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SCHOOL OF ECONOMICS AND BUSINESS

DIPLOMA WORK

**THE IMPACT OF COVID-19 ON THE AVIATION INDUSTRY**

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# TABLE OF CONTENTS

<b>INTRODUCTION</b> .....	<b>1</b>
<b>1 Market analysis of the aviation industry</b> .....	<b>1</b>
<b>1.1 Market description</b> .....	<b>1</b>
<b>1.2 Market division</b> .....	<b>3</b>
<b>1.3 PESTLE analysis of the aviation industry</b> .....	<b>4</b>
1.3.1 Political.....	4
1.3.2 Economic .....	5
1.3.3 Social .....	5
1.3.4 Technological .....	5
1.3.5 Legal .....	6
1.3.6 Environmental .....	6
<b>2 Impact of Covid-19 on stakeholders</b> .....	<b>7</b>
<b>2.1 Passengers</b> .....	<b>7</b>
<b>2.2 Airlines</b> .....	<b>7</b>
<b>3 Empirical analysis</b> .....	<b>10</b>
<b>4 Future outcome</b> .....	<b>16</b>
<b>CONCLUSION</b> .....	<b>17</b>
<b>REFERENCE LIST</b> .....	<b>17</b>
<b>APPENDICES</b> .....	<b>29</b>

## LIST OF FIGURES

Figure 1: Global aviation market divided by revenue share (%).....	2
Figure 2: Global carbon dioxide emissions from aviation .....	6
Figure 3: Year-on-year revenue-passenger kilometer (RPK) change on international routes from January to December 2020, by region .....	8
Figure 4: Capacity of Chinese airline carriers over time (in numbers of passengers).....	9
Figure 5: Net profit/loss of airlines by quarters for 2019, 2020 and 2021 (in million €)....	12
Figure 6: ASK of airlines by quarters in 2020 and 2021, as compared to 2019 (in %) .....	13
Figure 7: ASK of FSCs and LCCs by quarters in 2020 and 2021, as compared to 2019 (in %) .....	14
Figure 8: Load factor as RPK/ASK by company .....	15

Figure 9: Load factor as RPK/ASK by airline type .....	16
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## LIST OF TABLES

Table 1: Estimated net profit/loss of airlines in 2020 and forecast net profit/loss of airlines in 2021 and 2022 by region (in US\$ billions).....	3
Table 2: List of analyzed airlines, their type (FSC or LCC) and profit/loss in 2019 and 2020 (in million €) .....	11

## LIST OF APPENDICES

Appendix 1: Povzetek (Summary in Slovene language).....	1
Appendix 2: PESTLE analysis of airlines .....	2
Appendix 3: Net profit/loss of airlines by quarters for 2019, 2020 and 2021 (in million €)	4
Appendix 4: ASK of airlines by quarters in 2020 and 2021, as compared to 2019 (in %)...	5
Appendix 5: Load factor as RPK/ASK by company.....	6

## LIST OF ABBREVIATIONS

**FSC** – (sl. Prevoznik polnih storitev); Full-service carrier

**LCC** – (sl. Nizkocenovni prevoznik); Low-cost carrier

**ASK** – (sl. Razpoložljivi sedežni kilometri); Available seat kilometers

**RPK** – (sl. Prihodki potniških kilometrov); Revenue passenger kilometers

# **INTRODUCTION**

The Covid-19 pandemic has had an immense impact on virtually all sectors of the economy, as the so called “new normal” has led to a shift in consumer habits and led to economic struggles for both companies and individuals. One of the most heavily impacted industries has been the aviation industry, as it is dependent primarily on the tourism and transportation sectors, both of which have suffered greatly due to the virus spread. The uncertainty brought about by the difficult situation has made it challenging for airlines, passengers, airports and other participants and stakeholders to assess how the situation might progress in terms of restrictions presented by various governments and the course of the spread of the disease.

This paper primarily focuses on the economic impacts that the pandemic has and will have on the airlines and what the expected future for the sector might be. As such the 1<sup>st</sup> chapter primarily focuses on defining and explaining the industry and the many challenges it has been facing even before the pandemic. It also presents important divisions by region and airline types which are important for further discussion and analysis later on. The 2<sup>nd</sup> chapter then presents the two most important stakeholders – passengers and airlines – and provides insight into the already known impact that was done by other researchers. The 3<sup>rd</sup> chapter presents empirical analysis of 15 airlines based on their types – full-service carriers and low-cost carriers – where the difference in type of operations is taken as a factor of success in the current and future recovery. This is done by analyzing and comparing profit/loss, records of traffic and load factors of airlines. The 4<sup>th</sup> and final chapter presents the importance of state aid for companies to be able to recover and to prevent further industry fallout.

## **1 MARKET ANALYSIS OF THE AVIATION INDUSTRY**

To better understand the ways in which the aviation industry has been affected by the Covid-19 pandemic, as well as what the likely outcome will ultimately be, it is crucial to first analyze the industry as a whole, presenting the current issues and the status quo. It is also essential to point out what the trends in the industry were before the crisis as that is the only way we can separate the pandemic’s effects from other factors that were happening at the same time. This chapter will, therefore, present a broader picture and the role that the pandemic has in the potential future scenarios for the industry.

### **1.1 Market description**

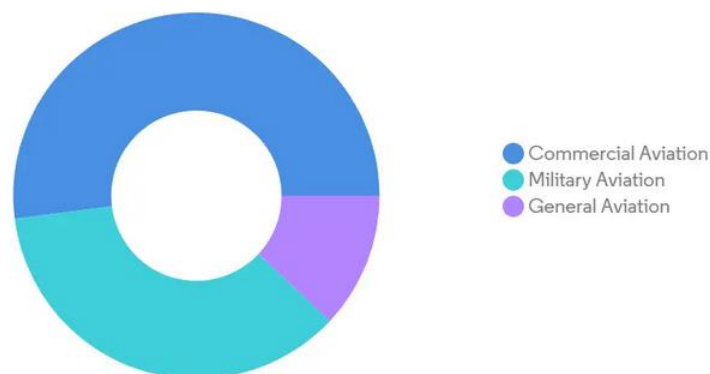
In order to properly analyze the market, it is essential to first define and limit the scope of the market that is going to be the focus of the report. When it comes to the aviation industry, there are two main sectors (IFATCA, 2018):

- civil aviation, comprised of:
  - general aviation,
  - commercial aviation,
- military aviation, comprised of:
  - training,
  - transport,
  - security,
  - defense.

This paper will not focus on the military aviation and general aviation sectors, as they are driven by government spending, based on politics, and spending by wealthy individuals respectively. The main focus will be on commercial aviation, which before the pandemic in 2019 was an industry worth an estimated \$838 billion, dropping to \$373 billion in 2020 and having an estimated value of \$472 billion in 2021 (IATA, 2021a), and represents the – more than 50% – majority of aviation revenue as seen on the figure 1 below (Mordor Intelligence, 2021). The reason for the focus on commercial aviation is that commercial aviation includes airlines and cargo transportation, which are both heavily dependent on the state of the economy and consumer spending, whereas general aviation is comprised of primarily private transportation of people and goods as well as leisure activities. Thus, while these activities are still impacted by government restrictions, they are not necessarily as heavily impacted by the difficult economic conditions considering the background of individuals involved.

With the scope outlined, the stakeholders that are of main focus are airlines, airports, pilots, passengers, government that are responsible for pandemic response guidelines and sometimes own or co-own airlines or airports, aircraft manufacturers. The effect by Covid-19 on these is going to be further discussed in the next chapter.

*Figure 1: Global aviation market divided by revenue share (%)*



*Source: Mordor Intelligence (2021).*

## 1.2 Market division

To allow for a more detailed analysis of the market it makes sense to divide it based on the region, as well as based on the types of operations and structures that airlines are utilizing. One of the most common regional divisions is that presented by the IATA (2021), as seen in the table 1 below.

*Table 1: Estimated net profit/loss of airlines in 2020 and forecast net profit/loss of airlines in 2021 and 2022 by region (in US\$ billions)*

<b>Region</b>	<b>Profit/loss in 2020</b>	<b>Expected profit/loss in 2021</b>	<b>Expected profit/loss in 2022</b>
<b>North America</b>	-35,1	-5,5	9,9
<b>Europe</b>	-34,5	-20,9	-9,2
<b>Asia-Pacific</b>	-45,6	-11,2	-2,4
<b>Middle East</b>	-8,5	-6,8	-4,6
<b>Latin America</b>	-11,9	-5,6	-3,7
<b>Africa</b>	-2,2	-1,9	-1,5

*Source: IATA (2021).*

As seen in table 1 it is estimated that all regions will have losses in 2021 and 2022, with the exception of North America, which is forecast to have a profit of \$9,9 billion in 2022. As it is likely that the industry has been affected differently due to the nature of the spread of the pandemic and subsequent government responses to the changing situation, this division presents an insight of how the government responses might be influencing the sustainability of airlines. One might assume that Asia, which was initially hit first, but later managed to stabilize the situation relatively well, would managed to recover its industries quicker than western countries, which have seen a succession of waves of the pandemics, leading to a high degree of uncertainty amongst industry leaders and passengers (Platto, Wang, Zhou & Carafoli, 2021). However, with the relatively high vaccination rate having been achieved in the US and EU fairly quickly, it might lead to a quicker post-pandemic recovery overall as opposed to some Asian countries that handled the prevention of the virus spread fairly well, but failed to procure adequate vaccines in a timely manner (Katz, Weintraub, Bekker & Brandt, 2021).

The second type of division which is also noteworthy is that between airlines operating as passenger and freight carriers, which is of importance due to the fact that in most cases it is a lot more difficult for airlines to conduct passenger flights due to the pandemic rather than carry out freight operations, where the contact between individuals is fairly limited to the employees of the airlines and ground staff at airports. If fact it might be the case that freight

airlines could be in a better position due to the drop in fuel prices that occurred during the pandemic and the lower traffic in general.

With regards to passenger airlines there is a further division between the low-cost carriers (hereafter referred to as LCCs) and full-service carriers (hereafter referred to as FSCs), where the difference is in the business model that a company incorporates to ensure profitability and long term stability. The benefit of this kind of discrimination is that analyzing and comparing the two business models can give insight into what the future industry trends might look like as the two groups were probably not affected in the same way and to the same extent. LCCs are known for trying to cut costs as much as possible, making them more profitable, but are usually less convenient for passengers in terms of the limited operation on some major hub airports that are more expensive and tend to pack as many seats into the aircraft as possible. FSCs on the other hand are more costly, but at the same time more convenient as they focus on delivering a better service and have better connectivity through major hubs (Rozenberg, Szabo & Šebešćáková, 2014).

### **1.3 PESTLE analysis of the aviation industry**

The aviation industry has been facing many challenges and obstacles in sustainability in recent years even before the Covid-19 pandemic. To get a better sense of the macroeconomic conditions and the impact external factors have on the industry it is beneficial to have a PESTLE analysis, which provides a detailed and well segmented overview. The analysis below tries to achieve this by focusing on the major challenges that the industry faces, but leaves out the coronavirus pandemic as that will be analyzed more in depth in the next section. Thus the purpose of the analysis in the context of the report is to present the other main issues in order to later better isolate the effect of Covid-19 from other external factors and prevent misinterpretations.

The full compilation PESTLE, based on some of the biggest and most relevant airlines in the world, which includes all the points that should be noted is in the appendix (Appendix 2). The below analyzed points are the most relevant in the context of the global pandemic and thus are focused on more in depth.

#### **1.3.1 Political**

The two most notable political aspects of the industry are the political relations between countries, which have somewhat deteriorated in the recent past due to trade wars and other disputes, and state ownership of airlines (Suau-Sanchez, Voltes-Dorta & Cugueró-Escofet, 2020). The latter is of the most significance, as with the demand of air operations at historic lows and with restrictions or even outright prohibitions of operations it has become vital for many airlines, airports and others to gain financial support of governments. This, however, might be challenging for some in cases where a country might prefer to give support to state



owned airlines and facilities, or even request that private companies become partially owned by states. Aside from that the environment is difficult for airlines to navigate also due to the fact that there are significant differences as to how much a state is willing to help out the private sector.

### 1.3.2 Economic

The most problematic economic aspect in the industry are the highly volatile prices and costs (IATA, 2021b). This volatility stems from the rapid and unpredictable changes in oil prices, which have been in the past influenced by political turmoil and wars, but have also seen an impact from the demand side, as well as from operation expenses, which are caused by varying costs of airport maintenance, upgrades and personnel costs, both in terms of crews and ground staff (Cummins, 2019). Because of these fluctuations the end prices for consumers have sometimes seen fluctuation, or the airlines have had to incur losses.

### 1.3.3 Social

Two social obstacles the industry faces are: lack of trained personnel – especially pilots – due to retirements in the future, and a general public that is more conscientious about the environment and sustainability (Mburu, 2017). The reason behind the pilot shortage is that many have gone into retirement or are expected to in the near future, which is expected to be a demographic trend due to pilot age regulations. At the same time fewer pilots have been trained in the past few decades in some parts of the world, which is likely to lead to problems for the industry.

The reason for people being more vary of their carbon footprint, leading to a tendency to prefers greener alternatives such as trains, on the other hand is due to the visible damage that has been done to the environment in the past couple of decades, such as huge uncontrollable fires worldwide, melting of polar ice caps. Although demand has still been growing overall, that might be primarily due to increased financial accessibility to airline services.

### 1.3.4 Technological

The main advancements in the airline industry, in terms of technology, in the 21<sup>st</sup> century have been cost cutting measures, which have make flying accessible to the masses and make airlines more profitable. One of the most important advancements has been the efficiency enhancement through the development of modern engine designs, which now feature bigger engines with bigger fans, and making the shape of the aircraft body more aerodynamic. Another important consideration for airlines is the size of the aircraft, as bigger aircraft can achieve better fuel efficiency, but there is an issue that they are rarely fully loaded, which means they are actually less efficient than smaller aircraft. This coupled with the limitations of landing only at major hubs has given rise to long-haul narrow-body aircraft such as the

Airbus A321neo, which is considerably more efficient than previous models (DeLuca, 2019).

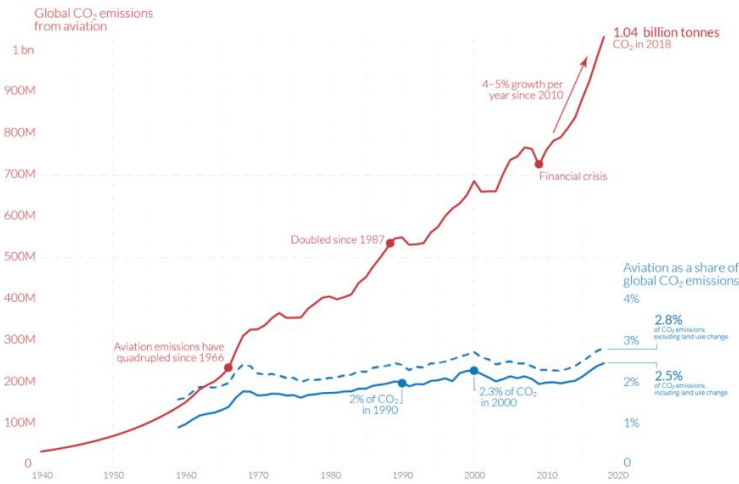
### 1.3.5 Legal

The industry is amongst the most highly regulated as is expected due to the danger having it unregulated would pose to the society. However, with the recent trends of new legislation being passed to regulate the environmental impact, such as limiting the amount of noise that aircraft can cause and new emission oriented regulations, the industry has become less profitable and more susceptible to changes. Another important development have been regulations regarding passenger rights, such as those by the EU which are very favorable towards individuals in case a flight is delayed or canceled (Drake, 2020). Those laws could be very problematic in the future due to uncertainty leading to cancelations and thus loss to airlines of changes in regulation at the detriment of passenger rights.

### 1.3.6 Environmental

The most heated discussions regarding the airline industry usually have to do with the effects that are caused to the environment, whether it is direct CO2 emissions, the caused noise, or other issues that arise. The industry as a whole has seen a massive rise in recent years, as seen on the figure below, with the introduction of low-cost carriers, causing concern regarding the necessity of some aspects of air travel (Lee et al, 2020). One consideration that has gained momentum amongst both individuals and governments is the idea that it might be better to use alternatives for short distance travel such as trains as they do not cause the same level of damage to the environment (Moshe, 2007).

Figure 2: Global carbon dioxide emissions from aviation



Source: Ritchie (2020); Lee et al (2020); Sausen & Schumann (2000).

## **2 IMPACT OF COVID-19 ON STAKEHOLDERS**

Covid-19 has impacted all stakeholders of the aviation industry, as due to health concerns and travel restrictions there have been many cancellations of flights around the globe, which have not only caused economic damage, but have also made it unpredictable, and thus difficult to plan and prepare for the future. Though not all airlines have been affected equally, as some have managed to find certain gains that they could exploit to be in a better position as the recovery progresses and travelers eventually decide to fly again in larger numbers. This chapter provides an in-depth analysis of the situations that stakeholders find themselves in.

### **2.1 Passengers**

On the demand side, the situation is currently not as grim as on the supply side, as there is still an abundance of interest for travel, which is due to a relatively good amount of disposable income and the optimism that the situation will improve and there will be a strong recovery. Some of this has already been seen, as certain western countries have relaxed restrictions and procedures put in place to curb the spread of the coronavirus. It is therefore reasonable to assume that as in the example with China presented in the previous chapter, the main factor in the recovery of the industry demand is alleviation of restrictions and having ample stability. Though regional differences and government restrictions are not the only factor in the recovery of demand, as we can identify two subgroups of travellers – business travellers and leisure travellers – which are expected to have a different characteristics in the recovery process (Bouwer, Saxon & Wittkamp, 2021).

In the comparison of business and leisure travel recovery many experts are suggesting it is likely that leisure travel will recover sooner than business travel, because many business meetings and events have already either been cancelled or moved online. It is also possible that, as companies have been forced to have online conferences and meetings using new online communication solutions, some are going to incorporate these solutions permanently at least to a certain extent in cases where trust between parties has been established. This is expected to have a profound impact especially on FSCs, which were traditionally known for having fixed routes from hub airports located near business centers. The costs of FSCs are typically higher than LCCs, but business travelers are not as price sensitive as leisure travelers, which have usually preferred LCCs (Suau-Sanchez, Voltes-Dorta & Cugueró-Escofet, 2020).

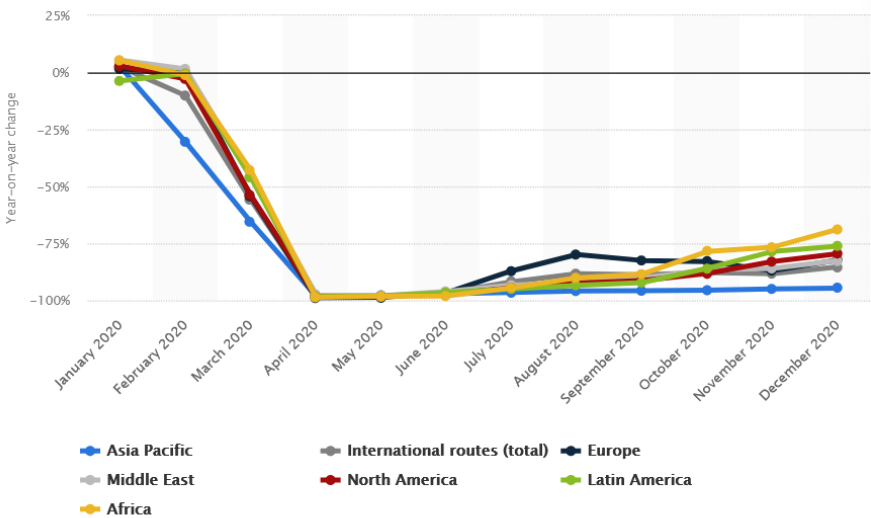
### **2.2 Airlines**

The pandemic was most devastating to the airlines, representing the supply side of the industry, as operations came to a halt overnight unexpectedly. Though, not all were affected in the same manner and to a same degree, which will likely result in a sort of restructuring

of the market, where certain companies will become more prevalent and have a larger market share in the future. As mentioned in chapter 1.2, the best way to further analyze the divide is to look at the data from companies based on the global region in which they primarily operate and on the type of operations and business model that they employ – looking at the differences between freight carriers and passenger carriers operation as FSCs and LCCs.

When looking at the regional differences, as seen in the figure 3 below, represented as the year-on-year changes in revenue passenger kilometers (hereafter referred to as RPK, calculated as number of passengers on a given flight times the distance in kilometers travelled), we can see that initially international activity in all regions essentially came to a complete halt in April of 2020 due to the first wave and wider spread of Covid-19. It is true, however, that the Asia Pacific region for example progressed much faster in terms of flight cancellations, likely linked to the more radical and quick response from countries such as China and Japan in order to stop the spread (Bonacini, Gallo & Patriarca, 2021). The recovery process has visibly been quite a bit more varied based on the region. Some regions have seen a quicker recovery than others as notably Europe saw a sign of recovery in the summer of 2020, before the pandemic situation got worse again in the fall, while Africa has seen a steady recovery in 2020, which was faster than other regions. This is likely directly correlated to restrictions implemented by governments, as Africa and Latin America with comparatively milder restrictions have seen a better recovery and Asia Pacific has seen the slowest recovery, which is in line with the more radical approaches of those countries (IATA, 2020).

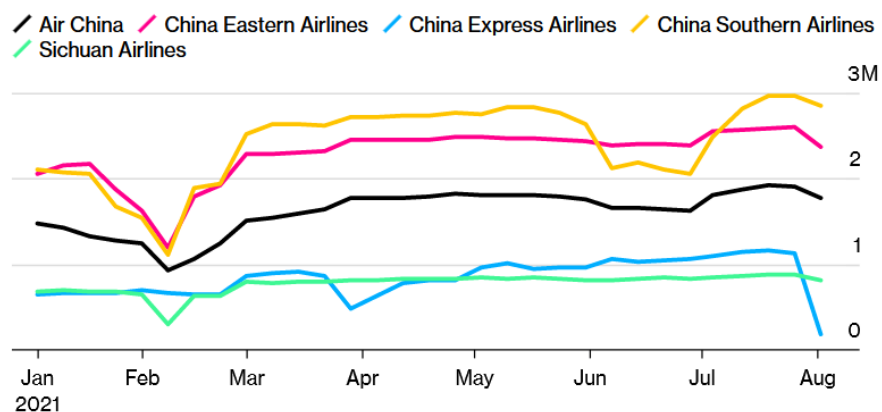
Figure 3: Year-on-year revenue-passenger kilometer (RPK) change on international routes from January to December 2020, by region



Source: Statista (2021); IATA (2020).

It should be noted though, that some countries, especially those bigger in terms of land mass, did see a recovery of regional travel at least in periods where the pandemic situation improved. This was very clearly visible in the case of Chinese airlines, where a swift and sturdy recovery was observed faster than in some other countries due to the effective initial prevention of the virus spread, actually leading to a growth in passenger numbers in 2021 compared to 2019; however, due to the governments “Zero Covid” policy, the sudden and unexpected spread of imported cases of the Delta variant in July have caused restrictions to be put in place again, leading to more damage to the aviation and other industries (Philip & Odeh, 2021).

Figure 4: Capacity of Chinese airline carriers over time (in numbers of passengers)



Source: Philip & Odeh (2021); OAG (2021).

Looking at the difference between FSCs and LCCs, the main factor is the business model, as companies that choose to be LCCs tend to be more flexible and are thus more adaptive to changes in the business environment compared to FSCs, which are more traditional and have in the past few years become increasingly dependent on long haul international flights that LCCs cannot cover due to the type of aircraft required to achieve the distance in some cases and better positioning of FSCs at major international hub airports. As international flights are the most affected by the pandemic due to the complexity of navigating restrictions and quarantines, they have seen the biggest reduction in the number of flights and passengers, meaning that FSCs are likely to be adversely hit by the crisis (Suau-Sanchez, Voltes-Dorta & Cugueró-Escofet, 2020). This negative impact on FSCs, however, might bring an added benefit for LCCs during the recovery as fewer FSC operation could result in lighter traffic at major hub airports, allowing LCCs to gain better connections and higher value customers. This could result in LCCs being better off after the pandemic relative to other airlines.

### 3 EMPIRICAL ANALYSIS

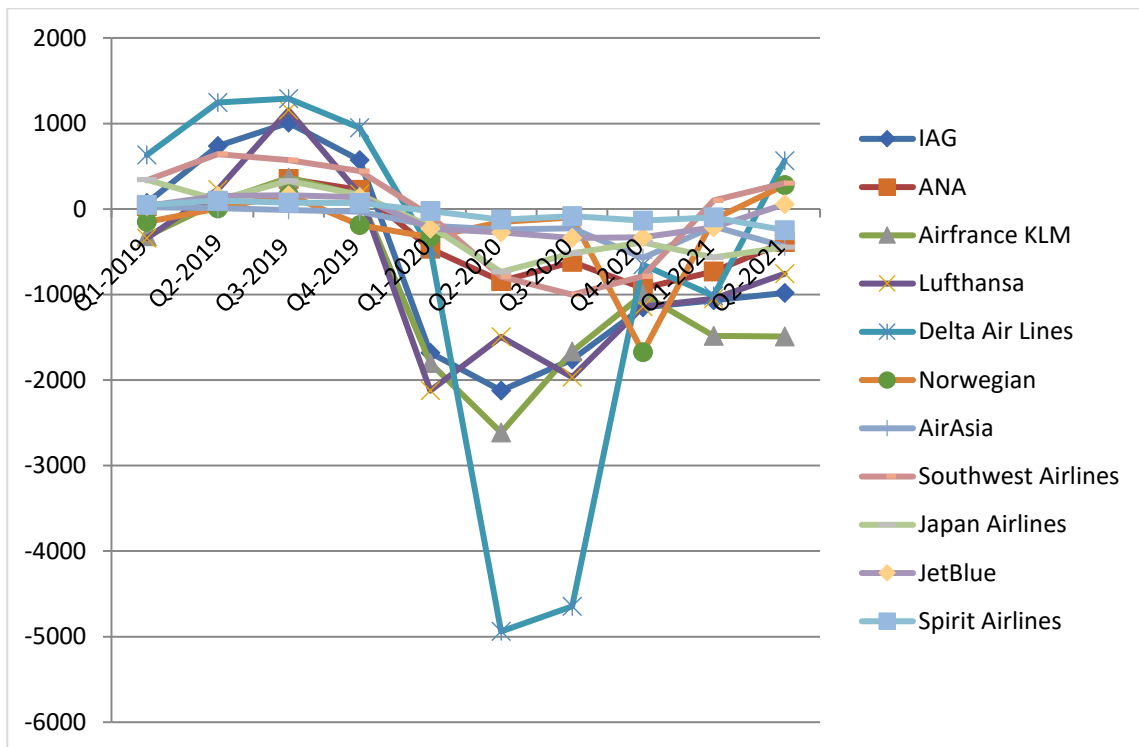
For a better representation of the financial situation and the impact on traffic, data from 15 airlines – 9 FSCs and 6 LCCs – has been compiled as presented in the table 2 below and in the appendixes. The differentiation between FSCs and LCCs is based on the International Civil Aviation Organization definition and compiled list of all LCCs in the world (ICAO, 2021). Looking at the net profit/loss of airlines (Figure 5 and Appendix 3), all the presented companies reported losses throughout all 4 quarters of 2020 and most are still making a loss even in 2021, with only a few making a small profit compared to the huge losses of the previous year. However, the *severity* of losses has not been the same for all the companies when comparing the 2019 profits with 2020 losses (excluding companies that have also reported losses in 2019, which includes Air France KLM, Lufthansa, Norwegian and AirAsia). In the case of FSCs, on average a company would require 3,06 years of 2019-like profits to cover the losses of 2020, whereas in the case of LCCs, on average a company would require 1,67 years of 2019-like profits to cover 2020 losses. This shows that LCCs have indeed been the better performers during Covid-19, though it should be noted that the sample of observed companies is relatively low, so for more reliable results the sample would have to be expanded on, and it does not account for the fact that there is likelihood that LCCs were better performing even before the pandemic. Because of that an analysis of the traffic of these companies is required as that provides more representative results as the main affecting factor on traffic was Covid-19.

*Table 2: List of analyzed airlines, their type (FSC or LCC) and profit/loss in 2019 and 2020 (in million €)*

<b>Airline</b>	<b>Type</b>	<b>Profit/loss in 2019</b>	<b>Profit/loss in 2020</b>
<b>IAG</b>	FSC	2387	-6716
<b>China Southern Airlines</b>	FSC	413	-1584
<b>ANA</b>	FSC	695,64	-2853,38
<b>Air France KLM</b>	FSC	285	-7083
<b>Lufthansa</b>	FSC	1213	-6725
<b>Delta Air Lines</b>	FSC	4118	-10701
<b>SIA</b>	FSC	Not reported	Not reported
<b>Silk Air</b>	FSC	Not reported	Not reported
<b>Japan Airlines</b>	FSC	944,4	-1848,62
<b>Scoot</b>	LCC	Not reported	Not reported
<b>Norwegian</b>	LCC	-162	-2255
<b>Air Asia</b>	LCC	-14	-1234
<b>Southwest Airlines</b>	LCC	1990	-2660
<b>JetBlue</b>	LCC	490	-1175
<b>Spirit Airlines</b>	LCC	288	-368

*Source: ICAO (2021); International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).*

Figure 5: Net profit/loss of airlines by quarters for 2019, 2020 and 2021 (in million €)

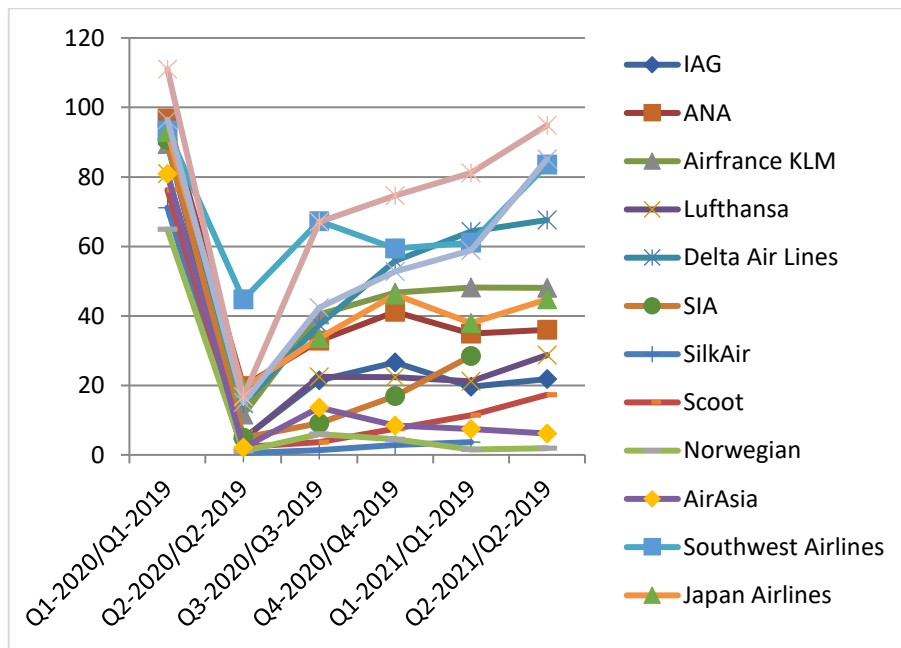


Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).

The first question that needs addressing when analyzing traffic of airlines is how many aircraft were operational and how many flights operated during this period. There are many different ways to measure this, such as the number of flights, change in fleet, but the most relevant is probably the available seat kilometers (hereafter referred to as ASK), which is calculated as the number of seats available multiplied by the kilometers flown. This measure also takes into account the differences in the flight routes as longer haul flights are typically more expensive both in terms of airline costs and the ticket costs for passengers. Looking at the difference between the ASK of airlines by quarter in 2020 and 2021 compared to 2019 (Figure 6 and Appendix 4), the 2<sup>nd</sup> quarter saw the highest flight cancellation. What is more noteworthy and perhaps unexpected, however, is the fact that when comparing FSCs and LCCs in terms of ASK change (Figure 7), we see that LCCs managed to retain more flights, proving that the aforementioned flexibility of this business model might give a competitive edge in rearranging flights more accurately based on demand.

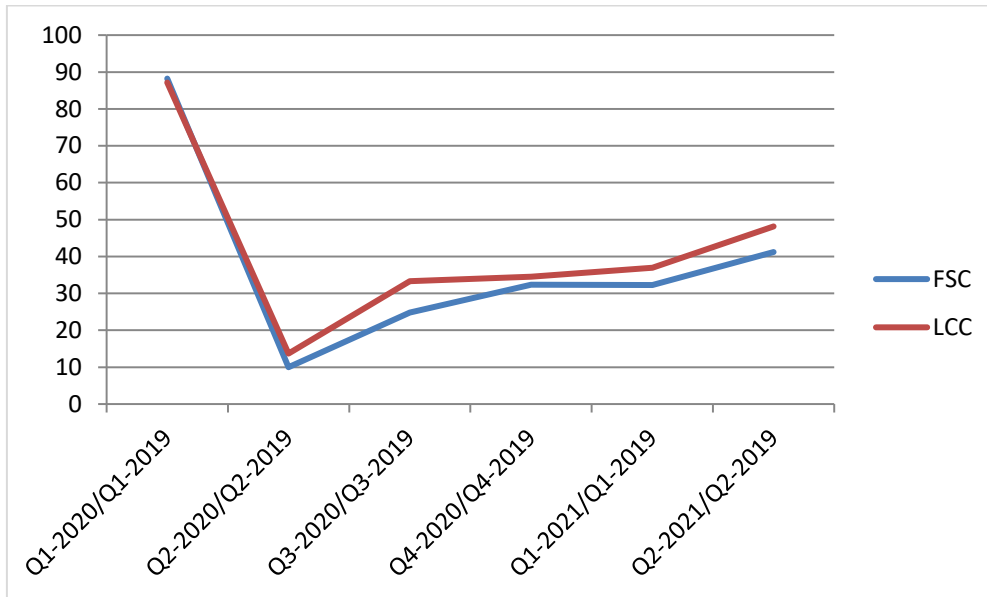


Figure 6: ASK of airlines by quarters in 2020 and 2021, as compared to 2019 (in %)



Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).

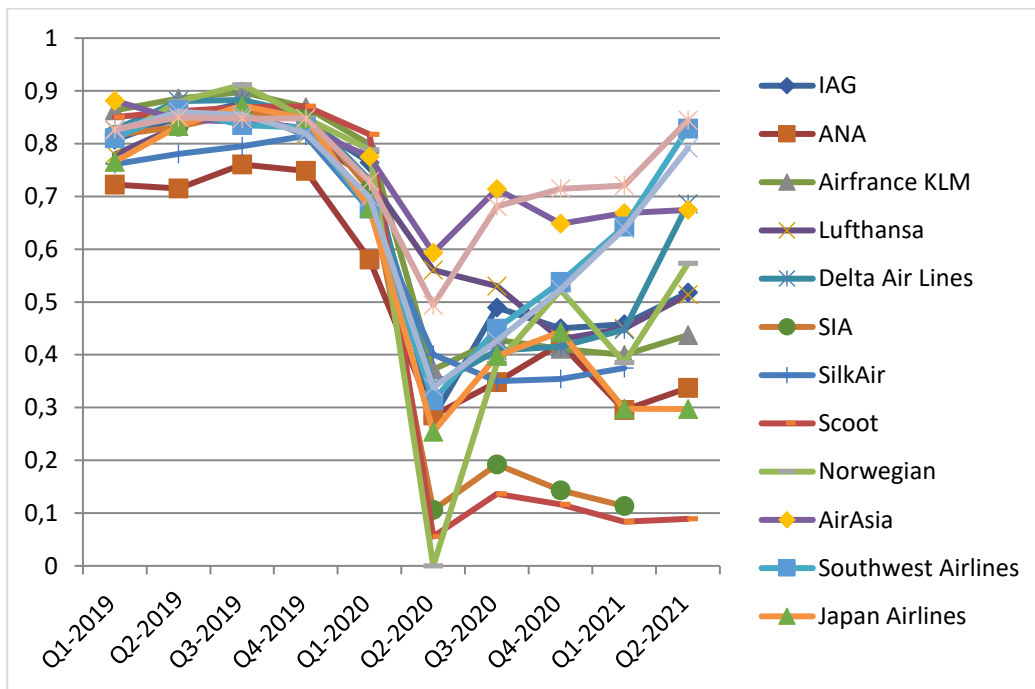
Figure 7: ASK of FSCs and LCCs by quarters in 2020 and 2021, as compared to 2019 (in %)



*Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).*

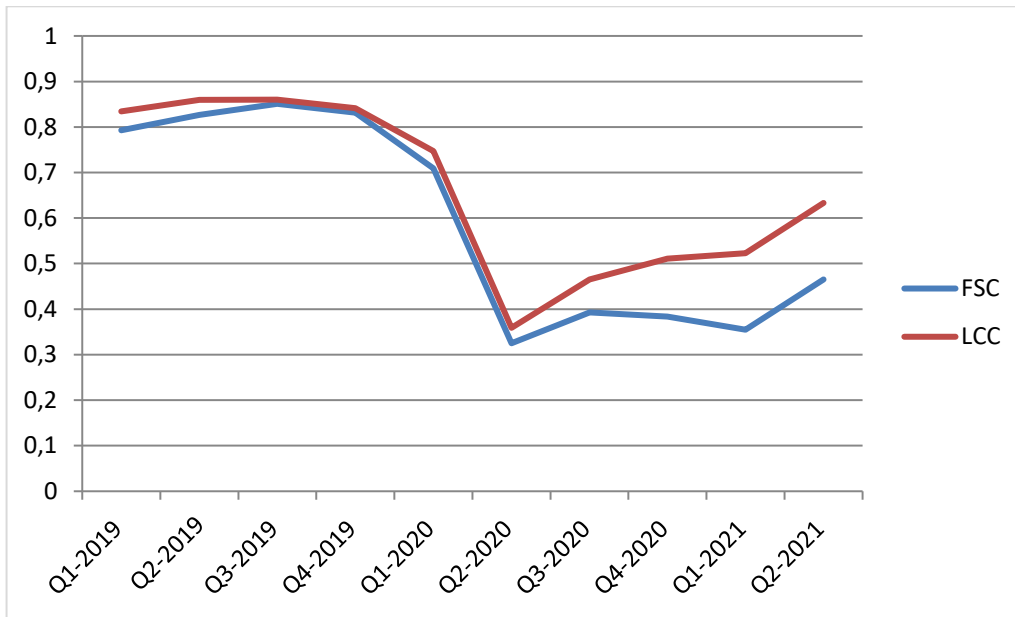
Yet, though the net profit/loss and ASK show an optimistic picture for LCCs, to determine whether LCCs are truly more efficient than FSCs, the main determinant is the load factor, which is the percentage occupancy of flights or how full the flights are. As it is also important to distinguish the length of flights in order to have a better representation and prevent shorter haul flights having a bigger impact on results, which would obscure the reality of long haul flights being more lucrative and having a bigger impact on a company, it makes sense to take the kilometer distance into consideration. As such, we will define load factor as RPK divided by ASK, as presented in Figure 8 and Appendix 5. Looking at the comparison of load factors by airline types below on Figure 9, it is clear that there are differences between LCCs and FSCs that have always been present, though their intensity has only been amplified by the pandemic. Before the pandemic in 2019, the load factor of FSCs was around 0,825, while that of LCCs was around 0,849 – only a small difference of about 2,3 percentage points. But in 2020 the load factor of FSCs dropped to around 0,438, while that of LCCs dropped *only* to around 0,540, which is a difference of about 10,1 percentage points, which proves that LCCs are indeed the more adaptable and thus have survived through the pandemic better than FSCs and will likely see a bigger growth as travel resumes.

Figure 8: Load factor as RPK/ASK by company



Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).

Figure 9: Load factor as RPK/ASK by airline type



*Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).*

#### 4 FUTURE OUTCOME

Because of the severe economic situation in which the airline industry has found itself in, it is clear that many airlines will require state aid in order to survive the difficult period. However, not all countries have the same attitude towards giving grants and the size of grants, which could lead to airlines of certain nations to have an advantage going forward after the crisis is over. Richer countries tend to provide more financial help, which could lead to unfair competition and closure of airlines from smaller countries that do not have the same access to funding. Another important aspect are the requirements and conditions by which companies will be eligible for state funding programs, as some countries might take advantage of the situation to partially nationalize airlines and to promote alternative modes of transportation, such as the rail system in order to move to a more sustainable future (Macola, 2021). A good example of this is France, which decided to ban short-haul flights that could be replaced by a train ride of less than two and a half hours, which went into effect during the pandemic, preventing large opposition from airlines as they are all struggling and hopping to gain help from the government.

## CONCLUSION

The aviation industry that has been hampered by the Covid-19 pandemic is showing signs of recovery, though it will likely take years before most airlines start to make decent profits and even longer for them to be able to repay the debts they have accumulated and get back on track. The demand side, despite lingering concerns regarding individuals' health, seems to be quite strong, showing that the biggest obstacles in the future will continue to be various government restrictions that are likely to have the most economic impact. Therefore, the most worrying for companies might be regions where "Zero Covid" policies are put in place, as that does not seem sustainable for companies long term. Another regional aspect of importance to both airlines and other actors in the industry will be government support, which is likely to both vary widely between regions and have certain political aspects such as attaining other goals countries have like climate change commitments.

In regards to the differences between FSCs and LCCs, based on the empirical analysis, it seems clear that LCCs are likely to continue operating with higher efficiency than their FSC counterparts. Even before the pandemic LCCs were seen as being more efficient due to their management characteristics that allow them to better adapt to the changing environment. The Covid-19 crisis seems to be no different as the LCCs have managed to retain both a higher percentage of flights compared to pre-pandemic levels and higher occupancy rates on the flights. In fact, the pandemic seems to have magnified the differences in efficiency parameters, as they appear to have become more vital to the survival of individual companies. Therefore, it is possible that the "phase out" of FSCs could accelerate in the future as the economy recovers.

The future of the industry, to a large extent, seems to rest with governments' support of airlines, airports and other actors. This paper has only analyzed this aspect in a qualitative way so future research into the support after the industry recovers might reveal more interesting conclusions and could represent an extension of the analysis presented in this paper.

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## **APPENDICES**



## **Appendix 1: Povzetek (Summary in Slovene language)**

Pandemija Covida 19 je močno vplivala na praktično vse sektorje v ekonomiji. Tako imenovana »nova normalnost« je vodila do velikih sprememb v obnašanju potrošnikov in vodi do ekonomskih stisk, tako pri podjetjih, kot tudi posameznikih. Ena izmed najbolj prizadetih panog je bilo letalstvo, saj je primarno odvisno od turizma in prevoza izdelkov, ki sta postala močno otežena. Razne omejitve s strani oblasti so vplivale na letalske družbe, potnike, letališča in druge udeležence v panogi.

Glavna problematika diplomske naloge je obravnava ekonomskega vidika in vpliva pandemije na letalske družbe ter ostale udeležence v panogi, kot tudi pogled v prihodnost, ko se bo situacija normalizirala. Prvo poglavje definira in deli industrijo kot celoto z namenom nadaljnje obravnave, kot tudi probleme, ki so bili prisotni že pred pandemijo. Drugo poglavje predstavi vpliv pandemije na potnike in letalske družbe, ki predstavljata povpraševanje in ponudbo v industriji. Tretje poglavje zajema empirično analizo petnajstih letalskih družb glede na način poslovanja – prevoznike polnih storitev in nizkocenovne družbe – in predstavi, kako te razlike vplivajo na njihovo poslovanje v pandemiji in okrevanje. Zadnje poglavje pa predstavi pomen državnih pomoči za okrevanje panoge, kar je področje, ki bi lahko bilo predmet nadaljnje raziskave.

**Appendix 2: PESTLE analysis of airlines**

POLITICAL	ECONOMIC	SOCIAL
<ul style="list-style-type: none"> <li>• Political stability of countries (terrorist threats, civil unrest)</li> <li>• Political destabilization of countries or regions</li> <li>• Ownership of airlines by states</li> <li>• Political backing of airlines (subsidies)</li> <li>• International relations (US-China relations, effects of Brexit, tensions with Belarus)</li> <li>• Trade wars (tariffs on the sectors during the Trump era)</li> </ul>	<ul style="list-style-type: none"> <li>• Volatile oil prices</li> <li>• Economic recovery</li> <li>• Protectionist trade policies (US)</li> <li>• Changes in FX market</li> <li>• Change of airport prices</li> <li>• Shift in investments (due to Brexit, turmoil in countries)</li> </ul>	<ul style="list-style-type: none"> <li>• Pilot shortage expected due to retirements</li> <li>• Change in passenger perception in regards to global sustainability</li> <li>• New and emerging markets</li> <li>• Employee strikes over low pay and lack of benefits</li> <li>• Preference of high speed rail for short distance travel</li> </ul>

TECHNOLOGICAL	LEGAL	ENVIRONMENTAL
<ul style="list-style-type: none"> <li>• Bigger engines to improve fuel efficiency</li> <li>• Smaller new aircraft in general and phasing out of bigger ones to cut costs (bigger aircraft were almost never full)</li> <li>• Narrow body aircraft becoming more popular</li> <li>• New management systems to improve efficiency (for example in warehouses)</li> <li>• Digitalization for improving the customer experience</li> <li>• Big data for customer analytics</li> </ul>	<ul style="list-style-type: none"> <li>• Stringent regulation of the industry</li> <li>• Administrative authorities</li> <li>• Information protection laws</li> <li>• Strict EU regulation regarding passenger reimbursements in cases of cancellation</li> <li>• Laws regarding state aid</li> <li>• New laws prohibiting carrying electronic devices from the Middle East to the US</li> <li>• “ Carbon tax” laws</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon reduction initiatives</li> <li>• More efficient aircraft designs being implemented</li> <li>• Emission regulations</li> <li>• Development of bio-fuels</li> <li>• Noise level reduction</li> <li>• Natural disasters</li> </ul>

*Adapted from: IATA (2021); IRENA (2017); Cummins (2019); Mburu (2017); DeLuca (2019); Drake (2020); Moshe (2007); Ritchie (2020); Lee et al (2020); Sausen and Schumann (2000); The Emirates Group (2021); Singapore Airlines (2021); Delta Air Lines (2021); International Airlines Group (2021); Lufthansa Group (2021); Air France KLM Group (2021a); Air France KLM Group (2021b); ANA Group (2020); Japan Airlines (2021); China Southern Airlines (2021); Ryanair Group (2021); Qatar Airways (2020); Qantas Airways (2020).*

**Appendix 3: Net profit/loss of airlines by quarters for 2019, 2020 and 2021 (in million €)**

	Q1-2019	Q2-2019	Q3-2019	Q4-2019	2019	Q1-2020	Q2-2020	Q3-2020	Q4-2020	2020	Q1-2021	Q2-2021
IAG	70	736	1008	573	2387	-1683	-2123	-1761	-1149	-6716	-1067	-981
China Southern Airlines					413					-1584		
ANA	32,58	86,51	352,29	224,26	695,64	-464,67	-845,01	-618,11	-925,59	-2853,38	-731,75	-386,25
Air France KLM	-320	81	367	157	285	-1803	-2614	-1665	-1001	-7083	-1482	-1492
Lufthansa	-342	226	1154	175	1213	-2124	-1493	-1967	-1141	-6725	-1049	-756
Delta Air Lines	630	1246	1291	951	4118	-461	-4939	-4647	-654	-10701	-1017	563
SIA												
SilkAir												
Scoot												
Norwegian	-150	8	168	-188	-162	-330	-152	-98	-1675	-2255	-119	279
AirAsia	21	9	-14	-30	-14	-197	-240	-225	-572	-1234	-202	-438
Southwest Airlines	334	641	570	445	1990	-81	-791	-1001	-787	-2660	100	301
Japan Airlines	341,8	106,23	329,28	167,09	944,4	-204,5	-735,76	-517,49	-390,87	-1848,62	-566,93	-445,31
JetBlue	36	154	161	139	490	-231	-276	-339	-329	-1175	-213	55
Spirit Airlines	48	98	72	70	288	-24	-124	-85	-135	-368	-97	-248

*Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).*

**Appendix 4: ASK of airlines by quarters in 2020 and 2021, as compared to 2019 (in %)**

	Q1-2020/Q1-2019	Q2-2020/Q2-2019	Q3-2020/Q3-2019	Q4-2020/Q4-2019	Q1-2021/Q1-2019	Q2-2021/Q2-2019
IAG	89,52441563	4,662076175	21,41402543	26,58496433	19,6173581	21,86733024
ANA	96,8503937	19,75122975	32,83770768	41,2131833	34,94501204	36,0090234
Airfrance KLM	89,45512407	11,58165962	40,40632907	46,70583355	48,14575897	48,11971459
Lufthansa	80,92457176	4,526537047	22,42336617	22,32899543	21,19869608	28,7094062
Delta Air Lines	94,34334183	14,76670477	37,35048485	55,85653135	64,27504779	67,63223527
SIA	90,61953098	4,955940254	9,144122286	16,93069894	28,4596048	
SilkAir	71,1531721	0,508646999	1,393728223	2,873772281	3,645285664	
Scoot	76,26964245	2,300720428	3,70696293	7,582624074	11,43247552	17,26702301
Norwegian	64,91026133	1,100687006	5,986236922	4,467599201	1,573091188	1,946516954
AirAsia	80,91409939	2,097076964	13,65643398	8,449309356	7,471328986	6,162510056
Southwest Airlines	93,30971477	44,7341839	67,20263831	59,38058183	61,0949827	83,56617818
Japan Airlines	92,90382407	19,15836588	33,61071992	46,13970588	37,91839618	44,7321076
JetBlue	96,46177998	15,05272135	42,37178265	52,73999072	58,88177756	85,12560087
Spirit Airlines	111,0254141	16,78777393	67,04076292	74,62536279	81,14805917	94,9077278

*Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).*

## Appendix 5: Load factor as RPK/ASK by company

	Q1-2019	Q2-2019	Q3-2019	Q4-2019	Q1-2020	Q2-2020	Q3-2020	Q4-2020	Q1-2021	Q2-2021
IAG	0,807154316	0,849922734	0,876632943	0,843094933	0,764447143	0,28150134	0,489301432	0,450300445	0,458164369	0,518004677
ANA	0,722684974	0,715324122	0,760504455	0,748631864	0,580259356	0,284898477	0,348304308	0,420813129	0,295158287	0,336987732
Airfrance KLM	0,863272123	0,885570825	0,897712826	0,869089838	0,79880775	0,372047918	0,428411215	0,411203438	0,399958316	0,437433067
Lufthansa	0,779492278	0,832748292	0,863650512	0,815940333	0,732522513	0,560250755	0,529843729	0,429675507	0,450276079	0,513746019
Delta Air Lines	0,826985107	0,88041671	0,88275879	0,855810025	0,731285482	0,341719446	0,408078545	0,415252077	0,447376981	0,685885863
SIA	0,816686289	0,832104243	0,858728618	0,855909576	0,714175357	0,10592686	0,192039801	0,143332749	0,113595707	
SilkAir	0,760953382	0,780603594	0,795470383	0,814841761	0,674876847	0,4	0,35	0,354443038	0,375	
Scoot	0,850603507	0,86102719	0,869101309	0,87089643	0,81755748	0,055555556	0,136498516	0,116618076	0,0836665339	0,088829071
Norwegian	0,809736966	0,879737017	0,911733727	0,848558379	0,78845396	0	0,384164223	0,522896699	0,384823848	0,573055028
AirAsia	0,881380706	0,84558863	0,842146762	0,829606463	0,775099006	0,593350384	0,713625866	0,648365207	0,668171558	0,674499565
Southwest Airlines	0,810461054	0,863525463	0,835184776	0,830498734	0,677078573	0,313833113	0,449200498	0,538201983	0,642648125	0,828671849
Japan Airlines	0,765609821	0,833252885	0,87189007	0,847163866	0,678359238	0,254237288	0,397790757	0,443653956	0,297892163	0,297233667
JetBlue	0,824900374	0,859784463	0,854833174	0,819137425	0,697880154	0,338140613	0,426475882	0,524291053	0,638980038	0,791793798
Spirit Airlines	0,827411809	0,84982699	0,847531546	0,848072025	0,728333903	0,49398832	0,680978402	0,714739265	0,720473668	0,84438233

*Adapted from: International Airlines Group (2020); International Airlines Group (2021); China Southern Airlines (2021); ANA (2019); ANA (2020); ANA (2021); Air France KLM Group (2019); Air France KLM Group (2020); Air France KLM Group (2021); Lufthansa Group (2020); Lufthansa Group (2021); Delta Air Lines (2020); Delta Air Lines (2021); Norwegian (2020); Norwegian (2021); AirAsia (2020); AirAsia (2021); Southwest (2020); Southwest (2021); Japan Airlines (2020); Japan Airlines (2021); JetBlue (2020); JetBlue (2021); Spirit Airlines (2020); Spirit Airlines (2021).*