

The long-term implications of the COVID-19 pandemic on the aviation industry

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Affidavit

I hereby affirm that this Bachelor's Thesis represents my own written work and that I have used no sources and aids other than those indicated. All passages quoted from publications or paraphrased from these sources are properly cited and attributed.

The thesis was not submitted in the same or in a substantially similar version, not even partially, to another examination board and was not published elsewhere.

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Abstract

The aviation industry is of utmost importance for the economic prosperity and strategic development of many countries and it plays an irreplaceable role in the global transportation system. One of the most prevalent and unprecedented threats to this industry is the occurrence of a pandemic, that is likely to shatter the sector and change its operations fundamentally. Starting in 2020, aviation in particular has been confronted with the devastating impact of coronavirus (COVID-19) disease, which has evolved to a worldwide pandemic and led to a drastic reestablishment of the society's daily life. The pandemic has triggered a change in the previously standardized way of traveling by air. This thesis focuses on the investigation of COVID-19 implications for the aviation industry, on the strategies implemented by this sector as a response to the crisis, as well as on the intention of passengers to travel by air in pandemic times. The literature review of this thesis elaborates on the challenges that the aviation industry is facing due to the global pandemic and it discusses the restructured onboard experience including the introduced safety measures throughout the entire aviation network. The paper also focuses on the new behavioral patterns of passengers. Based on a quantitative research approach, an online empirical experiment including a video advertisement as a form of stimulus in two different experimental conditions was conducted in April-May 2021. The population's exposure to aviation safety measures and their impact on travel intention, customer satisfaction, value for money and perceived health risk were examined. The research has revealed that airline safety measures are likely to positively influence the anticipated customer satisfaction. At the same time, a direct exposure to safety measures introduced by airlines does not reduce their perceived health risk, as well as increase their value for money.

As further concluded by the research, a rising customer satisfaction and anticipated value for money can positively influence the individual travel intention. On the contrary, the more of a health risk perception passengers develop, the less likely they are to travel by air. This would imply a negative scenario for the air traffic sector, of which a further development is currently difficult to predict, while the time needed for recovery remains unclear.

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List of Abbreviations

GDP - Gross Domestic Product

COVID-19 - Coronavirus Disease

IATA - International Air Transport Association

ETF - European Transport Workers' Federation

ICAO - International Civil Aviation Organization

1 Introduction

The global COVID-19 pandemic leaves its marks on the international travel demand and the overall movement of the population. Approximately 90% of the society has so far been affected by a sort of restrictions imposed on the air traffic. Deep losses in the passenger revenue and in the count of people employed in the aviation sector signalize a mass disruption to economies that highly depend on air transport related operations (Baker, 2020). Apart from the ability to unite people from different regions, the central position of aviation is observable through its influence on other sectors' success and growth. It creates diverse employment opportunities within the actual sector, as well as in related fields (Air Transport Action Group, 2014). The excellent connectivity aspect, a broad range of advantages and other contributions that the aviation system was facilitating the world with in the pre-pandemic stage have become strictly limited at the time when COVID-19 shut the door on international tourism and has exposed the industry to a severe crisis (Liu, 2020).

Nowadays, depending on the country, the air traffic operations are either limited or completely unavailable (Poonam, 2020). Some airlines have reached the point when they are forced to discontinue their business activity partly or entirely. Bankruptcy files, closure of subsidiaries and other actions result from failure to survive the crisis (Albers & Rundshagen, 2020). One of the main questions that potential passengers are nowadays interested in being answered is when will they be able to travel carefree again. Apart from the fear of the infection itself, some additional sources of concern are quarantine regulations and the probability of flight connections to be cancelled (Clarke, 2021). As the number of COVID-19 cases per region has steadily increased, the amount of flights operated in that specific area have become less (IATA, 2020). Since the COVID-19 outbreak, the drastic decline in departing flights has almost reached -52% (Bielecki

et al., 2020). Indeed, each restriction that a country issues on e.g. crossing borders or the acceptance of international travelers means a challenge for the usual operations of global aviation (Monmousseau et al., 2020).

This thesis attempts to answer the following three research questions:

RQ1: How does the COVID-19 pandemic affect the aviation industry?

RQ2: What are the strategies pursued by the aviation industry in order to survive the COVID-19 crisis?

RQ3: What is the impact of a perceived health risk, anticipated value for money and customer satisfaction on the behavioral (travel) intention of passengers?

It is of great importance to understand the kind of threat that the aviation business is exposed to in case of a pandemic by identifying major vulnerabilities. The relevance of this matter is supported by its high topicality, as well as by the direct impact that the COVID-19 pandemic has on the pivotal role of the aviation industry. The topic is considerably new and of high interest in the discussed context, which raises the need for further research. The present research aims to fill a knowledge gap by providing a deeper understanding of the actual implications that the pandemic has for the air traffic industry. It is a further target of this thesis to uncover possible behavioral patterns that have emerged due to the presence of the COVID-19 disease. Hereby, the paper examines the perception of passengers towards traveling by air in times of a pandemic, with focus on what might be a potential driver of their travel intention. Furthermore, it intends to reflect on the strategies and paths that airlines pursue, especially on the adopted safety measures that are meant to protect passengers and ensure the competitiveness of airlines on the market. An online

experiment will be created and distributed through diverse social media channels in order gain valuable data on the researched topic. The experiment will focus at measuring perceived health risk, anticipated value for money, as well as customer satisfaction of respondents both in the presence and absence of safety measures implemented within the aviation industry and at conducting a research on causality.

This paper consists of the following parts: introduction, literature review, methodology, analysis & results and conclusion & recommendations. The introductory part has the purpose of presenting the discussed topic. It further contains information on the aim of the thesis, on the hypotheses to be tested including the research approach, and lastly on the detailed thesis outline. The literature review first provides knowledge on the role of the aviation industry within the transportation network and afterwards outlines the COVID-19 pandemic outbreak in the aviation context. This section is followed by a detailed discussion on the challenges that the aviation business is dealing with in regards to the emerging pandemic. The next section primarily focuses on the safety measures introduced across the air traffic industry, with an emphasis on the function of air filters and a description of the up-to-date onboard experience. This part also reveals both the new trends and threats that the world of aviation is encountered with, as well as what recovery-driven steps are pursued by this industry. This section of the thesis is concluded with information on governmental responses and support provided to aviation businesses. The following part of the thesis covers the topic of new behavioral patterns of potential passengers when it comes to traveling by air in pandemic times. The methodology part describes the chosen research design and data collection method, as well as provides details on the exact manipulation of the stimuli, including the corresponding survey questions. The analysis & results section presents the outcomes of the experiment and discusses all related

takeaways. Afterwards, conclusions on the topic are drawn, combined with a section on the chances for aviation to recover and an outlook on its future.

2 Literature Review

2.1 The role of the aviation industry in global transportation

The aviation industry is a complex system that plays an indispensable role in the global transportation of people and freight on scheduled domestic and international flight connections. It encompasses all units that actively participate in the execution of air traffic, such as airlines, airports and aircraft producers (Air Transport Action Group, 2014).

The importance of the air traffic sector has been concluded in Poonam's research (2020). Based on his findings, this sector is not only a major contributor to the economic prosperity, it also plays an important role in the performance of related sectors such as tourism. Additionally, it allows people to conveniently travel around the world and reach their target destination within shortest time (Poonam, 2020). The aviation benefits report published by ICAO (2019) reveals that approximately 65 million job opportunities are created by this industry. The research has shown that the aviation sector contributes on average with around 3.6% to the worldwide GDP (ICAO, 2019).

Furthermore, the sector forms a significant part of modern logistics systems. Due to its speed, convenience and efficiency air transport is highly sought for important freight transport. It is the fastest and safest way of transporting perishable freight and freight of high value over larger distances (Lenin, 2015). This makes the aviation industry to a facilitator of global trade by enabling the access to foreign marketplaces around the globe (Lenin, 2015). Aviation also

encourages the process of innovation and it aids to increase the overall productivity levels (Lenin, 2015).

The industry of aviation has ever since invested time and effort in progressing towards a development in various areas (Mrazova, 2014). For instance, the optimization of the way of flying while mitigating the environmental impact is a challenge aimed to be tackled by the industry. Mrazova (2014) explains that aviation strives for the constant improvement in the field of sustainable operations and in preventing climate change by e.g., minimizing its carbon footprint (Mrazova, 2014). The detailed study of Garrow and Lurkin (2021) proposes that on average 60% of international travelers make use of air transport and above 30% of worldwide imports and exports occur by air (Garrow & Lurkin, 2021). The Air Transport Action Group (2014) has described one of the core values of aviation as the facilitation of time-efficient movements across the established route networks. The statistics obtained from this sector point out that the number of people traveling by air on annual basis can exceed a 3 billion figure (Air Transport Action Group, 2014). Especially civil aviation plays a vital role in diplomatic and political context, having positive effects on the relationships of two or more nations. The authorities of countries can agree upon establishing air route networks that would meet the interests of their population, as well as to facilitate the flow of cargo (Kobierecki, 2020). Whenever a physical access to a specific region is limited or not possible, aviation offers reliable solutions. It helps to develop a connection to all parts of the world and provide assistance in emergency situations (Air Transport Action Group, 2014).

Within the aviation environment, the integration of various regions together with raising the air connectivity are topics of high priority (PwC, n.d.). ICAO (2019) suggests that the ability of air traffic to grow depends on several aspects, for instance on earned profits. The passengers preference for an airline or destination is often determined by their image. The extent to which they are considered as safe can

affect the travel demand and either support or hinder the air traffic growth (ICAO, 2019).

2.2 The COVID-19 pandemic outbreak

The year 2020 has been marked by the outbreak of the disease called coronavirus (COVID-19). Due to the rapid spread of this infectious respiratory illness a global pandemic emerged, which has brought tragic implications for the society. Many people have lost their lives, the everyday life has been restructured and a disruption of multiple industries has occurred (De Vos, 2020). The transmission of the virus can occur either from person to person or through droplets on surfaces that individuals might touch. Mostly, infected individuals are only experiencing mild symptoms but in some cases the infection can be life-threatening. The most frequent symptoms compatible with COVID-19 are fever, cough and shortness of breath (Harvard T.H. Chan - School of Public Health, 2020).

In December 2019, first cases showing symptoms of the disease were detected in Wuhan, China. Following these events, the previously unidentified illness has been given the name novel coronavirus. The virus has continued to spread from China to the entire world and up to the present day, it keeps causing damages to economies and it is reshaping the lifestyle of people worldwide (USF Center for Urban Transportation Research, 2020). A reproduction number represents a single case that can possibly transfer a specific disease to others. The main target of governments is to decrease the number of new infections originating from an individual case. In order to prevent the coronavirus disease from spreading and to achieve a decline in the number of reproductions, countries across the globe started to introduce safety measures (Fischer et al., 2020).

2.3 Challenges in the aviation industry during the COVID-19 pandemic

The aviation sector is an inevitable component of the transport industry and is of high importance for all countries. However, the COVID-19 pandemic is responsible for the current downturn in the industry and air traffic is perceived as a potential way of bringing the disease to other regions. This industry has very few options to proceed with operations during such collapse. The occurred shock has caused it to go through a phase of economic vulnerability (Dube et al., 2021). There has been a course of important events that have determined the fight against the spread of COVID-19 by country. To keep the spread of the illness under control governments have introduced limitations of air traffic, which have had a direct impact on national and international aviation. Many countries that were experiencing a quick rise in the number of infected citizens have made the decision to proceed with a country-wide lockdown, while flights kept being suspended and airports were closing down (Gössling et al., 2020). Right after the virus has been identified in China, it became the first nation to impose a lockdown (KPMG, 2021). Shortly after, several other countries have followed this example and a sequence of announced lockdowns has initiated. Furthermore, an official warning from traveling outside the US has come into effect (Monmousseau et al., 2020). Immediately after this event, the official border closure of almost all European Union nations occurred. Consequently, only EU citizens were allowed to return to their home country and the rest of travelers has been banned (Monmousseau et al., 2020). The sudden slowdown stands in the way of further aviation industry's development and expansion. These are some of the prerequisites for creating jobs and for the overall prosperity of the economy (European Commission, 2020).

Capacity reductions, low demand and a lot of uncertainty are some of the implications caused by COVID-19 that the aviation environment is confronted with. The pressure on the industry comes from the side of employment too. Sobieralski (2020) suggests that the workforce of the air travel sector might go down by -13%. His research proposes that airline employees in charge of customer handling are the ones to be most at risk (Sobieralski, 2020). Due to the pandemic, a problematic has emerged that consists in airlines trying to retain their flight routes and continue operating flights with no passengers, which leads to undesirable outcomes. Such operations are not feasible for airlines in the long-term (Poonam, 2020). While the labor costs go down, salaries of people employed in this sector, as well as revenue generated by airlines drop too. According to IATA (2020), COVID-19 has showed to have a damaging effect on the the advantages that each aviation job is capable to bring for the entire economy. There has been a percentage change of -35% in the aviation employment during the 2020 time period. The crisis has also caused the percentage of gross valued added that each aviation worker generates to experience a greater loss (IATA, 2020).

As a consequence of the coronavirus crisis and limited flight schedules, airline fleets are staying on the ground for a long time. There are expenditures related to maintaining aircrafts in good conditions and several other outstanding costs that need to be carried, such as parking costs (Adrienne et al., 2020). Airlines are increasingly struggling with where to store the aircrafts while trying to survive these challenging times that the industry is facing. Current plans of some airlines involve a sooner retirement of older aircrafts (Adrienne et al., 2020). Nowadays, aircraft producers such as Airbus have to deal with a significantly low demand for airplanes (Dube et al., 2021). Similarly, Boeing is going through a period determined by extremely reduced production. Generally, a great amount of uncertainty is prevailing across the aviation businesses (KPMG, 2021).

The aircraft leasing sector is also put at risk due to the coronavirus crisis. Due to the bad financial situation imposed by the pandemic, those airlines that only lease their aircrafts were put in the situation when they need to return them to the owner (Wilson et al., 2020). Since the beginning of the pandemic, the flight volume has been suffering and the entire industry's performance turned out to be very weak. The constantly prolonged limitations of air traffic contribute to the severity of financial backlog experienced by airlines and the rest of the sector (Dube et al., 2021).

The commercial aviation sector, which also includes the carriage of freight and medical supply has been growing over a period of time until February 2020 (Bielecki et al., 2020). The passenger revenue per kilometer metrics has been experiencing a sharp downturn throughout the 2020 period (IATA, 2020). In 2020, there has been an overall decline of nearly -60% in total spendings of people who traveled by air in contrast to pre-covid phase (IATA, 2020). By end of March 2020, as opposed to previous year the total count of air transport services dropped by -55%. By April, the number of scheduled flight connections continued to decline, reaching a downturn of -74% in contrast to last year's performance. Multiple countries have made the decision to permit traveling for special purposes only, such as to make it possible for nationals to return back to their country. Depending on the region, both in-bound and out-bound flights were restricted or completely prohibited (Bielecki et al., 2020). In 2019, the amount of planned flight connections has reached 38.9 million. This number declined drastically throughout the year 2020, totaling roughly 23 million. In this case, the represented percentage change accounts for -40,6%. (Bielecki et al., 2020) In case of the metric revenue from passengers per kilometer, a drop of nearly -66% in contrast to 2019 can be observed, together with an intense decline in flight ticket bookings. In addition, the passenger demand for cross-border travel fell by roughly -76% (HospitalityNet, 2021).

The broad range of benefits that aviation brings for the global economy has been particularly restrained due the coronavirus crisis. Connectivity by air could have not been held at the same level as before the pandemic and airline carriers have been forced to constantly cut expenses (IATA, 2020). The implications of the pandemic are also visible on the passenger count per flight. Compared to the year 2019, the amount of passengers who traveled by air in 2020 fell by -50,6%. This figure corresponds to a decrease from initial 4.5 billion to 2.2 billion travelers (Bielecki et al., 2020).

The investments in new aircrafts went down since the start of the COVID-19 crisis. From the original amount of ordered aircrafts, commercial airlines were only able to acquire a half of them due to the pandemic outbreak. IATA (2020) proposes that depending on how the passengers demand for airline services will develop, the probability of undertaking similar investments might rise or decline accordingly (IATA, 2020). Despite of relatively low fuel costs, airlines are planning to move forward with the strategy of retiring older airplanes. Some of the aircrafts might not be completely retired yet but kept stored instead (IATA, 2020). Due to unpredictable implications of the COVID-19 crisis the situation in the aviation sector is currently determined by limited operations, grounded aircrafts and increased transports of cargo instead of people. The vast majority of commercial airlines are daily facing the struggle of deciding which routes are still making profit and can be retained. In the meantime, airline management teams are obliged to keep up with staff members and clients and provide them with at least short-term solutions, that are met in line with governments' strategy (Boston Consulting Group, 2020).

3 The COVID-19 safety measures in the aviation industry

3.1 The significant role of air filters for safe travel

The COVID-19 outbreak has caused airlines to adapt their marketing strategies and focus on different aspects than before the pandemic. In order to protect passengers and respond to their needs, nowadays the emphasis lies in offering a virus-free travel experience. The current focus of airline marketing is on high cleanliness standards and sanitizing efforts. The marketing specialist Pavel Bogomolov (2020) explains the necessity to inform passengers about the presence of the so called HEPA filters in the majority of aircrafts. The purpose of these systems is to filter the air on board during the entire flight (Bogomolov, 2020). The presence of air filters onboard of an airplane has gained importance since the beginning of the pandemic. An air filtration system in the cabin is implemented in nearly all passengers aircrafts. These are known for effective replacement of air in the cabin taking place in regular intervals and for minimizing the risk of virus contamination (Congressional Research Service, 2020). The reintroduction of air traffic depends to a certain extent on the perceived probability of COVID-19 transmission inside an aircraft (Bielecki et al., 2020). According to studies performed on the probability of getting infected by COVID-19 on board of an airplane, assuming that all regulations are strictly being followed the risk is considered to be minor. This also applies for a scenario when there is an infected person among passengers (Bielecki et al., 2020).

3.2 The new onboard experience

In the air travel business, the process of revolutionizing the onboard experience has already initiated with the acquisition of advanced technologies. Some of the air purification tools that airlines can adopt include UV-rays disinfection. The incorporation of this system would limit the disease spread and accelerate the restart of airline operations (Pecho et al., 2020). Norms and standards that used to apply to airline operations during pre-pandemic stage were transformed and adapted to the current needs of the market. The seating proximity inside of an aircraft becomes a topic of interest. The US Department of Health and Human Services (2021) claims that a previous study has shown the risk of infection with COVID-19 in the cabin can be reasonably decreased under the condition that middle seats stay unoccupied (US Department of Health and Human Services, 2021). This finding results from observations of a three-row seating configuration with middle seat excluded from sale. This strategy would therefore be seen as a preventive measure for ensuring social distance onboard (US Department of Health and Human Services, 2021). In this scenario, the usual capacity of such airplane configuration would go down to 62%. This makes it difficult for airlines to achieve profit and therefore the prices offered to customers would need to be adjusted accordingly (Poonam, 2020). The regular prices could possibly go up to 53%, potentially leading to in-affordability for many travelers. This is one of the reasons why IATA does not support the decision of excluding the middle seat from sale (Poonam, 2020). Each airline has fixed expenditures and a minimum of 77% occupancy onboard is necessary to make profit. From this reason, strategies such as leaving the middle seat empty are rather counterproductive for most airlines in terms of revenue (Janzen, 2020).

Ensuring the effectiveness of implemented measures is nowadays an essential business opportunity for airlines (Poonam, 2020). Apart from

the idea to exclude center seats from active sale, there is another strategy that requires aircraft interiors to go through a change. This modification of the usual seating configuration is based on installing middle seats opposed to those on left and right side in the economy class (Hardingham-Gill, 2020). Such arrangement would avoid that travelers face each other during flight and possibly reduce the risk of contamination. This is planned to be further enhanced by the addition of protective shields for every seat that would ensure a complete isolation of people onboard. In all these cases the main target is to comply with social distancing rules (Hardingham-Gill, 2020). Nowadays, the majority of airlines pay more attention to sanitation and before passengers are allowed to board the aircraft, all surfaces are being disinfected. The disinfection of the entire aircraft prior and after each flight is becoming a standardized procedure (Bielecki et al., 2020). The virus outbreak is also behind the notable change that has happened to the hospitality onboard. Some airlines have restricted or completely suspended the consumption of food & beverage during a flight. In some cases, items such as alcohol are not available anymore and frequently, passengers might only receive prepackaged food (Aerospace Technology, 2020).

3.3 Protective measures for passengers

A recent experiment on the in-flight COVID-19 transmission during a long-haul flight has revealed that travelers wearing surgical masks are less probable to get infected with the disease (Nir-Paz et al., 2020). The Harvard T.H. Chan School of Public Health (2020) points out the importance of wearing face masks while traveling by air (Harvard T.H. Chan - School of Public Health, 2020). They are highly protective for individuals who spend time in aircraft environment or at airports and should be used during the entire journey. The combination of wearing face masks, keeping distance and sticking to hygiene standards can

reduce the likelihood of disease transmission (Harvard T.H. Chan - School of Public Health, 2020). These findings are supported by WHO (2003) and extended with the recommendation to perform temperature checks for both travelers and staff (WHO, 2003). WHO (2003) also emphasizes that everyone who shows symptoms similar with COVID-19 is supposed to reschedule the journey by air up to the point of recovery (WHO, 2003).

Further air-travel related measures include RT-PCR and rapid antigen testing. In both cases, the purpose is to detect the presence of COVID-19 among passengers early enough. Based on the specific requirements of a country, airlines require travelers to hold a negative certificate in order to approve their arrival. In case of the RT-PCR test, the evidence is very accurate but only available after several hours (European Centre for Disease Prevention and Control, 2020). Even though the specific travel requirements may vary, currently above 100 countries enforce the so called RT-PCR certificate from people traveling by air. This test must indicate a negative result and it cannot exceed the maximum time limit of validity, that the individual country has decided on, which is mostly between 48 and 96 hours (Bielecki et al., 2020). A rapid antigen test delivers a result within a couple of minutes and can be done for instance, directly at airports. Another measure of preventing infectious cases to spread the disease in a country is the introduction of mandatory quarantine for incoming passengers (European Centre for Disease Prevention and Control, 2020). In some selected regions it is the case that - in order to prevent the need for quarantine - next to a COVID-19 test done before the journey an additional test must be provided after arrival in the final destination within a pre-specified period of time (Pitrelli, 2020). A study has been performed on the effectiveness of conducting routine asymptomatic tests for airline travelers. The recommendation resulting from the research is to give rise to testings and quarantine after returning back to the home country. This appears to be especially

important when travelers are coming back from an area with high incident rate (Kiang et al., 2021). Despite of the fact that the Antigen test method delivers a result within shortest period of time, it does not replace a PCR certificate and therefore cannot be used in order to enter a country in most of the cases (Bielecki et al., 2020).

A combination of testing for COVID-19 and mandatory quarantine is also a frequent approach in fighting against the pandemic. Measures that bring the most serious implications for the aviation sector are travel bans and border closures. These have proven to have catastrophic consequences for the financial stability of the air traffic industry (European Centre for Disease Prevention and Control, 2020).

The procedures prior, during or after a flight are implemented to help the industry to restart its operations. Before being accepted on a flight, travelers might be asked to fill out a health declaration form. As proposed by ICAO (2020) these forms can raise the confidence of travelers and countries. The process of submitting such form might be facilitated through e.g. an application (ICAO, 2020).

In addition, guidelines on systemic boarding are increasingly being adopted by various airlines. In this way, they intend to mitigate the health risk exposure of travelers. A sequential mode of boarding is a method adopted and currently applied by several airlines. This can for example consist of travelers who were assigned a window seat to enter the aircraft first, or systematically enter from back to front (Milne et al., 2020).

3.4 The change of airport facilities

As a result of the on-going pandemic, brand new infrastructure needs emerged that have an impact on air traffic operations. Airports are generally locations of high traffic and therefore the entire look of terminal facilities needs to be redesigned and adjusted to comply with social distancing rules. Facilities and key areas where the COVID-19 risk exposure might be higher, such as tickets desks or waiting halls require additional attention (Congressional Research Service, 2020).

For instance, in case of the Viennese airport all handling procedures were moved to one terminal. There are significantly less flights to handle than in normal circumstance and everyone who enters the airport area is obligated to wear a FFP2 mask (Vienna International Airport, 2021). Travelers who depart or arrive from the airport are also given the option to take there a COVID-19 test. Regardless of the inbound or outbound destination, all passengers are subject to measurements of body temperature. The entire check-in experience, as well as boarding are organized in a way that the risk of infection is kept at minimum (Vienna International Airport, 2021).

3.5 The way aviation tries to restart its businesses

The resumption of air traffic is increasingly occurring through the creation of a `Travel Bubble`, as implied by IATA (n.d.). The `Travel Bubble` agreement refers to opening borders in between selected countries that generally cope well with COVID-19 (Locker, 2020). IATA states that within `Travel Bubbles` it is not compulsory to attend quarantine. Especially the international aviation can benefit from this strategy and step by step reopen travel markets (IATA, n.d.). So far, this approach has been introduced for instance on the Australia - New Zealand route (Lee et al., 2020). Both countries have proved to be successful in containing the virus. Also, some of the Baltic nations

have already created a 'Travel Bubble' in order to stimulate tourism. At this stage, Germany is planning to follow the same strategy with some of its neighboring countries (Locker, 2020). To boost sales, airlines are relying on their frequent traveler programs and they, for instance, extend the validity of customer tier status or offer greater flexibility for rebooking. In this way, airlines also try to show passengers what kind of experience they can expect nowadays. Disruption management and further customer services might positively impact the confidence of customers in uncertain times and become the key to success (Engel, 2020).

3.6 New trends and threats in the aviation industry caused by COVID-19

In the pre-covid phase, airlines used to dispose of a wide range of inbound and outbound flight connections that they could offer to their customers for establishment of the most convenient itinerary (Bouwer et al., 2020). The life-saving role of the aviation industry can be observed more than ever before in the current times when the time-efficient distribution of already available COVID-19 vaccines is the priority of most countries. As reported by Blachly (n.d.) for the Air Transport World and Aviation magazine, this challenge has been accepted by various air cargo flight operators across the globe (Blachly, n.d.).

A hub airport facilitates the operation of various flight connections and in this way, offers passengers convenient travel options whenever a stopover is inevitable for reaching their target destination. The connecting model of hubs links both short- and long-distance flights and serves as a guarantee of smooth transit procedure. However, it is rather a costly approach for airlines which especially in times of a crisis might cause additional constraints for airlines (Combe & Bréchemier, 2020). Long-haul flights and flights with a stopover tend

to raise concerns among passengers who fear the COVID-19 risk exposure (McMahon, 2020). As a consequence, the number of connecting hubs might eventually need to be reduced in order to preserve key aviation markets (PwC, n.d.).

In these days there is a clear preference for trips without stopovers from the side of travelers. Behind this tendency there is the fear of contamination with the coronavirus and the increasingly complicated entry regulations exhibited by each country (Bouwer et al., 2020). The urge to re-establish airline route networks is nearly unavoidable from the current aviation perspective. In order for airlines to reach the desired outcome of either success or survival, some important steps would have to be undertaken. As suggested by Bouwer, Krishna and Saxon (2020), these include mainly the occupation of new market position, the adaption of newer technologies and of a more efficient form of information usage (Bouwer et al., 2020).

The pandemic outbreak has raised the need for artificial intelligence for the purpose of bringing back the confidence of travelers. The role of artificial intelligence has also importance due to its usefulness in protecting people and ensuring social distance (Boyle-Veovo, 2020). This is supposed to happen by introducing cost efficient models and mainly automated operations (Boyle-Veovo, 2020). For instance, artificial intelligence is a useful tool for predicting the building of crowds within an airport terminal by considering the time schedule (Boyle-Veovo, 2020).

The shift of companies towards holding conferences and meetings online is expected to reduce the demand for business-oriented trips. The category of business travel has ever since been crucial for the air traffic sector but is nowadays visibly disrupted. Such scenario means a loss of valuable clients and revenue for the entire aviation business (Wyman, 2020). In order to resume international flights, it is necessary to establish uniform rules for travelers who wish to enter a specific country that airlines can refer to. In these days, airport and airline staff

is frequently dealing with confusions in regards to documents that travelers need to provide. In addition, a need for better passenger data management has emerged (Gangitano, 2021).

One of the prevailing threats for the aviation industry is the risk of becoming insolvent as a consequence of reduced cash amount available (Kikoyo et al., 2020). The turbulent times that the aviation sector is facing requires cost cutting and major restructuring. In order to survive, airlines must be able to effectively manage both the demand and supply side. While airlines cannot control the demand, they need to identify areas where cost reductions can be performed in periods of a pandemic. A reorganization is most likely necessary in regards to route network and fleet with profitability assessment. These are some of the possible strategies for insolvency prevention (Kikoyo et al., 2020).

Throughout the pandemic, the performance of airlines has gone through a difficult phase characterized by low occupancy and relatively high probability of flights experiencing delays or cancellations. At the same time, the quality of customer services provided by some airlines, as well as the satisfaction of travelers with them have notably worsened (Monmousseau et al., 2020).

Airlines have the responsibility to offer a certain kind of compensation to passengers who have experienced a flight cancelation. In striking for survival, some of them refuse to provide cash refunds and instead offer vouchers or reward extra loyalty credits to customers. However, this is likely to have an effect on the passengers' trust in those airlines, that is also inevitable for them to rebound their pre-crisis level (Dhalla, 2020).

3.7 Governmental support for the aviation industry

A governmental response to the crisis is essential in terms of protecting revenues generated within the aviation industry, in accepting reliefs of taxes to be paid and in supporting freight transport (Coates, 2021). “The European Transport Workers’ Federation“ (ETF) represents employees of the aviation industry across the European continent (Coates, 2021). Those include for example stewardesses, pilots and airport employees, who all had to deal with various challenges ranging from reductions in working hours and wages to termination of contracts as a consequence of the prevailing crisis. In the present times, their contribution to the aviation sector is needed more than ever before. They play an essential role on the industry’s way to recovery, as well as in adjusting to the emerging shift towards higher demand for freight transport (Coates, 2021). A study by Abate, Christidis and Purwanto (2020) explains that multiple nations are providing financial aid for their local airlines, as well as for further members of the air traffic value chain. The protection is often targeted at saving jobs in this sector and at operating essential travel connections. From the perspective of governments, aviation represents a strategic industry that contribute to the growth of economy (Abate et al., 2020). Aid packages from governments are mainly of financial character, addressed to deliver cash to the aviation sector in different forms, such as payroll support. Due to governmental support many airlines were able to retain their airport slot (ALG Transport & Infrastructure, 2020).

In the pre-covid stage governments of most countries used to earn billions from taxes paid by airlines on annual basis. They have acknowledged the significance and the value of the air traffic sector and therefore keep providing the necessary help that the industry still needs as a consequence of the still prevailing COVID-19 crisis. They provide airlines with wage subsidies or they wave taxes on costs such as fuel. The support made available for airlines is generally based on

short-term assistance up to the point when people start traveling again (IATA, 2020). By providing enough cash to airlines the potential risk of becoming insolvent or bankrupt can be avoided at least for a while. Each country deals with the situation differently but the current situation requires both government and airlines to make an effort in keeping the aviation sector alive (Poonam, 2020).

The research from Albers and Rundshagen (2020) deals with the individual responses of airlines to the pandemic situation and crisis. One path taken by multiple airlines has been to ask for help from the local government. Those that were experiencing a stable financial situation intended to follow the the strategy of preserving and getting through the pandemic without experiencing major losses. This would also mean that basically no structural changes in the company need to be done, which is expected to have positive implications for its future competitiveness (Albers & Rundshagen, 2020). As opposed to that would be the strategy of some airlines to restructure and renew their operations. The impact of some of the tactics that are increasingly being considered as innovative could have been observed immediately. Into this category belong ideas such as to use traditional passenger aircrafts for freight transport. The finding that the demand for freight has experienced an upturn since the beginning of COVID-19 crisis is also supported by Albers and Rundshagen research (2020) (Albers & Rundshagen, 2020). By the end of 2020, the approximate financial loss of the aviation sector lies at USD 118 billion. In 2021, the figure is expected to reach roughly USD 38 billion. So far, the COVID-19 crisis has caused airlines to be in the urgent need for governmental funds of USD 180 billion (Forsberg, n.d.).

4 Air travel behavior of passengers in times of the COVID-19 pandemic

There are several aspects that directly influence the travel behavior of people and their intentions connected to going abroad in times of a pandemic. The anxiety arising from the potential risk of getting infected with COVID-19 outside of the home country is seen by many of them as a major threat. The assessed level of risk typically varies by the end-destination and its current situation related to the pandemic (Abdullah et al., 2020). The various regulations require from people to change or adjust their behavior. To comply with the new standards, the advice given to citizens of multiple countries has been to not leave their homes, make sure to keep distance from other people in public areas and pay increased attention to hygiene rules (Fischer et al., 2020). Regardless of the purpose for traveling, an on-going pandemic is a valid reason for many travelers to either postpone or completely cancel their plans. The demographic factors are likely to determine this self-protective attitude pattern of travelers. Destinations of medium to high severity in regards to the spread of e.g. the coronavirus are being largely avoided (Abdullah et al., 2020). There has also been a notable reduction in long-haul flights but the perceived risk exposure towards contamination with COVID-19 has declined the more frequently people have travelled (Truong & Truong, 2021).

Since the virus outbreak, the flow of tourist arrivals decreased significantly across the globe. Major transformations have occurred in preferences on where to travel and in terms of the preparedness to leave the home country. Nowadays, secure countries that have fewer tourists coming in are increasingly being favored. At the same time, prices are playing a less important role in the process of searching for the ideal holiday location (European Commission, 2020). Decisions on traveling to a place within the own nation are also more frequent. When considering going abroad, tourists are mostly seeking for

regions that are coping well with the pandemic situation (European Commission, 2020). The travel behavior in pandemic times is notably determined by the existing fear of an individual traveler, resulting in lowered frequency of traveling. Next to the intention for traveling, changes in the behavior might also be visible when looking at the travel distance. Both the distance and frequency of traveling are likely to be reduced as a consequence of a pandemic (Abdullah et al., 2020). As suggested by Abdullah, Dias, Miley and Shahin (2020), the priorities of people when pursuing a trip are likely to change in times of a pandemic. For instance, they focus more on hygiene measures, as well as on keeping distance from other people and the usage of masks. This shift towards cleanliness and sanitation are accompanied by paying less attention than usually to the financial aspect and comfort while traveling (Abdullah et al., 2020).

A study has been conducted by Graham, Kremarik and Kruse (2020) on the intention of people aged 65 or above to travel by air in the near future, as well as on the aspects that contribute to their final decision. Quarantine requirements and infection numbers in the respective country turned out to be the key factors for decision-making (Graham et al., 2020). The findings show that roughly 60% of participants are planning to travel less in the following months. An important result is that one in five respondents of this age group would consider different means of traveling than by air. Moreover, measures on social distancing and frequent cleaning of surfaces seem to be the highest priority for a safe travel experience for this age group (Graham et al., 2020). A study by Abdullah, Dias, Miley and Shahin (2020) also implies that the willingness of older generations to postpone their trip is reasonably higher than among younger people. Their avoidance behavior could have been already observed in the past during pandemic outbreak related to diseases different than COVID-19 (Abdullah et al., 2020). The current travel behavior of passengers is also likely to be influenced by media and the image that a travel

destination is entitled to. Changes in the travel behavior can be observed as soon as a specific country or region is communicated by media to be potentially dangerous for visitors due to sudden increase in COVID-19 positive cases. Some of them might look for a safer destination or simply postpone the trip. Based on the most recent published information from media, the travel behavior might become a subject for adjustment (Neuburger & Egger, 2020).

Based on a recently published surveys, there are different criteria that should be met in order for passengers to choose traveling by air. High cleanliness standards followed by protective health measures result to be the most essential prerequisites for developing a positive travel intention (Oliver Wyman - A Marsh & McLennan Company, 2020). This gives airlines the chance to stand out from the crowd based on how they respond to these current market needs. Some of them can persuade by sanitizing aircrafts with ultraviolet light, incorporation of robots or selling masks on spot. According to the results of the survey, the role of airports is of equal importance than of airlines. A good cooperation between these two units is necessary to protect passengers both on the ground and in the air (Oliver Wyman - A Marsh & McLennan Company, 2020).

The confidence in air transport has notably changed and it is not at the same level as it used to be prior to the outbreak of COVID-19. Based on recent studies, the estimated time in that travelers would not take the risk and travel by air varies by individuals (Poonam, 2020). The willingness to fly in case of an urgent matter is much higher compared to those of passengers who would travel for leisure. Holiday- and even business-oriented trips are given secondary priority, which again leads to an overall reduction in sold airline seats (Poonam, 2020). The reputation of individual airlines has gained importance among travelers compared to the time before pandemic. This is combined with an increased demand for high quality onboard experience characterized by digitalization (Inmarsat, 2020). According to a PwC Traveler

Sentiment Survey (2020), the driving force in sales is nowadays the passengers' confidence in the safety measures applied by airlines. Overall, the individual trust in an airline has replaced the previously important aspects such as fares or schedule convenience (PwC, 2020).

The following hypotheses have been postulated and will be tested by means of a quantitative research approach:

H1: Exposing consumers to COVID-19 *safety measures* introduced by the aviation *reduces* the perceived *health risk*.

H2: Exposing consumers to COVID-19 *safety measures* introduced by the aviation industry *increases* the anticipated *value for money*.

H3: Exposing consumers to COVID-19 *safety measures* introduced by the aviation industry *increases* the anticipated *satisfaction*.

H4: (a) Perceived *health risk* has a *negative* impact, (b) perceived *value for money* and (c) anticipated *satisfaction* have a *positive* impact on *travel intentions* (behavioral intentions).

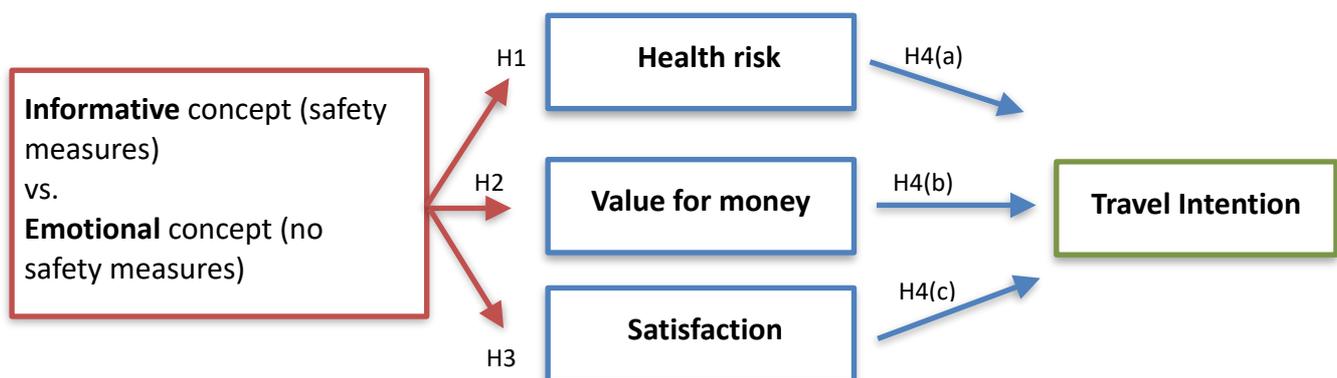


Figure 1: Conceptual Research Framework

5 Methodology

5.1 Research Design

A research design provides the researcher with a plan on how to proceed with a study until reaching the research objective. It refers to the strategy for establishing a connection between a concept of a research problem and the empirical investigation. As explained by Asenahabi (2019), the purpose of a research design is to find responses to the formulated research questions (Asenahabi, 2019). Creswell & Creswell (2018) define research design as a process of information inquiry. When conducting a research on a certain topic, the selection of a research approach that fits well to the topic of interest plays an important role. Creswell & Creswell (2018) distinguish between three approaches to a research that indicate what method may be implemented in order to conduct a study on a chosen topic. These include the qualitative, the quantitative and the mixed-methods approach (Creswell & Creswell, 2018).

This thesis makes use of the quantitative research approach, with the intention to investigate causal relationships between dependent and independent variables and to seek answers to the formulated research questions. When pursuing a quantitative approach for data collection, researchers try to verify a formulated hypotheses in order to later either retain or reject it (Creswell & Creswell, 2018). For this purpose, designs such as surveys with closed-ended questions and experiments are adopted. Surveys can deliver information on the attitudes or opinions of the target group. Experiments seek to illustrate whether a stimulus is likely to have an impact on a certain outcome (Creswell & Creswell, 2018).

The reason for conducting a study using quantitative approach is that it makes use of statistical data and it is considered to be an objective measurement method. It is known to follow structured procedures and

for adopting clearly established scales for collecting information. The examined samples tend to be large and findings are subjects for generalizations of concepts. In addition, the quantitative research methodology comprises a theoretical framework, as well as defined hypotheses (Queirós et al., 2017). It can be used to reveal the association between independent and dependent variables and to identify causal relationships (USC Libraries, 2021). An online survey has been selected for the collection of valuable information. It is a cost-effective tool, characterized by a high degree of representativeness which enables researchers to easily collect and analyze data (Queirós et al., 2017). More specifically, this research employed a one factor between subjects design, with advertising appeal (safety measures vs. emotional content) as manipulated variable.

According to Perdue & Summers (1986), this process starts by manipulating the independent variable. Afterwards, measurements of the dependent variable are put into practice. In case any changes occur in the dependent variable, the target is to find out if it has been caused by the independent variable. (Perdue & Summers, 1986) In order to fulfill the conditions of an experiment, the independent variable must be manipulatable. The prerequisite for this is that it is possible to randomly allocate a respondent to a certain condition (UCF, n.d.).

For this thesis, respondents are assigned to watch two types of video advertisement as a stimulus (see Figure 2 & Figure 3), which both contain no voice but only background music and which were published by the same airline (Emirates). Both video advertisements originate from the largest carrier of the world, the Emirates airline (CAPA, n.d.). The full service Dubai based carrier operates both commercial and cargo flights and commands a wide route network with connections all across the globe (CAPA, n.d.). Afterwards, the

measurement of dependent variables is performed through a questionnaire with established scales. The random allocation of respondents to one of the video advertisements ensures that causal interpretations can be formulated.



Figure 2: Safety Measures

An informative video advertisement with safety measures promoted.

(Emirates, 2020)

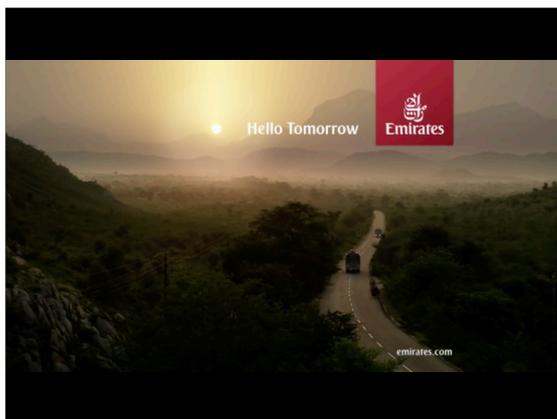


Figure 3: Emotional Appeal

An emotional video advertisement with no safety measures promoted.

(Emirates, 2012)

While the length of both videos is exactly one minute, the displayed content varies and could be classified into two categories (safety measure condition versus emotional appeal condition), as shown in Figure 2 and Figure 3. To ensure that respondents get familiar with the content of the video advertisement before answering the prepared questions, settings were made in SoSciSurvey to only allow participants who have viewed the corresponding video until the end to proceed to the survey questions. In the safety measure condition,

respondents are displayed a video advertisement of the airline which focuses on the COVID-19 safety measures throughout the whole customer journey, from the moment of their arrival at the airport up to the point when they reach their end-destination. In the emotional appeal condition, respondents are displayed a traditional video advertisement released in the pre-covid time where no COVID-19 safety measures can be seen. After the participants have viewed the randomly selected video, the second part of the questionnaire initiates.

The data collection occurred by means of an online questionnaire in English that consists of questions aimed at measuring the established scales. A total of 35 questions were prepared based on established scales, divided into four parts, with the intention to test the proposed hypotheses. In the introduction part of the questionnaire, respondents are informed about the purpose of conducting the survey where all responses remain anonymous and they are asked to only state their own opinion on the discussed topic. Furthermore, the online survey contained an experiment in form of a manipulation check. All respondents of the conducted experiment were randomly allocated into two different groups. The empirical investigation consists in exposing respondents to two different video advertisements: One video demonstrated safety measures, while the other video exposes respondents to an emotional content. Subsequently, respondents had to answer questions measuring the perceived health risk, travel intention, value for money, as well as satisfaction. The experiment aims to detect the causal relationships between safety measures in the aviation industry and the mentioned constructs, namely perceived health risk, value for money, satisfaction and travel intention. Furthermore, the research also intends to uncover if perceived health risk has a negative effect on the travel intention, as well as if value for money and customer satisfaction can positively impact the behavioral intentions in regards to traveling. In this way, the research intends to fill

the research gap and elaborate on the advertising implications for the aviation industry in times of the COVID-19 pandemic.

5.2 Measurement

A dichotomous scale, styled in a yes or no format starts the survey section by asking respondents if any safety measures were promoted in the advertised video. Thomas (2009) explains that this type of closed questions can be utilized in order to divide participants into various groups (Thomas, 2009). Also, a factual question has been included, asking participants to state the name of the airline that the video advertisement referred to. According to Pappas (2015), factual questions are simple in nature, exhibiting a straightforward answer. However, it is necessary to provide the audience with the necessary resource, in this case it would be the advertisement video, to be able to give an answer (Pappas, 2015). Further in this part, respondents are surveyed on the type of content shown in the video advertisements. To be specific, they were asked to indicate on a 7-point Likert Scale to what extent they agree with the statement, that the shown video content is informative or emotional. The majority of constructs were measured on a 7-point Likert Scale for expressing the level of agreement, ranging from strongly disagree to strongly agree. According to Finstad (2010), this scale is likely to reveal the true opinion of participants in an online survey and to deliver a high degree of accuracy (Finstad, 2010).

The next part of the survey aimed to discover the attitude of participants towards traveling by air in times of the COVID-19 pandemic with an emphasis on their health. The specific focus lies here at examining the perceived health risk in the current situation, adapted from Jacoby and Kaplan (1972), referring to the COVID-19 pandemic. The objective is to first explore whether the participants would see their health as potentially endangered through selecting air transport in pandemic times and secondly, if their health risk

perception could be reduced upon the exposure to COVID-19 safety measures introduced by the aviation sector.

In the following part, respondents are asked to imagine themselves in a situation when they would consider the advertised airline for their travel plans and accordingly, to indicate their satisfaction with the customer care and the overall enjoyment of the travel experience, based on a 7-point Likert Scale. The questions aim to uncover whether the exposure of consumers to aviation COVID-19 safety measures can potentially increase their anticipated level of satisfaction. Furthermore, the questionnaire also seeks to find out about the respondents' value for money, adapted from Rajaguru (2016), and if this might rise as a consequence of exposure to the safety measures promoted by the airline.

In the next part, respondents were asked to state their opinion on the information provided by the airline in its advertisement video by again making use of the 7-point Likert Scale. Aspects such as sincerity, honesty, commitment, performance and attention to customers' needs of the airline company are examined. Subsequently, the travel intention of respondents, as well as their likeliness of traveling by air in the near future while taking into account the pandemic situation are researched in this section. In addition, participants are requested to state whether they would further recommend the advertised airline, or even encourage people to fly with it. The goal is to conclude whether customer satisfaction and value for money can have a beneficial impact on the travel intentions of respondents and if perceived health risk can have a negative effect on their travel intention.

The final part of the survey intends to find out more about the travel habits of respondents and on collecting demographic data. The participants are also asked to indicate the extent to which they are personally afraid of getting contaminated with COVID-19, as well as on their assessment of risk of getting the disease when traveling by air. In

order to obtain an overview of the possible differences between the frequency of traveling by air before and during the coronavirus pandemic, participants were asked to state the number of times they have travelled by air since the outbreak of COVID-19, and how often they would do so under usual circumstances. Furthermore, respondents are asked to reveal whether they have already travelled with the Emirates airline by selecting a yes or no answer. The survey is then concluded with questions aimed at collecting the following demographic data of participants: age, gender and the highest completed education.

5.3 Survey Distribution

The survey was developed by using the online survey tool SoSciSurvey. In order to obtain a sufficient number of responses, a link to the survey has been shared through the following social media platforms: Instagram, Facebook and LinkedIn.

In Instagram, a direct link to the survey has been inserted into the user profile (timeline) of the author of this thesis on the 20th of April 2021, supported by a separate story post visible for 24 hours in order to attract more users to participate in the survey. On the same day, the link distribution in Facebook occurred only via the private group MODUL University Vienna Community, where mainly students, faculty and staff of MODUL University were exposed to the survey. In case of the social network LinkedIn, a direct survey link has been shared with the entire community. The survey has been available until 18th of May 2021 for a period of 29 days. In total, 96 results were assessed as valid, meaning the participants completed the entire survey. The data obtained from the survey was analyzed in the SPSS software and an interpretation can be found in the following section.

6 Analysis & Results

In total, 96 valid responses were obtained and the sample characteristics are summarized in Table 1. The majority of survey respondents were female, accounting for 67.7 % while roughly 30% were male participants. The mean age of the sample lies at 23 years old. In case of the highest completed education, 61.5% of participants have completed their high school studies and 37.5% have a university degree (see Table 1). The data analysis has also shown that from the sample, approximately 53% of people have travelled with Emirates airline before. The planned manipulation functioned well and according to the performed Chi-square test the survey participants were able to differentiate between the two displayed contents (safety measures vs. emotional appeal) in the airline video advertisement.

Sample Characteristics	N=96
Mean Age	23
Gender %	
Women	67.7
Men	30.2
Prefer Not To Say	2.0
Other	0.0
Highest Completed Education %	
High School	61.5
University	37.5
Vocational School	1.0
Apprenticeship	0.0
Compulsory Schooling	0.0

Table 1: Sample characteristics

For the analysis of scale reliability, the values of Cronbach’s Alpha were calculated for each construct (see Table 2). A sufficient degree of reliability is generally represented by figures between 0.7 and 0.8 for Cronbach’s Alpha (Field, 2009). As summarized in Table 2, for the current research, all constructs deliver a satisfactory value for Cronbach’s Alpha, exceeding the 0.8 figure threshold. The respective mean scores and standard deviation for all measured constructs were also computed. Respondents of the online survey were asked to provide their opinion statement on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree).

	Cronbach’s Alpha	Mean	Standard Deviation
Behavioral (Travel) Intention	0.90	5.43	1.21
Customer Satisfaction	0.90	5.47	1.30
Health Risk	0.88	2.94	1.42
Value For Money	0.88	5.05	1.10
Trust in the Company	0.89	5.53	1.20

Table 2: Cronbach’s alpha, mean scores & standard deviation for measured constructs

The next step of the analysis process focused on whether the manipulation was successful (see Table 3). A multivariate analysis of variance was performed with the experimental condition serving as factor variable, and two items assessing to what extent respondents perceive the content either as emotional and informative represented the dependent variables, to see if the video advertisement with emotional content was actually perceived as emotional by respondents. The descriptive statistics contains information on mean scores of various conditions and standard deviations (Field, 2009). The results show that there is a strong agreement among the group exposed to a video advertisement with an emotional appeal [(M=6.10,

SD=1.17, $F(1, 94) = 89.34$, $p = 0.001$] to the statement that the content was emotional. Furthermore, a high degree of agreement can be observed among the group of participants who saw a video with safety measures and indicated that the content was indeed informative [$M=5.81$, $SD=1.36$, $F(1, 94) = 147.86$, $p = 0.001$]. As a result, it can be concluded that the manipulation check worked out as planned. Table 3 summarizes the findings of the analysis and Figure 4 offers a visual representation of the manipulation check in form of bar charts.

N=96	Informative		Emotional		F	p-value
	Mean	SD	Mean	SD		
Emotion	2.54	1.27	6.10	1.17	89.34	<0.001
Safety	5.81	1.36	3.31	1.67	147.86	<0.001

Table 3: Results of the Manipulation Check

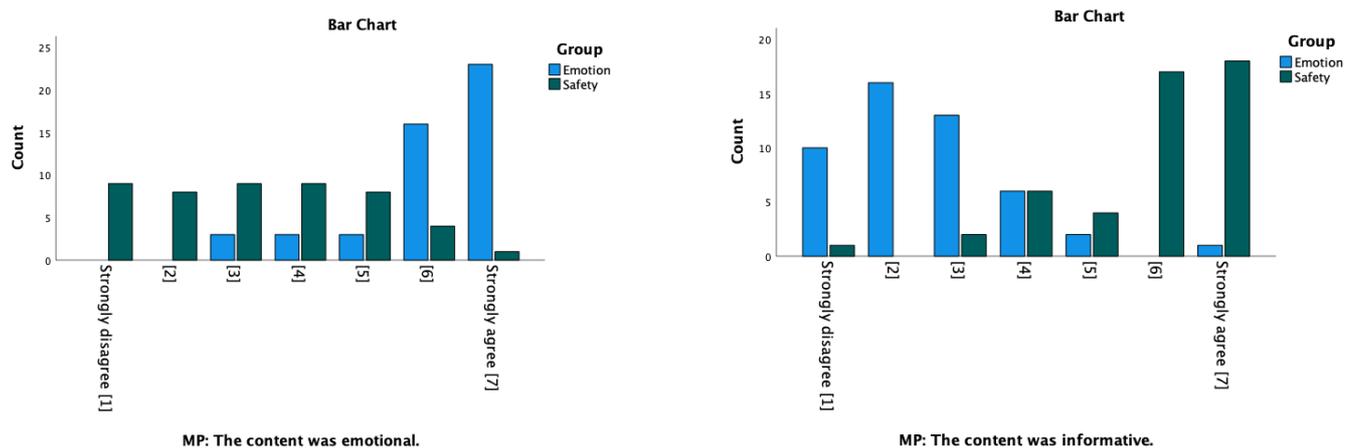


Figure 4: Visual representation of the manipulation check (emotional vs. informative content), Likert Scale (1 = strongly disagree, 7 = strongly agree)

The analysis continued with a check on whether survey respondents have seen any safety measures in the displayed advertisement video. By making use of the non-parametric Chi-square test statistic, an examination of a possible relationship between categorical variables (the two experimental conditions: emotional vs. informative appeal) and if respondents have seen any safety measures or none has been conducted (Field, 2009). The test has revealed that the individual groups of respondents, namely those who were exposed to an advertising video with safety measures (informative content) and those who have viewed a video without any safety measures (emotional content) were able to distinguish between them: [$\chi^2 (1) = 73.62, p < 0.001$]. The obtained significance value of $p < 0.001$ is smaller than 0.05, which allows for the conclusion that the categorical variables are related and an association between the two groups of respondents can be observed, as illustrated in Figure 5. This has led to the finding that the type of displayed content (informative vs. emotional) has a significant impact on the ability of participants to notice safety measures in the video advertisement. From 96 valid cases, 95% of respondents stated correctly that the advertised video promotes the Emirates airline.

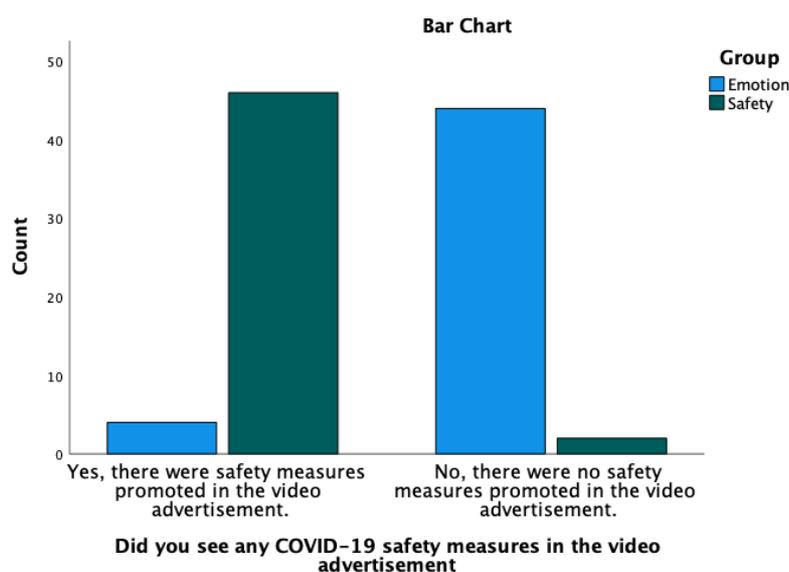


Figure 5: Visual representation of the chi-square test of association (emotional vs. safety content)

The previous data analysis confirmed that the manipulation check has fulfilled its intention. In order to test the hypotheses **H1**: Exposing consumers to COVID-19 safety measures introduced by the aviation reduces the perceived health risk, **H2**: Exposing consumers to COVID-19 safety measures introduced by the aviation industry increases the anticipated value for money and **H3**: Exposing consumers to COVID-19 safety measures introduced by the aviation industry increases the anticipated satisfaction, a multivariate analysis of covariance (MANCOVA) has been estimated (see Table 4). This is known for conducting a comparison of mean scores (for dependent variables) that are adjusted for the effect of a covariate. The multivariate model analysis in SPSS resulted in a table representing tests of between-subjects effects and multivariate tests (Laerd Statistics, n.d.). Previous flying experience with the advertised airline (Emirates) served as covariate in the analysis.

The one-tailed hypotheses H1 is marginally confirmed and a statistical trend can be reported. In order to obtain a one-tailed probability, the p-value of 0.153 is divided by 2 resulting in a non-significant value of 0.0765. The results have shown that after controlling for flying experience, the effect of the dependent variable health risk ($p = 0.0765$) exceeds the value of 0.05 ($p > 0.05$) and therefore is only marginally significant (Pillai's Trace $V = 0.092$, $F(3, 91) = 3.091$, $p = 0.0765$). However, at a significance level of 5% the hypotheses H1 has to be rejected, leading to the conclusion that the exposure of respondents to COVID-19 safety measures does not reduce their perceived health risk.

In case of the dependent variable value for money ($p = 0.889$), which shows a non-significant result (Pillai's Trace $V = 0.092$, $F(3, 91) = 3.091$, $p = 0.889$) the hypotheses H2 is not confirmed. This finding indicates that after exposing participants of the experiment to COVID-19 safety measures their anticipated value for money does not increase.

On the contrary, due to the statistically significant effect of the dependent variable customer satisfaction ($p = 0.029$) the hypotheses H3 can be supported (Pillai's Trace $V = 0.092$, $F(3, 91) = 3.091$, $p = 0.029$). Therefore, the assumption that COVID-19 safety measures are a potential driver of respondents' anticipated satisfaction is confirmed by the conducted analysis. Resulting from MANCOVA, Figure 6 is a visual representation of mean scores for all dependent variables (health risk, value for money & customer satisfaction) among the two experimental conditions.

N=96	Emotion		Safety		F	p-value
	Mean	SD	Mean	SD		
Customer Satisfaction	5.19	1.35	5.76	1.20	4.924	0.029
Health Risk	3.11	1.48	2.77	1.34	2.075	0.153
Value for money	5.08	1.06	5.02	1.15	0.020	0.889

Table 4: MANCOVA

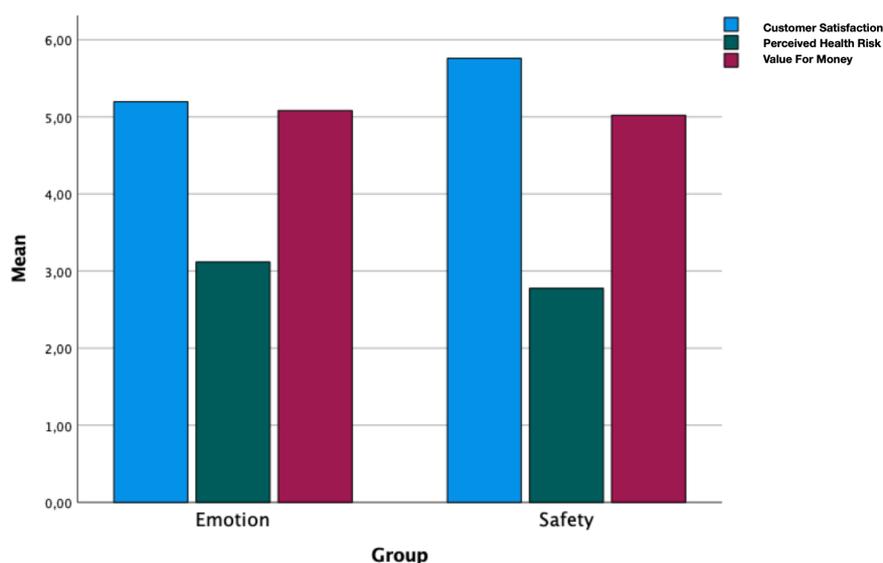


Figure 6: Mean comparison among the emotional vs. safety experimental conditions

In order to test the final hypotheses: H5 (a) perceived health risk has a negative impact, (b) perceived value for money and (c) anticipated satisfaction a positive impact on travel intentions (behavioral intentions), a multiple regression analysis (see Table 5) in SPSS has been conducted. The dependent variable is represented by behavioral intention, while the independent variables are the anticipated value for money, customer satisfaction and perceived health risk.

As displayed in Table 5, the multiple correlation coefficient R lies at 59.9% and reveals a moderate degree of correlation. This is a representation of the degree to which the dependent variable can be predicted (Laerd Statistics, n.d.-b). The obtained R^2 figure provides information on the amount of variance in the behavioral intention variable, which can be determined by the mentioned independent variables (Laerd Statistics, n.d.-b). The resulting value of 35.8% (see Table 5) is an indication of the extent to which anticipated value for money, customer satisfaction and perceived health risk are able to explain the variance in behavioral intention.

The reason for selecting the multiple regression analysis is to successfully predict the dependent variable (behavioral intention) based on independent variables (customer satisfaction, perceived health risk, value for money). As shown in Table 5, based on the F-ratio resulting from ANOVA which aims to predict dependent variables it can be concluded that the independent variables can accurately predict the dependent variable, $F(3, 92) = 17.11, p < 0.001$. Therefore, the regression model (see Table 5) represents a good estimate of the outcome. Based on the regression model, a visual demonstration of the standardized residual plot in form of a histogram is shown in Figure 7. The regression analysis has also delivered Beta coefficients, which show the extent to which the dependent variable varies with independent variables (Laerd Statistics, n.d.-b). More specifically, an increase in customer satisfaction has a marginally significant impact on the travel intention ($\beta = 0.193, p = 0.063$). Furthermore, an increase in

value for money has a significant impact on the travel intention ($\beta = 0.395$, $p= 0.001$). Lastly, an increase in perceived health risk has also a significant impact on the travel intention ($\beta = -0.192$, $p = 0.012$).

Multiple Regression Model					
Model	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Perceived Health Risk	-0.192	0.075	-0.223	-2.555	0.012
Value For Money	0.395	0.117	0.357	3.373	0.001
Customer Satisfaction	0.193	0.103	0.206	1.882	0.063
Model Summary					
Model	R	R square²	Adjusted R²	Std. Error of the Estimate	
1	0.599 ^a	0.358	0.337	0.993	
ANOVA					
Model	Sum of Squares	df	Mean Square	F	
Regression (p=0.000)	50.647	3	16.883	17.118	
Residual	90.737	92	0.986		
Total	141.385	95			

Table 5: Multiple Regression Analysis

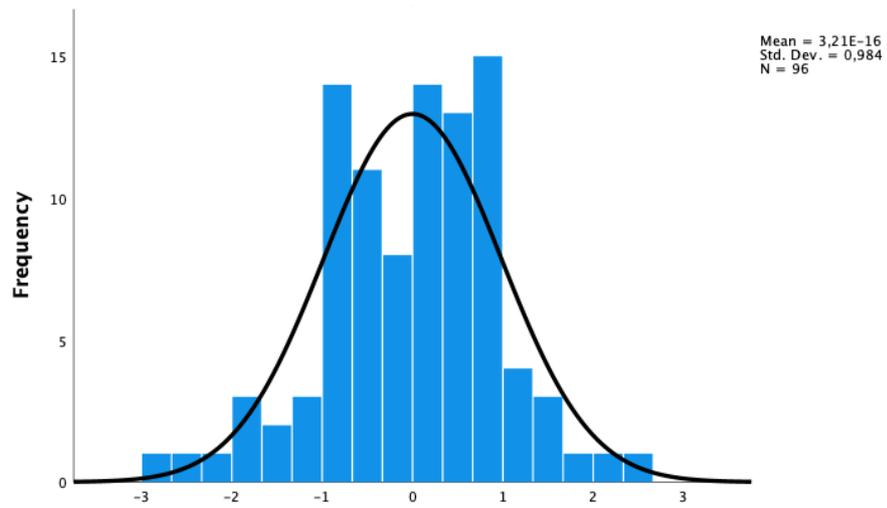


Figure 7: Histogram of Regression Standardized Residual, dependent variable: behavioral (travel) intention

7 Conclusion & Recommendations

7.1 Discussion

The COVID-19 effect in the aviation context is a relatively new topic and only a little research has been conducted so far on the impact of industry-wide adopted safety measures on passengers' willingness to fly. Taking into account that the official pandemic outbreak has been declared approximately 14 months ago (AJMC, 2021), there is still a prevailing lack of knowledge and uncertainty in regards to the future evolution and impact of the crisis on the aviation sector.

The main target of this thesis was to investigate the effect of COVID-19 disease and pandemic on the air traffic industry and provide an insight into the measures and strategies applied within the sector to survive the crisis. In addition, the impact of health risk perception, customer satisfaction and value for money was explored in terms of the travel intention. This research employed a quantitative research approach in form of an online experiment. The manipulation worked out as planned and respondents were able to see the difference between the two advertised contents resulting in obtaining valuable findings for the current research. From the convenience sample, 53% of respondents have already travelled with Emirates airline and therefore are familiar with the brand and its services to a certain extent. Based on the findings, from an average amount of seven trips per year in the pre-COVID-19 time a negative tendency since the pandemic outbreak can be observed, resulting in traveling only three times per year on average.

The findings of the performed research suggest that a rise in customer satisfaction and anticipated value for money can positively influence the intention to travel. Therefore, in order to motivate potential passengers to use airline services in pandemic times an increased

attention should be paid to meeting their needs and justifying the price they pay for air transport.

Considering the additional requirements for traveling by air these days and the resulting need for flexibility in terms of last-minute rebookings and cancellations, as well as the important safety aspect of all passengers, a recommendation for the aviation sector is to further enhance the travel experience from the moment when a customer purchases a flight ticket. This would for instance include mastering the challenge of providing the most recent information on entry regulations to prevent passengers from cancelling their trip and the industry from losing both the profit and a potential customer. As further concluded by the current research, the active exposure of customers to safety measures incorporated in the daily operations of aviation have beneficial effects for their overall satisfaction level. This finding can motivate airlines to better promote and practice their safety procedures in order to have a satisfied customer base.

Another result of the experiment is that with increasing health risk perception the behavioral intention in regards to travel goes down. This allows for the conclusion that the perceived health risk connected to the COVID-19 disease is a major threat for the process of air connectivity resumption. It could also be concluded by the research that by promoting COVID-19 safety measures the health risk perception is unlikely to be reduced and they seem to be not convincing enough to create a feeling of protection and to achieve the desirable outcome for the industry, such as to sell an airplane seat. Accordingly, these findings might serve as an incentive for the aviation sector to initiate research on new strategies other than promoting safety measures that would minimize or completely eliminate the current form of health risk perception when traveling by air until the disruptive pandemic period is over.

Subsequently, since the investigation has also revealed that an exposure to safety measures does not lead to a growth of the anticipated value for money, there is a need for further studies on implementing pricing strategies with an emphasis on how to create additional value in crisis situations like a pandemic.

One of the limiting factors of the research is that the mean age of participants lies at 23. In addition, to allow for a generalization of findings it would be favorable to collect more responses from e.g., people of higher age and with an education degree higher than high school. It would be interesting to investigate how older generations perceive traveling by air in pandemic times. The results of this thesis might be mainly useful for people involved in the aviation sector and related industries, but also for the general audience interested in how COVID-19 has restructured the airline operations and the usual travel experience. Any future research on this topic might encounter further implications of the COVID-19 crisis for the aviation industry and ways how to effectively deal with it. In the aviation context, a similar research might be performed on the differences between advertising strategies of low cost and full-service carriers or on how to best make use of marketing and advertising as a crisis management tool in pandemic times.

7.2 The chances of the aviation sector for recovery based on region

The chances for recovery depend mainly on the geographic area and market conditions (IATA, 2020). The Aviation Industry Leaders Report of 2021 by KPMG (2021) foresees that the strong market position of North American airlines increases its probabilities of regaining the pre-covid stage (KPMG, 2021). In case of Europe, forecast of IATA (2020) indicates a step-by-step recuperation process, being a subject to possible extensions of travel restrictions (IATA, 2020). However, the

fact that this market used to experience over-capacities and rely mainly on international traffic might hinder its rebound process (KPMG, 2021). The Asia-Pacific airline sector has been the first one to be hit by the crisis but has also been able to initiate its journey to betterment early enough. This process is supported by the prompt rebound of important domestic markets like China (KPMG, 2021). Before the coronavirus pandemic has reached the Middle East aviation market, it has been in the phase of capacities reduction. This sector is highly dependent from international connections which might slow down the recovery process (IATA, 2020). The operations of Latin American aviation have been encountered with difficulties already in the pre-pandemic time. The weaknesses in the performance have been further deepened by the crisis and any kind of betterment is estimated to take more time (IATA, 2020).

7.3 Future Outlook for the Aviation Industry

The year 2021 is expected to become the long-expected turning point in the COVID-19 crisis. The chances for the aviation industry to quickly recover from the crisis have been hindered by mainly by two essential elements. These are the constantly changing restrictive measures that vary by country and the notable decline in passenger confidence (IATA, 2020). At this point of time, there is still a lot of uncertainty remaining on the duration of the coronavirus crisis. Experts frequently address the consequences of the pandemic to have long-term effects (Hotle & Mumbower, 2021). The estimated time of recovery will depend on each country, as suggested by Gudmundsson, Cattaneo and Redondi (2021). This is mainly because of the variety in adopted measures and the individual pre-crisis stage (Gudmundsson et al., 2021). The already initiated series of right-sizing across airline fleets is expected to continue. New business models need to be designed by airlines due to a significant change in passenger profiles (Forsberg, n.d.). From the

point of view of most airlines and as per IATA estimations, the aviation sector recovery is forecasted to be achieved earliest by the year 2024. A major implication of the coronavirus pandemic on the aviation industry has been the movement towards short and medium-haul flights. In the process of retiring aircrafts, this new trend will influence the decision on which aircrafts should be kept with the emphasis on their size. It can be expected that airplanes of smaller size will be preferred in comparison to those of large capacities (IATA, 2020).

As suggested by Dube, Nhamo and Chikodzi (2021), airport facilities should be able to perform COVID-19 testing. There is also a call for the synchronization of precautionary guidelines that can be collectively referred to. Generally, all measures targeted at the detection of the virus and at protecting the health of passengers are welcomed (Dube et al., 2021).

Questions are arising on how the new normality in the world of aviation might look like and in how far airlines can contribute with their actions to recover the travel demand. Based on a forecast of a post-covid outlook, protective measures in context of COVID-19 and certain limitations of air travel will prevail for a while, just as usual airport security procedures that have to be followed in order to board a flight (Boston Consulting Group, 2020). The outlook on the aviation industry recovery from COVID-19 shock points out certainly bigger losses and a much worse scenario than it was in the case of comparable events in the past. Apart from the inevitable periods of economic downturn resulting in depression and recession, the aviation sector has already been forced to adopt some of the new trends into its daily working structure. For example, aviation has not been excepted from the trend of switching to home office mode. (Boston Consulting Group, 2020) The new normal will challenge the entire aviation industry to reconsider its operations and models. The future is expected to be determined by a more customer-centric approach with increased focus on sustainability (Forsberg, n.d.).

Closure of unprofitable segments and adjustments made to the cost structure will be crucial. The crisis will have mostly likely taught the air traffic sector how to respond and deal with sudden demand changes (Forsberg, n.d.). Tabares (2021) claims that a virus-free airport is fundamental for a safe travel experience. An improved preparedness for pandemic situations might protect the industry from experiencing scenarios of equal severity. He also suggests that the crisis will trigger the need for stricter airport controls for the purpose of identifying the virus, which can be significantly enhanced by the adoption of advanced technology (Tabares, 2021). According to Adrienne, Budd and Ison (2020), coordination and good time management in regards to resuming operations under the circumstances imposed by the COVID-19 pandemic will be a major challenge (Adrienne et al., 2020). In the process of understanding the new customer behavior, airlines might focus more on creating personalized offers in order to motivate people to fly. They might be able to persuade a potential traveler by promoting an innovative concept featuring COVID-19 safety measures. Overall, the values of an airline might need to be strengthened (Forsberg, n.d.).

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Appendix 1: Links to video advertisements

Video advertisements by Emirates airline used as a stimulus:

Safety measures:

Emirates. (2020, April 21). *Emirates puts health and safety first for customers and employees* [Video]. YouTube. <https://www.youtube.com/watch?v=oKxflL6t93c8>

Emotional appeal:

Emirates. (2012, April 1). *Hello Tomorrow Full TV Commercial* [Video]. YouTube. <https://www.youtube.com/watch?v=xG-NGPbtOOK>

Appendix 2: Survey



0% completed

Dear Participant,

My name is Melania and I am currently writing my Bachelor Thesis at MODUL University Vienna about the effects of the COVID-19 pandemic on the aviation industry. I would appreciate if you could take a few minutes to answer the following questionnaire (maximum 5 minutes).

All your responses will remain confidential and will be used for academic purposes only. Please note that your answers should reflect your own opinion.

Thank you for participation.

Clicking on the "Start" button below would indicate that you have read the information above and that you voluntarily agree to participate.
Melania

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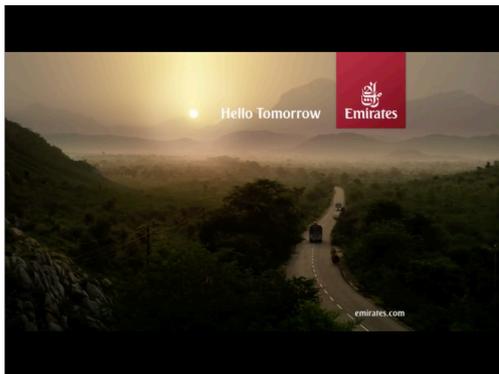
14% completed



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14% completed



Next

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29% completed

Thank you for watching the video! In the following, we kindly ask you to answer the following questions that relate to the video.

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43% completed

1. Did you see any COVID-19 safety measures in the video advertisement?

- Yes, there were safety measures promoted in the video advertisement.
- No, there were no safety measures promoted in the video advertisement.

Strongly Disagree Strongly Agree
1 2 3 4 5 6 7

The video advertisement made me think that the safety measures of this airline are sufficient.

2. Which airline was promoted in the video?

Airline:

3. What kind of content was promoted in the advertisement?

Strongly disagree Strongly agree
1 2 3 4 5 6 7

The content was informative.

The content was emotional.

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57% completed

4. Please indicate to what extent you agree with the following statements.

Please note: "current situation" refers to the COVID-19 pandemic.

Strongly Disagree Strongly Agree

In the current situation traveling with this airline could endanger my health.

In the current situation traveling with this airline would be harmful to health.

In the current situation it would not be safe to travel with this airline.

5. Please imagine you consider this airline for travelling. Please indicate the extent you agree/disagree with the following statements.

Strongly Disagree Strongly Agree

I would be satisfied with how the airline had taken care of me.

I would be satisfied with this airline.

I would enjoy the travel.

Strongly Disagree Strongly Agree

The service would be good for the price paid.

The fare would be very reasonable.

I would receive what I pay for.

I see value for the money I would pay.

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6. Please indicate to what extent you agree with the following statements.

	Strongly Disagree									Strongly Agree
The information offered by the company is sincere and honest.	<input type="radio"/>									
In general the company fulfils its commitments.	<input type="radio"/>									
The company is concerned for its customers' needs.	<input type="radio"/>									
The company has the resources and experience to do its job well	<input type="radio"/>									

	Strongly Disagree											Strongly Agree
	1	2	3	4	5	6	7					
I would select this airline if I am going to fly in the near future.	<input type="radio"/>											
I would look forward to travel with this airline in the future.	<input type="radio"/>											
I will consider this airline when I intend to fly in the future.	<input type="radio"/>											
It is likely that I will use this airline in the near future.	<input type="radio"/>											
I expect to fly with this airline in the future.	<input type="radio"/>											

	Strongly Disagree									Strongly Agree
I would say positive things to other people about this airline.	<input type="radio"/>									
I would recommend this airline to anyone who asked my opinion.	<input type="radio"/>									
It is likely that I would encourage my friends and acquaintances to fly with this airline.	<input type="radio"/>									

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7. Please indicate to what extent you agree with the following statements.

	Strongly Disagree									Strongly Agree
	1	2	3	4	5	6	7			
I am generally afraid of getting infected with COVID-19 disease.	<input type="radio"/>									
I believe there is a high risk of contamination with COVID-19 when traveling by air.	<input type="radio"/>									

8. How often have you travelled by air in the last year?

times per year

9. How often do you usually (not in COVID-19 times) travel by air?

times per year

10. Have you travelled with Emirates before?

- Yes
 No

Age

11. Gender

[Please choose] ▾

12. Highest completed education

[Please choose] ▾

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