 2019 (COVID-19) Situation Report – 72*. World Health Organization. Retrieved April 2, 2020, from https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200401-sitrep-72-covid-19.pdf?sfvrsn=3dd8971b_2

Wolf, H., Forsyth, P., Gillen, D., Hüschelrath, K., & Niemeier, H. M. (2016). À la carte pricing to generate ancillary revenue: The case of Ryanair. In H. Wolf, P. Forsyth, D. Gillen, K. Hüschelrath, & H.-M. Niemeier (Eds.), *Liberalization in aviation* (pp. 207–216). Routledge. https://doi.org/10.4324/9781315592305-18.

World Meteorological Organization (WMO). (2020). *WMO is concerned about impact of COVID-19 on observing system*. World Meteorological Organization. Retrieved April 7, 2020, from https://public.wmo.int/en/media/press-release/wmo-concerned-about-impact-of-covid-19-observing-system?fbclid=IwAR2y3GHOk-H4Xd_9DwX7_QgZC37iUb-BqG6sg9XigA_seDX_lsk2gUYyBiQ