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COVID-19 AND AIR TRAVEL: VIEWS FROM WITHIN THE PANDEMIC IN 2020

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CONTENTS

1. INTRODUCTION

    1.1. The challenge
    1.2. Issues

1.1. THE CHALLENGE

    Tuchen et al (2020) began with an obvious statement: "The coronavirus pandemic has turned commercial aviation on its head and the experience at the world's airports has changed drastically" (p1). For example, world passenger air traffic dropped by 95% in April 2020 compared to April 2019. Lamb et al (2021) reported: "Some passengers who travel frequently no longer perceive flying as unique and fun, leading to a perceived decrease in valuation. This effect, coupled with passengers' changing preferences..., is substantial enough to raise concerns about the long-term health of the travel industry" (p1).
    The air transportation industry has always faced the elements of VUCA (Volatility, Uncertainty, Complexity, Ambiguity), which have included de-regulation and low-cost carriers, terrorism, and natural disasters (eg: volcanic ash). Covid-19 is the latest of these challenges (Tuchen et al 2020). Tabares (2021) summed up: "Historically, air travel has always been focused on safety. From the 70's, and continuing today, security threats had to be dealt with as well. The covid-19 crisis [1] has shown us that from now on, health will be another key aspect to take into account. Safety, security and health will be the new triad for air travel" (p7).

    "Pandemic-free air travel" requires the reduction of risk in two aspects of air travel: (i) contamination between individuals during the journey, and (ii) the transport of infected individuals around the world (Tabares 2021).
    Sun et al (2020) analysed data from "Flightradar24" for a period of 152 days (16th December 2019 to 15th May 2020). The flight data covered 150 airlines and 2751 airports. The most striking finding was that "the worldwide airport network seemed to have been largely unchanged for the first 2-3 months of the year 2020. The evolution of the number of OD [origin-destination] pairs and the number of aircraft in operation showed that the

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[1] Nathan (2000) observed: "When a crisis occurs, it usually arrives as a barrage of urgent, unexpected and unpleasant events, allowing little time to organise or plan appropriate responses" (quoted in Albers and Rundshagen 2020).

aviation industry has reacted to the pandemic with a delay of about two months, and the opportunity to avoid the covid-19 from a local burst to a global pandemic was missed due to the postponement. Given existing research... and the degree of knowledge about the disease in January 2020, one would have expected a much more co-ordinated and informed global response" (p6).

Gossling (2020) commented: "Many media statements released by airlines and industry organisations have suggested that aviation is a victim of the ongoing covid-19 pandemic, and that restarting the sector has key relevance for global tourism and trade... However, air transport has created its own vulnerabilities, because it is a vector in the spread of pathogens and diseases on various scales" (p1). This has been downplayed, along with aviation's contribution to climate change, by the industry.
Gossling's (2020) criticisms included prior to the pandemic, as "while air industry advocates have sought to spread an understanding that air travel is a global norm, recent research has determined that flight activity is highly skewed, as only a few percent of the world population fly internationally in a given year" (p2). He continued: "This raises the question of how much air transport is really needed. Growing evidence suggests that air transport 'wants' are weakly correlated with 'needs'" (Gossling 2020 p2). For Gossling (2020) it was important to consider carefully about State aid to the industry. The pandemic may be an opportunity to "think the unthinkable", and change, if not reduce, the aviation industry. Most importantly, "it is desirable for aviation to become more resilient financially and more sustainable climatically" (Gossling 2020 p3).

Air travel is facilitated by relations between countries, but covid-19 has challenged this normal state of affairs. "States face tension between the economic and social role of aviation, the desire to preserve public health (by imposing border closures, for instance) and the requirement, as per international law, standards and guidance..." (Macilree and Duval 2020 p2). The introduction of quarantine by certain countries has impacted airlines (eg: fourteen days in the UK was legally challenged by three companies in June 2020) (Macilree and Duval 2020) (appendix A).
With the reduction in air travel, companies may need financial help from governments [2]. But "with government

financial resources especially stretched with mass
unemployment and fiscal stimuli urgently needed, as well
as other industries equally in need of financial support,
governments grapple with how much priority should be
given to aviation. For a few countries, this includes
their aerospace industries, the airliner and engine
manufacturers and their respective supply chains"
(Macilree and Duval 2020 p2) [3].

Some airlines provide "essential" services to remote
areas. Supporting such companies becomes important, but
this could be at the expense of other companies. So, "a
pertinent question arises as to whether a government is
obligated to underwrite or provide capital to all
airlines equally" (Macilree and Duval 2020 p2).

Related to this, "where multiple airlines exist with
different business models and cash positions, governments
may need to decide, given limited resources, which
business model has the best hope going forward once
government support is no longer needed. For example, to
what extent should governments offer financial relief to
airlines whose business models focus on high density,
such as low-cost airlines, particularly when physical
distancing may be necessary and thus presenting a
challenge to yield and profitability?" (Macilree and
Duval 2020 pp2-3). Support for the aviation industry
could be problematic with sustainable goals and carbon
emission targets of governments.

Civil aviation includes air cargo traffic, which
will be impacted by covid-19 in a different way to air
passenger transport. There is opportunity, for example,
with the growth of e-commerce during the pandemic and the
demand for express delivery (Li 2020).

"Ultra long-haul" (ULH) is a term describing flights
of 14.5 hours or more in length (and over 12 800 km in
distance) (Bauer et al 2020). Prior to the pandemic these
flights were growing as "an especially preferable option
among corporate travellers" (Bauer et al 2020 p1). The
impact of the pandemic will be both similar to shorter
flights, but also different.

ULH is linked to "premium class", and it will depend

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charges. Support had been provided in 57 countries (costing over US$150 bn) by August 2020 (Abate
et al 2020). Abate et al (2020) commented that "most governments give a high priority to maintaining
air transport connectivity in order to protect economic activity and jobs, in aviation itself and in related
sectors such as tourism. This often means that the support is primarily given to, at best, a handful of
national operators in each country, which were already enjoying preferential treatment compared to the
competition" (p12).

[3] An estimated 65 million jobs worldwide are supported directly or indirectly by the aviation industries
(and another 37 million including tourism) (Serrano and Kazda 2020), or $2.7 trillion of global
economic activity in 2019 (Tanriverdi et al 2020).

on the demand for this type of service. The competition from online meetings has to be addressed for all flights. Bauer et al (2020) were upbeat about their predictions for ULH post-covid-19, but they paid limited attention to Internet communications as an alternative to face-to-face contact.

The impact of the pandemic on the aviation industry will also be upon those in training. Miani et al (2021) surveyed sixty-seven students enrolled in a "Bachelor of Aviation" at Australian universities (either pilot/flying majors or aviation management majors). The survey was wide-ranging, including:

a) The impact of the pandemic on career - Around 60% of the respondents agreed that they needed to consider an alternative career pathway. This was more evident among aviation management than pilot majors. Perceived oversupply of experienced aviation professionals and reduced jobs post-covid were key.

b) Importance of non-technical skills (NTS) - The participants were asked to rate twelve NTS. The top three in terms of perceived importance for pilot majors were "critical thinking/analytical", "communication", and "decision-making", while the management students agreed with the first, but chose "problem-solving", and "emotional intelligence" next. Digital literacy was not perceived as important, though industry professionals see it as so.

Linked to NTS, management students scored higher on seeing the need to broaden skills and knowledge (to include emerging technologies, and operational management during pandemics).

1.2. ISSUES

Sun et al (2021) found over 100 scientific papers on covid-19 and aviation topics by the end of 2020. They summarised the literature under the following headings:

i) Air transportation's role in spreading infection - Models of disease spreading existed prior to covid-19, and together with specific covid-19 research, it was shown that "the number of passengers is a rather reliable indicator of predicting when the disease arrives, given a fixed place of origin, a concept known as effective distance... in the literature" (Sun et al 2021 p2).

Zhang, Y et al (2020) calculated that the spread of the virus in China was a greater risk with air travel than high-speed trains or coach services.

Also using Chinese data, for January-April 2020, Zhang, L et al (2020) constructed an index to measure imported case risk of covid-19. The index was based on international air travel data and number of global covid-19 cases. The restriction of inbound flights to China was predicted to be effective in reducing imported case risk by half.

ii) The short-term impact of reduced flying on the aviation industry.

iii) The passenger experience at the airport, and on the plane.

iv) The long-term impact on the aviation industry.

1.3. APPENDIX A - THREE POLICIES IN CHINA

The Chinese authorities via the CAAC introduced three policies for international passengers in 2020 (Yu and Chen 2021):

i) "Circuit breaker" (4th June) - All international passengers were tested for SARS-CoV-2 on arrival in China. "If five or more passengers on the same flight tested positive, that airline shall be suspended for one week. If ten or more passengers on the same flight tested positive, the suspension increases to four weeks" (Yu and Chen 2021 p1).

ii) "Negative NAT" (20th July) - All international passengers must produce a negative nucleic acid test (NAT) (from the last five days) before boarding flights to China.

iii) "Double negative tests" (7th November) - A "negative NAT" and anti-body test from the last 48 hours before boarding the flight.

Yu and Chen (2021) evaluated these three policies in terms of containment of imported covid-19 cases to China. Using data from Guangzhou between 1st May and 30th November 2020, the "double negative tests" policy was most effective, while the other two were "counter-productive" (ie: covid-19 cases increased).

2. AIRLINES

2.1. HEALTH MEASURES

Salari et al (2020) performed simulations using the Airbus A320 to investigate social distancing options. This type of plane has one aisle, twenty rows and three seats on each side of the aisle. The strategy of leaving the middle seat empty appeared effective, except that the passengers in the aisle seat have increased risk from staff moving around the plane. The rows at the front and back were higher risk as close to staff areas. Meanwhile family groups might be better to sit close together. Anyway, these planes will need to fly with 20-30 passengers (vs 120 when full).

2.2. LIABILITY AND RISK

Airlines are liable for death or injury of passengers during the use of services. But if an individual is infected with covid-19 during the flight, is that different?

The air conventions regulating air carriers are known as the "Warsaw Convention 1929" (WC-29) and the "Montreal Convention 1999" (MC-99). The concept of "accident" is key to liability, and the courts have tended to use "the criteria of being unexpected, unusual events and external to the passenger" (Naboush and Alnimer 2020 p2) (eg: Air France vs Saks in the USA).

In order to establish liability for an accident, the passenger has to prove their injury during the flight (ie: from boarding to disembarking the plane). In relation to covid-19, Naboush and Alnimer (2020) noted two key issues: "First, when does the operations of embarking start and the operations of disembarking ends. Secondly, to what extent of certainty the passenger can prove that contracting the virus happened during the carrier's liability period" (p3).

Embarking could be defined as starting as early as check-in, and disembarking continues until baggage is

collected. If this is so, it raises issues for the airlines. However, airlines have the general defences of passenger's contributory negligence, or by a third party (Naboush and Alnimer 2020).

Naboush and Alnimer (2020) argued that "the mere fact that the passenger has got infection by covid-19 during the air travel does not necessarily mean that there is an air accident. Whether the infection by covid-19 constitutes an 'accident' is based on the facts and surrounding circumstances of each case" (p8). These authors were writing early in the pandemic before any specific court case.

"Environmental scanning" describes the behaviour of top management "to monitor the firm's external environment to gather information for its next round of strategic decision-making" (Brown and Kline 2020 p1). This could include spotting global health risks like the covid-19 pandemic.

One way to assess future risks is along the continuum of probability of occurring, and destructive magnitude (or consequences) (Brown and Kline 2020) (figure 2.1).
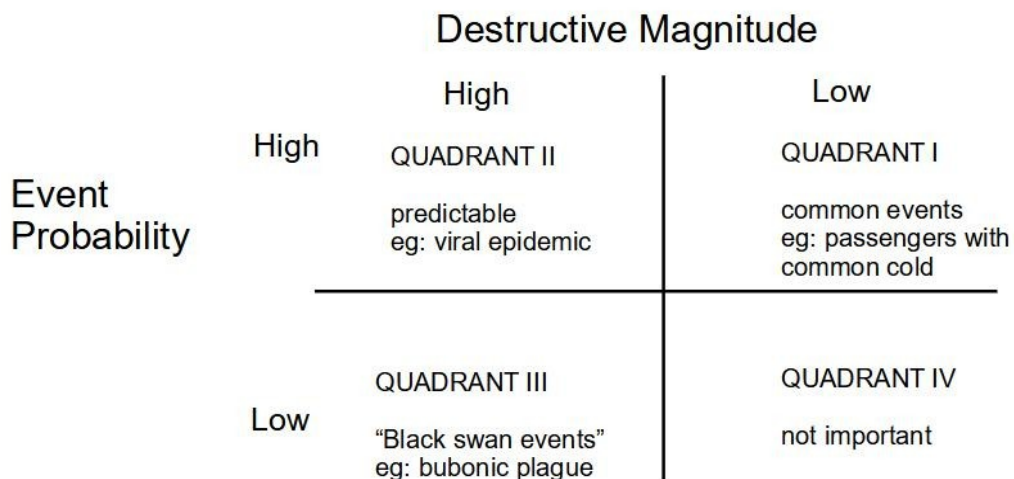
(After Brown and Kline 2020 figure 1)

Figure 2.1 - Assessing risks.

Brown and Kline (2020) placed pandemics caused by a coronavirus ("viral epidemic) in Quadrant II (high

probability/high consequences). "When it comes to global
health issues, there has been six major pandemics since
the 1950s and an even greater number of health events
that may be flu-related but non-pandemic (ie: years with
higher than normal flu deaths) or non-flu related but
pandemic in nature (ie: Ebola Outbreak, 2014; Zika
Outbreak, 2016). In other words, decision-makers at major
airlines should anticipate these events as they are both
highly probable, with probabilities increasing to near
100 percent over a longer time stretch, and potentially
devastating to the financial wherewithal of any given
airline" (Brown and Kline 2020 p5).

Looking at twenty years of corporate reports and
financial statements of major US airlines, Brown and
Kline (2020) felt that "firms were not focused on the
magnitude of such an event" (p8). For example, "United
Airlines" in 2011 had over 1000 words on the risks of
government regulations and only one sentence on pandemics
in their annual report.

Brown and Kline (2020) concluded: "First, pandemics
are regularly occurring events, with major deadly
pandemics having interval gaps of about a decade. Second,
notwithstanding the fact that these events will happen
with great certainty, airline executives must have known
that in the case of a serious disease outbreak, both the
public (including corporations and their employees'
travel) and the government would reduce air travel to a
great degree. Since the firms in this study 'lived'
through two pandemics in recent years (SARS and Swine
Flu), it would seem beyond question that a scenario where
flights were halted (ie: a zero revenue event or close to
that) should have been part of their probability matrix
prior to covid-19" (p8).

2.3. ORGANISATIONAL RESPONSE

Linden (2021) offered managers in the aviation
industry some advice, beginning with that they "need to
be aware of the cause of the decline the organisation is
facing" (p2). This will "help to structure a process to
cope with it and help alter the actions taken to react to
it proactively" (Linden 2021 p3).

The next advice was "not to get paralysed by
uncertainty, which might result in unproductive
uncertainty [Furr 2020]. Aviation decision-makers must
embrace uncertainty as a critical aspect not only for
their short-term actions but also for their long-term
planning process – thus developing uncertainty

capabilities or dynamic capabilities with a particular
focus on managing uncertain environments" (Linden 2021
p3). A three-step process can be used to "embrace
uncertainty" (Linden 2021):

    1. Sensing - "grasp and describe the problem"
(Linden 2021 p6).

    2. Seizing - leaders should "analyse causal
relationships for their organisation" (Linden 2021 p7).
For example, how will covid-19 impact customers' flying
habits?

    3. Transforming - "the ability of an organisation to
transform its asset structure and accomplish the
necessary internal and external transformation" (Linden
2021 p7).

    Albers and Rundshagen (2020) analysed the initial
response to covid-19 of European airlines in the first
half of 2020 via the daily "Air Transport Digest"
newsletter [4]. Five themes emerged from 148 relevant
articles between 6th January and 2nd June 2020 [5]:

    i) "Retrenchment" - the most common response, to
save money in some way (eg: cuts in plane fleet).

    ii) "Persevering" - get through the crisis without
reducing staff or fleet (eg: finding extra funding).

    iii) "Innovating" - finding new ways to make money
(eg: using empty passenger airlines to carry cargo).

    iv) "Exit" - closing down the business.

    v) "Resuming" - re-introduction of flights after

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[4] In terms of finances, the share price of airlines fell. Using data on eleven publicly traded US airline
companies for 21st January 2020 to 15th March 2021, Atems and Yimga (2021) found an immediate
drop in value of around 0.5%.
 "This negative response of airline stock prices to a covid-19 shock is not explained by a covid-19-
induced increase in airlines' variable costs, but rather by a covid-19-induced decrease in air travel,
which, in turn decreases revenues, profitability, and stock prices of US. airlines" (Atems and Yinga
2021 p1).
    Another study (Martins and Cro 2022) showed that airline stocks rose after the news of the
effectiveness of covid-19 vaccines in November 2020 (Pfizer-BioNTech announced on 9th; Moderna
on 16th; AstraZeneca on 23rd; Martins and Cro 2022). So, "the WHO [World Health Organisation]
declaration of covid-19 as a global pandemic was associated with a negative and significant impact on
stock prices. In turn, the announcements of 'cures' for the disease were associated with positive impacts
on stock prices, with the first of these announcements showing a greater stock market impact than the
other two announcements" (Martins and Cro 2022 p6).
[5] Kim and Sohn (2022) confirmed these different responses among South Korea airlines.

lockdowns.

With the decline in air travel came predictions around how long before demand returned to pre-pandemic levels [6]. Any predictive model depended on the data used and the assumptions made. Many of these models also used traditional approaches to predicting travel that focused on macro factors like changing population demographics, and economic growth. But the unprecedented nature of covid-19 required a new approach, which Truong (2021) offered with a neural network simulation model. Various US data sources were used.

Rather than predicting a date or length of time before air travel would increase again, which some studies have done (eg: 2.4 years; Gudmundsson et al 2021 [7]), Truong's (2021) model highlighted the variables that would influence demand. Control of the pandemic was an obvious factor, but also "an improved economy" (as measured by weekly economic index). Truong (2021) explained that "even in the best case scenario, with a normal economic condition after covid-19, we can still not reach the normal level of air travel in a short time. It may take several years for US residents to travel by air on the level that can help the airline industry to fully recover and bounce back to normal as before the pandemic" (p18).

South Korea experienced three waves of infection in 2020, in February-March, August, and the end of the year. Using flight industry data, Kim and Sohn (2022) found that, for domestic flights, "[I]t took about three months to get back to 2019 levels after the first spike in February, although the number of confirmed cases did not increase significantly. However, after the second spike in August, it took less than one month to recover to 2019 levels, despite large numbers of daily confirmed cases" (p3).

Concentrating on Brazil, which has 2498 airports (including landing areas), Pereira et al (2021) considered the response to covid-19 of the main Brazilian airlines in early 2020. Companies with a better mix of aircraft models (including freight and passengers) was

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[6] The "bounce-back" or "rubber-band" effect assumes that business demand returns after a recession. This idea has been applied to the airline industry, for instance, after "9/11" (September 11th 2001) (eg: Ito and Lane 2005).

[7] Gudmundsson et al (2021) used international air passenger and air freight data for 1970 to 2019, and developed a statistical model to predict the recovery period after covid-19. It was assumed that rebound from previous events would predict the response after the introduction of a covid-19 vaccine.

predicted by statistical modelling to fare better.

In another Brazilian study, Santos et al (2021) predicted that low-cost carriers (LCCs) would suffer more. LCCs have allowed a wider segment of society to fly (ie: to improve social inclusion) [8], but the impact of covid-19 on these airlines could also impact social inclusion. At the same time, lower income households may have lost income and employment, and so limit their ability to buy tickets. Santos et al (2021) used data from Brazil for 2010-18. It was calculated that airlines that prior to the pandemic provided more socially inclusive flights (ie: LCCs) "may be the most vulnerable to the current crisis" (Santos et al 2021 p1).

2.3.1. Non-Market Strategy

"Non-market strategy" is "a broad, integrative term for corporate strategic actions directed at government, legal-regulatory, political, and social environments of business" (Akbar and Kisilowski 2020 p1). It involves two broad categories (Akbar and Kisilowski 2020):

i) "Bargaining strategies" - "where executives explicitly or implicitly engage powerful governmental, political or societal actors to pursue public policy outcomes beneficial to firms" (Akbar and Kisilowski 2020 p1) (eg: via lobbying; financial contributions to political parties or campaign groups). These strategies can be "conflictual" and "partnership" (Akbar and Kisilowski 2020).

ii) Non-bargaining strategies" - "a set of initiatives focusing on interactions with the firm's non-market environment that does not involve direct engagement with political or social actors. Compliance with governmental regulations, business reconfiguration in response to those regulations..., selective avoidance of regulations or engagement in corporate social responsibility initiatives are all examples of non-bargaining non-market strategies" (Akbar and Kisilowski 2020 p2).

Akbar and Kisilowski (2020) presented a decision matrix for airlines in relation to governmental covid-19 measures for their industry. This matrix combined the

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[8] According to one estimate, "from 1990 to 2005, the size of the middle class impressively grew from 1.4 to 2.6 billion worldwide. The rise of the middle class in Asia, Latin America, and Africa has boosted the propensity to fly in these regions" (Santos et al 2021 p3).

impact on the airline, and the health impact of the policy:

1. Small impact on airline/large health impact (eg: social distancing requirements) - Compliance with such policies would be the best strategy. Here "non-compliance could logically and quickly trigger a major health incident (such as a publicised case of mass infection), acting as a legitimacy jolt for the already anxious flying public. In that case, more active bargaining with governments over the proposed measures would risk creating a perception that the industry is not living up to its responsibilities in a covid-19 world" (Akbar and Kisilowski 2020 p4).

2. Small impact on airline and health (eg: remove seat back pockets) - Selective avoidance may be the best strategy.

3. Large impact on both airline and health (eg: leaving middle seat empty) - "Given the large health impact of the measure in question, non-compliance or even a perception that the airline is pushing back against the safety measure may trigger a delegitimation cascade for the airlines" (Akbar and Kisilowski 2020 p4). So, a partnership bargaining strategy is recommended. Airlines negotiated the practicalities of the measures. "The industry never questioned the objectives of the policy but bargained with governments to find a less costly solution (eg: requiring facemasks for passengers and PPE [personal protective equipment]for cabin crew). This option prevailed, following intensive lobbying by IATA [International Air Transport Association], the global industry association" (Akbar and Kisilowski 2020 pp4-5).

4. Large impact on airline/small health impact - A conflictual bargaining strategy is best here where "economic considerations prevail over worries about delegitimation. The strategy of choice for airlines will be conflictual bargaining with political actors, with airline executives driving a hard bargain with governments on economic support. The classic argument at an airline's disposal is 'too big to fail'. It is legitimate for governments (and society) to bail airlines out, otherwise the cost of travel will rise once routes are cut after insolvency... Since airlines know that the government has an interest in bailing them out, they can bargain hard over the details of the quid pro quo" (Akbar and Kisilowski 2020 p5).

2.3.2. Grounded Aircraft

With the decline in flights during lockdowns, what to do with grounded aircraft? Adrienne et al (2020) explained: "In order to safely preserve an aircraft during an indeterminate period of inactivity, it is necessary to place them in a parked condition. This involves ensuring the aircraft is fuelled so that each tank has a minimum of 10% of its capacity (although operators may chose to uplift more to support ground engine and APU [auxiliary power unit] running, especially if the aircraft is stored at a location where there is no facility to refuel the aircraft or at a site where fuel hydrants have been temporarily deactivated). The weight not only acts as ballast but also ensures fuel seals and pumps remain adequately lubricated. Aircraft in a parked condition must also be powered down and engines and all external angle of attack and temperature sensors, vents, static ports and probes need to be covered to prevent contamination or ingestion of foreign objects such as dust, sand, insects or birds. Hydraulic and brake systems should also be periodically cycled to keep fluid circulating and aircraft should be secured with chocks rather than the parking brake in case the latter seizes on during long periods of inactivity" (p2).

Where to park the aircraft depends on factors like (Adrienne et al 2020):

- Space at an airport.
- Cost.
- The infrastructure to maintain the plane.
- Meteorological and climatic risk factors.

Adrienne et al (2020) analysed official aircraft industry data on UK airports and grounded planes between 15th February and 1st May 2020. Over 80% of the aircraft were stored at the top twenty airports. But some aircraft were parked at airports that they do not normally use.

The immediate challenge was the availability of appropriate staff nearby, and when flights resumed, the transfer of planes to their usual starting points. "Careful co-ordination will be required to protect the safety and integrity of the airfield and the aircraft parked on it while ensuring as easy and as safe a transition back to normal operations as possible" (Adrienne et al 2020 p5).

2.4. CHINA

"Compared to most other major economies, the aviation sector in China's domestic services recovered at a much faster rate. At the end of July, it recovered at around 70-80% of the pre-pandemic level in the domestic market", noted Czerny et al (2021 p7). This seemed to be a product of the "zero covid" policy in that country. Writing in late 2020, Czerny et al (2021) observed: "Most other countries with a 'curve flattening' strategy, instead of full pandemic control, may not expect the fast recovery path China has achieved. A British 'travel corridor' approach may be more practical for Western countries to follow, albeit more likely to be subject to serious setbacks and disruptions" (p1).

While in a case study of four airports in China and 12 domestic flights, Xue et al (2021) found that total fight volume in 2020 was two-thirds of 2019, but there was a partial rebound by the end of 2020.

Hou et al (2021) noted the impact on regional or "small" airports (ie: less than two million annual passengers), with particular reference to the 165 in China. "Unlike the larger airports, these airports do not have enough capital reserve as they mainly live on government subsidies... With limited market size, they are less resilient to dramatic demand shock, probably taking a long time to fully recover" (Hou et al 2021 p2). One way to help such airports would be via slot allocation liberalisation at the three most important airports in the country (Beijing, Shanghai, and Guangzhou). The interaction between small airports and this "big three" was tightly controlled by the Civil Aviation Authority of China (CAAC) until a policy change in September 2020. Hou et al (2021) concluded from a modelling study: "Allocating these slots to the small airports in nearby regions with lower imported case risk of covid-19 would be feasible and can benefit both hub and small airports in terms of fast traffic recovery" (p9).

Another study of Chinese data (airline seat demand 2017-2020) found that "those routes served by well financed/funded air carriers, those exposed to the lowest rates of covid-19 infection and/or those that are seeing the least restrictive lockdowns and travel measures have been impacted least by the pandemic and are those that are most likely to rebound first" (Warnock-Smith et al 2021 p20).

3. AIRPORTS

3.1. THEIR CHALLENGE

With the decline in demand for air services, airports could increase their charges to passengers and airlines, but Forsyth et al (2020) argued against this. They stated: "Keeping prices low will be helpful to increasing the viability of airlines and tourism, and it will enable the wider economic benefits of air transport, such as connectivity, to be reaped" (Forsyth et al 2020 p2).

Rather than increase airport fees, airports could seek to increase their non-aeronautical revenue (eg: duty free shopping). As a case study, Choi (2021) analysed data from around one quarter of a million duty-free shop transactions at Incheon International Airport (ICN), Seoul, South Korea, in 2019.

Airport purchasing behaviour is influenced by "dwell time" (ie: time between check-in and flight boarding), location of shops (compared to boarding gates), and promotions to stimulate impulse buying, for instance. All these factors were relevant in Choi's (2021) analysis, but dwell time was particularly important. While "even a passenger with solid purchasing power may lose the purchasing intention when assigned to an unfavourable gate or terminal" (Choi 2021 p10).

Choi (2021) noted that "per-passenger spending at ICN duty-free increased in 2020 [up from 41.9 US$ in 2019 to 48.0 in 2020]... Passengers still purchase products at airport shops in travelling during covid-19. It implies shopping during the trip has already become a part of the journey. It also indicates that commercial revenue may still serve as a valid key to the airport industry's profitability recovery post-covid-19" (p6).

Serrano and Kazda (2020) offered some other suggestions for airports including:

a) Resize the infrastructure - eg: close one terminal where there are multiple terminals.

b) Increase the use of automation.

c) Outsource non-essential services.

3.2. HEALTH RESPONSE

        Faced with covid-19 pre-vaccine in 2020, airports,
like many other industries, introduced measures against
covid-19 (eg: cleaning and sanitising; social
distancing), and detection of covid-19 (eg: free PCR
(polymerase chain reaction) testing) (Tabares 2021).
Health screening generally has to deal with the process
time of tests, the user experience (eg: blood samples vs
body temperature measures), and false negatives and
positives of tests (Tabares 2021) [9].
        It is important to understand the numbers for large
airports prior to the pandemic - 200 000 passengers per
day, along with 20 000 airport-based employees, and 2000
airline crew members (Tabares 2021).

        Airport security control systems have to adapt to
social distancing. The most obvious is the queueing to
pass through controls, which involves many people close
together. Kierzkowski and Kisiel (2020) performed
simulations of different solutions. The best strategy was
to expand the space used (eg: two separate distanced
queues), but this may not be feasible for all airports.

        The "Airport Health Accreditation" (AHA) programme
was set up by Airports Council International (ACI) "to
take effective measures to reduce the spread of covid-19
disease at airports, to inspect these measures, to make
them measurable, and to relieve employees and users. In
this sense, it is to show the authorities and regulators
the precautions taken regarding health and safety during
the pandemic process" (Kurt 2021 p3). Basically, it is an
accreditation programme, and Istanbul Airport was the
first to be certified in July 2020. By the end of
November 2020, 189 airports had been accredited (Kurt
2021). But why did airports rush to be accredited?
        Kurt (2021) analysed the websites of 56 AHA
accredited airports in September to November 2020 to
answer this question. Two themes were found:

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[9] New boarding/deboarding procedures and disinfection protocols will increase the turnaround times of
aircraft. "The turnaround is defined as the ground times of aircraft in-between two flight legs, starting
with scheduled in-block time (SIBT) of the inbound leg and finishing with the scheduled off-block time
(SOBT) of the outbound leg. The turnaround consists of up to twelve interdependent sub-processes
which contain more than 150 individual activities and involve up to 30 different actors" (Schultz et al
2020 p3). Based on simulation modelling, Schultz et al (2020) calculated an increase of 10-20% more
ground time to fulfil the new procedures and protocols. This figure depended on the number of
passengers on a plane (eg: "empty middle seat"), and whether extra staff were employed.

a) Moral legitimacy - "By obtaining this certificate, airports organisations gain legitimacy in the eyes of the ACI professional community on the one hand, and the other hand, they create 'the reputation of the airport operator that does its job well and following the ethical values' and try to create legitimacy in the eyes of all stakeholders" (Kurt 2021 p4).

Examples from the websites included: "Quito airport is the first in South America to obtain this accreditation", and "Passenger safety has always been our paramount concern at CVG [Cincinnati Kentucky International Airport]. Our CVG community, comprised of the airport, airline and tenant staff continue to go above and beyond for travellers, said Candace McGraw, Chief Executive Officer, CVG" (p5).

b) Pragmatic legitimacy - Kurt (2021) noted that accreditation "for airports is related to creating an airport's reputation that has taken the necessary precautions for covid-19 precautions in the eyes of customers, being preferred by customers in their travel times and providing benefits that will increase their economy in the long term" (p6).

For example: "Brussels Airport makes every effort to ensure that the airport's facilities are hygienic and safe to welcome passengers... The Health Accreditation Programme was set up to restore confidence in travellers about the safety of airport facilities and the effectiveness of the precautionary measures implemented to prevent any risk to their health" (p6).

Kurt (2021) summed up: "Airports use this accreditation to rebuild trust in the eyes of customers and passengers, to create an airport reputation that took the necessary measures during the pandemic period, to be preferred again, and to revitalise airports" (p1).

3.3. USERS AND STAFF

The "airport experience" is part of what Pine and Gilmore (1999) called "the experience economy" (table 3.1) [10]. The passenger experiences here will influence the overall perceived quality of air travel. So, it is important for airports to measure passenger satisfaction. The Airport Service Quality (ASQ) survey is the nest example of this. Factors in satisfaction that emerge from

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[10] Or "experience industries" (Tofler 1970).

such surveys include those related to check-in (eg: self-service; queues), mobile technology (eg: availability of Wi-Fi), security screening, and retail facilities. Key dissatisfaction occurs with airport parking, immigration, and the experiences of passengers with mobility issues or other disabilities (Tuchen et al 2020).

Tuchen et al (2020) commented: "Employees are largely seen as 'cogs' in the complex airport system... Notwithstanding the more prominent role the passenger experience – or at least satisfaction – plays, passengers too appear to be seen as 'passive cogs' from an operational perspective, owing to the process-oriented nature of airports as complex engineering and logistics systems" (p3).

- Pine and Gilmore (2013) commented: "Focusing on goods and services alone leads down the road of economic austerity. Experiences are a distinct form of economic output, and as such hold the key to promoting economic prosperity" (p22).

- The point was that "mass customising a good – making an individually customised physical product with low costs, high volume, efficient operations – automatically turned it into a service" (Pine and Gilmore 2013 p22). Mass customisation thus becomes an experience.

Table 3.1 - The Experience Economy.

4. VIEWS OF PASSENGERS

4.1. STUDIES

4.1.1. Lamb et al (2021)

In a qualitative study Lamb et al (2021) interviewed eight men and seven women in the USA who were relatively frequent flyers (average of nine trips per year for work and four for leisure purposes before the pandemic). The following themes emerged from the interviews in mid-2020 about flying during the pandemic and afterwards:

1. Trust - All but one interviewee mentioned trust, which related to different groups:

a) Other people - eg: "you have to worry about other people if they're also practising good health and hygiene with washing their hands, covering their mouths and nose, either with mask or using their elbows, especially and children. I kept my distance... and then just be totally nervous or anxious sitting next to somebody they don't know or, you know, having to sit by somebody during this time can be kind of stressful, especially for other groups" (Participant (P) 14; p4).

b) Airlines - eg: "I know [the] airlines is [are] supposedly taking measures such as like NOT selling the middle seat or making sure keep compartment masks and socially distancing. You still don't actually see that happening when people are on planes. A couple of other people that still have to travel for work, like the consultants that I work with and know their first-hand experience that, you know, all seats are still full and it depends on the flight you're on, I've heard they are very full... Yeah, it's a lot of show. And then people just kind of wash their hands of it to say, well, we covered our bases for not getting sued" (P3; p4).

c) Airports - eg: "it's kind of uncertain whether each airport is following social distancing. Are they really strictly enforcing the wearing of masks? I also I've noticed that I've travelled recently that the airport did not take temperatures? So that was a concern. I assumed that, that is something that would be something that would be done" (P14; p5).

d) Information about covid-19 - "At the time of this study, various government entities released conflicting information, which led some people to believe that the virus was not 'real', despite the exponentially increasing number of deaths caused by the disease... Despite their political beliefs, however, they seemed to agree that information about the virus was sufficiently inconsistent to impact their flying experiences negatively" (Lamb et al 2021 p5).

2. "Emotional heuristics" - Interviewees expressed a number of emotions related to covid-19 and flying, including:

a) "Afraid of others, feeling anxious and feeling vulnerable" - eg: "Well, I kind of feel a little anxious going to the airport. In XXX, it's a much larger airport than the one that I flew from in XXX. and I'm just not sure how people are going to respond to it. Keeping social distance and following the rules and also just how, whether it's going to be busy at this airport or not... some people might be too afraid to ask [to move seats] and then just be totally nervous or anxious sitting next to somebody they don't know or, you know, having to sit by somebody during this time can be kind of stressful, especially for other groups... [about another passenger] But I can also tell she was feeling a little anxious having to sit next to me..." (P14; p6).

b) "Need to feel in control and feeling powerless" - eg: "You have no control over any social distance. You know, but that's the one part that you can't manage differently. You can try to manage distance. And the check-in queue with the TSA [Transportation Security Agency] queue. Or even at the boarding door, they can try to manage just that. But you can't manage this on a plane. All the seats are full" (P3; p6).

c) "Anger and frustration and stress" - eg: "I am really concerned about my health on the plane. I'm not talking about coronavirus. I'm talking about just in

general stress. And I don't want to be stressed over getting sick so much that I end up getting sick... Sure. In terms of overbooking. I know that there's a lot of there's not a lot of long waitlists on all of my flights. And I think it has to do with the fact that there's so many cancellations. So. we know when people are overbooked and they're seated in the middle aisle" (P13; p6).

3. Precautions - eg: "I wore a disposable mask so I could throw it away when I got to where I was going. And I also packed can of lyson [Lysol] that I sprayed myself down with and I spread my suitcase down a lot when I got after plane and got my baggage at the baggage claim and changed my clothes right away when I got to the hotel or - or back home" (P15; p7).

4. The future - "When participants were asked whether they would eventually return to their old travel schedule, most were optimistic. However, there were mixed feelings of pessimism about business travel returning to normal compared to travelling for leisure" (Lamb et al 2021 p8).

Lamb et al (2021) summed up: "This study's primary findings emphasise that trust issues are likely experienced by all travellers to varying degrees of intensity, with subsequent emotions such as fear and anxiety for personal health and safety. These trust issues primarily manifest in a distrust of other people, perceiving them as a threat not only a potential carrier of the disease but the potential for unpleasant confrontations over mask-wearing and social distance violations within the aircraft. The airlines may alleviate some of these concerns through transparent communication on how a high level of safety can be maintained in the face of staff shortages, cost-cutting, and operational changes in scheduling and flight loads" (p10).

The interviews were carried out via telephone, and the participants, who were white-collar professionals, were recruited through the principal researcher's contacts. Around half lived in Texas, and there was a variety of political affiliations held. Eight open-ended questions were the basis of the 30-60 minute-long interviews (eg: "What factors are you concerned about right now when you think about air travel?"; "What precautions do you take if any?"). The themes were

elicited based on keywords and phrases with no pre-
determined categories.

4.1.2. Other Studies

Samanci et al (2021) surveyed 449 passengers on
Twitter in April 2020 with the link, "Are you ready to
fly again?". Twenty-two airline service quality factors
related to covid-19 were rated. These factors came from
previous studies, and online focus groups. Three
dimensions of passenger perceptions emerged:

a) "Social distance and hygiene" (eg: "requiring
crew members to wear a mask and disposable gloves during
the flight").

b) "Information awareness and concern" (eg:
"responding to passengers' covid-19 related questions").

c) "Infection alert procedure" (eg: "separating
suspected infected passengers from other passengers as
much as possible").

Factors with highest importance to passengers
included "allowing the passengers to bring their own
food", and "maintaining the quality of the air
circulating in the cabin".

Lamb et al (2020) explored 23 possible predictors of
willingness to fly under five headings - personality,
demographic, affect or emotional, health, and air travel
predictors - in a survey of 632 US adults recruited via
Amazon's Mechanical Turk (MTurk).
Distinguishing between willingness to fly for
business or pleasure in the following two weeks, four
significant predictors were common (table 4.1):

i) Perceived threat from covid-19 negatively
associated with willingness to fly.

ii) Personality trait of Agreeableness negatively
associated - "Individuals who score high in agreeableness
are often friendly, helpful, considerate, generous and
trustworthy..., but are not necessarily conformists...
People who fall into this category might not want to fly
because they believe that they will endanger others,
including family and friends" (Lamb et al 2020 p5).

iii) Affect (positive emotions about flying).

iv) General fear level negatively associated.

Business flying was also significantly predicted by general propensity of risk taking, and flying for pleasure by "pre-covid travel purpose" (ie: "if participants primarily travelled for business before covid-19, they were more willing to fly for pleasure now"; Lamb et al 2020 p4).

The study used a convenience sample of US MTurk users, who self-reported on twenty-three variables in early to mid-2020 (ie: the early days of covid-19, pre-vaccination).

Factor	High Willingness to Fly	Low Willingness to Fly
Perception of covid-19 as threat	Low	High
Agreeableness	Low	High
Emotions about flying	Positive	Negative
General fear level	Low	High
Propensity for risk taking (business flying)	High	Low
Reason for pre-covid flying (pleasure flying)	Business	Pleasure

Table 4.1 - Self-reported factors that significantly predicted willingness to fly during covid-19.

In South Korea, a survey in May 2020 of 1000 individuals found that 60% intended not to fly until a vaccine was developed, while in an equivalent survey in November 2020, over 70% were willing to travel (Kim and Sohn 2022).

4.2. PERCEIVED RISK AND TRUST

A more recent study by Garaus and Hudakova (2022) investigated "how individuals react to rational (safety) appeals vs emotional appeals in terms of health risk perceptions and trust in the airline" (p3). This was done by varying an one-minute advertisement by "Emirate Airlines" on YouTube. The two versions had no narrative, but varied the images and information.

The "emotional advertisement" showed "people in a working environment at various destinations, the nightlife of different cities (ie: the city's illuminated skyline, people having fun and dancing at a nightclub) as well as other beautiful pictures of various locations of the world. The advertisement ends with the slogan, 'Tomorrow believes, the more of our world we see, the richer we become'" (Garaus and Hudakova 2022 p4). The "safety appeal advertisement" showed the covid-19 safety measures being taken by the airline with sub-titled information. After watching one version of the video, a convenience sample of 218 adults completed a questionnaire, covering perceived health risk, trust in the airline, and air travel intentions.

Viewers of the "safety appeal advertisement" reported lower perceived health risk (mean 2.23 vs 3.54 out of 7), and higher trust levels in the airline (mean 5.92 vs 4.97 out of 7). Also "participants indicated higher air travel intentions and higher intentions to recommend the airline when they were exposed to safety appeals as compared to emotional appeals" (Garaus and Hudakova 2022 p6).

The sample was volunteer (ie: those individuals who responded to a social media advertisement for participants, or undergraduates on a business course). No details were given of demographics. The researchers were based in Vienna, so can it be assumed that the study was in German?

Other types of appeal could be tested in future research (eg: cultural appeal), and other forms of advertising.

In another recent study, Battisti et al (2022) surveyed over 1100 Italian students about the importance of travel in life with a structured questionnaire developed from focus groups. Most of the respondents were 18-25 years old ("Gen Z").

Respondents were divided into high and low risk perception of covid-19 (ie: afraid/not afraid). This distinction was key in attitudes towards long distance flying (ie: outside of Europe). For example, individuals afraid of covid-19 placed higher value on safety, rapidity, and convenience related to long distance flying, while those not afraid emphasised relaxation (table 4.2).

When you take a longer trip by plane (outside of Europe), how do you evaluate the following feeling to describe your state of mind:

- Tranquillity
- Safety
- Relaxation
- Sense of Rapidity
- Comfort
- Convenience
- Entertainment
- Anxiety

(1 = "I don't feel at all this way; 5 = "I feel a lot this way")

(Source: Battisti et al 2022 appendix)

Table 4.2 - Key question asked by Battisti et al (2022).

4.3. OLDER PASSENGERS

Older passengers were a growth demographic for air travel before the pandemic (eg: 7% of trips abroad by UK residents in 2000, but 11% in 2019) (Graham et al 2020). What are the attitudes of this group (65 years old and above) to flying since covid-19 appeared?

Graham et al (2020) reported an online survey of 600 UK residents in June 2020. Respondents had taken at least one air trip in 2019. Nearly two-thirds stated that they were "extremely likely" or "somewhat likely" to travel in the next twelve months. This was a surprise as the increased vulnerability of older adults to covid-19 was expected to influence future travel decisions.

The decision to travel was influenced by low infection rates at home and abroad, and the availability of a vaccine most importantly, and least so by quarantine at destination and on returning home. "This is a somewhat surprising finding because of the disruption that quarantine can cause to lives, but given the age of the respondents, they are less likely to be in employment, and would perhaps be less inconvenienced by a quarantine than those individuals who are working" (Graham et al 2020 p3).

The perception of a "safe trip" was influenced by social distancing, regular sanitisation, and the mandatory use of masks on the plane. Contactless self-service check-in as relatively unimportant "as a means to feel safe during the passenger journey is interesting in that it could tentatively confirm common perceptions that the ageing market is generally less comfortable with self-service technology. Whilst in itself this is not

very surprising, it does act as a reminder to the industry, in that attempting to ensure a safer environment by using technology, it needs to be aware that the attitudes towards such technology may differ for ageing passengers compared with other passenger segments" (Graham et al 2020 p4).

Concern about contacting the virus on the aircraft was high for around half of the respondents (figure 4.1).
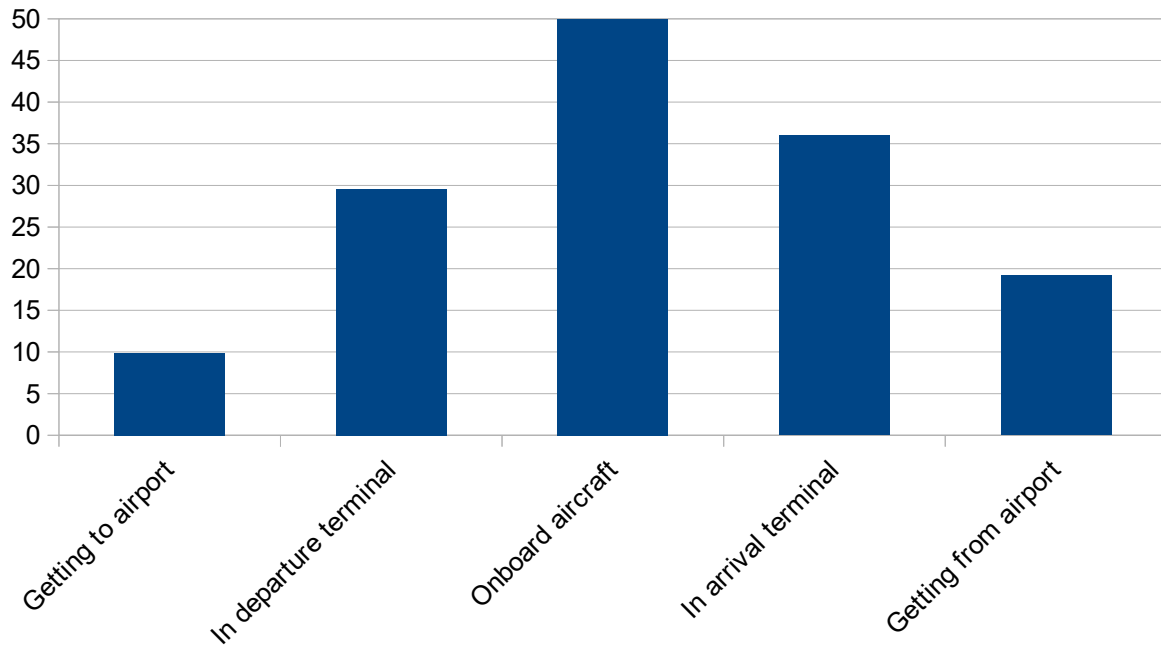
(Data from Graham et al 2020 table 3)

(Answering "extremely concerned" or "very concerned" on a five-point scale)

Figure 4.1 - Risk perception of contacting covid-19 at different points on a journey (%).

4.4. TRAVEL MOTIVATION

Air travellers can respond to changes in the aviation industry due to covid-19 in three main ways - accept the changes (eg: longer check-in times) and adapt their travel behaviour, find alternative ways to travel, or not travel at all (Lin and Zhang 2021).

Particularly interesting is the individual who continues to travel during and after a crisis. This is studied under the heading of "travel motivation", which can be defined in relation to flying as "the desire that impels an individual to engage in air travel regardless of destination or travel purpose" (Lin and Zhang 2021

p2).

The Push and Pull Factor Model" has been developed to explain travel motivation. Push factors are intrinsic motivations, like the desire to escape, rest and relaxation, while pull factors are "external appeals that entice the travellers in question to react to the attractiveness. Such attractiveness could be either destination-associated products and services with unique appeals and attributes, or marketing and promotional stimuli" (Lin and Zhang 2021 p3).

Lin and Zhang (2021) applied this model to survey data from Taiwan (n = 760 respondents at Taichung International Airport on 8-9th October 2020). Thirteen statements related to pull factors and thirteen to push factors, and a five-point Likert scale was used (table 4.3). The items receiving the highest mean scores were "I want to be free to act the way I feel" and "I enjoy planning a trip and then implement it". These were the "self-realisation/achievement" category (push factors). Next came two pull factors (from the "destination" category) - "During covid, the food diversity and featured activities at the destination attract me" and "During covid, the scenery and themed activities at the destination attract me". Further analysis of the responses showed that the "destination" category was the most important pull factor, and the "self-realisation/achievement" category was the foremost push factor.

Rather than asking individuals to say what they intend to do, ticket purchase data, for example, show what individuals actually do (ie: more objective data). Zhang et al (2021) analysed data on the Chinese domestic flight market for 1st January 2018 to 31st December 2020. Specifically, the advanced ticket booking time can be used as a measure of confidence about the future. In other words, a longer booking time is a sign of greater confidence.

In October 2019, for instance, the average advance booking time was 16.6 days (ie: pre-pandemic baseline). This time was reduced to 5.5 days in May 2020, but rebounded to 10-11 days by the end of 2020. Zhang et al (2021) stated: "Therefore, we believe that the pandemic has caused a fundamental change in the travel psychology of many passengers. People are becoming more conservative in their travel psychology. It will be difficult for the booking time in 2021 to return to the pre-pandemic level" (p4).

Type of Factor	Category	Item
Push	Self-realisation/ achievement	I want to be physically and mentally refreshed
	Escape	I want to escape from the busy work
	Flying experience	Flying makes me feel excited
Pull	Destination	During covid, all types of outdoor activities at the destination attract me
	Safeguard measures	Covid-safe measures implemented by airlines are reliable and trustworthy
	Promotion and marketing deals	The self-service facilities attract me
	Aviation and specific products and services	Earning more mileage points is attractive

(Source: Lin and Zhang 2021 table 2)

Table 4.3 - Example of items used by Lin and Zhang (2021).

4.5. PERCEPTIONS OF CRISIS MANAGEMENT AND COMMUNICATION

Crisis management involves pre-crisis preparation and preparedness. The airline industry has faced previous crises, and lessons from these may be applicable to dealing with covid-19. but the perception of crisis management capability influences passengers' attitudes towards the airline ("brand").

Kao et al (2020) analysed online data from 848 respondents after an airline staff strike in Taiwan in June-July 2019. Positive perceived crisis management capability by the airline was associated with positive brand attitudes, and intention to use the airline. Perceived crisis management capability was measured by nineteen items (eg: communication with the media; prompt and timely disclosure of information).

Scheiwiller and Ziska (2021) analysed the "crisis communications" of twenty European airlines via over 7000 posts on social media between 1st December 2019 and 25th May 2020. Crisis communication is how the organisational makes known its response to events, and how to deal with public perceptions and expectations.

The "Situational Crisis Communication Theory" (Coombs 2007) has been proposed as a framework for

communicating during a crisis. Three types (or clusters) of immediate response strategy can be used (Scheiwiller and Ziska 2021):

i) "Deny cluster" - "where the organization rejects responsibility and denies any connection between the crisis and the organisation or blames another organisation or person for the crisis" (Scheiwiller and Ziska 2021 p2).

ii) "Diminish cluster" - the organisation attempts to decrease its responsibility for the crisis and its impacts.

iii) "Rebuild cluster" - the organisation admits responsibility and apologies and/or offers compensation.

Subsequently, strategies include reminding stakeholders about the organisation's past good deeds, ingratiation (eg: praising stakeholders), or "victimage" (ie: reminding stakeholders that the organisation is also a victim of the crisis).

Scheiwiller and Ziska (2021) noted three strategies used by the airlines, in order:

1. "Bolster strategies" - A strategy "which aims to remind customers about a company's past good deeds. Additionally, airlines emphatically praised their stakeholders during the crisis. Applauding messages to frontline hospital workers and 'thank you' messages to customers, government institutions, and employees were frequently released. Except for Jet2 and Aeroflot, all other airlines made extensive use of this strategy, with Eurowings releasing the highest number of ingratiation messages. Praising stakeholders was previously reported to evoke sympathy for an organisation, particularly during a victim crisis... Through the ingratiation strategy, the airlines sought to minimise a potential threat to their reputation" (Scheiwiller and Ziska 2021 p8).

2. Details of safety measures being taken to reduce the risk to customers and employees.

3. Blaming others and "victimage".

Overall, the researchers felt that the communication was effective, though there were differences between

individual airlines.

Scheiwiller and Ziska (2021) proposed this best practice model: "1) Communicate the basic facts about the crisis first, within an hour of the first signs of a crisis; 2). Emphasise instructing and adjusting information strategies; 3) Increase communication frequency during a crisis; and 4) Determine the appropriate crisis communication channels for addressing specific stakeholder groups" (p9).

Studies prior to covid-19 on crisis communications include Lufthansa Group's response to an Airbus A320-211 crash in the French Alps in 2015 (Cannny 2016) [11], and Malaysia Airlines during the MH370 crisis in 2014 (Othman and Yusoff 2020) [12].

Prados-Pena et al (2022) investigated social media communication generally by the airlines during the pandemic. Prior to the pandemic, studies (eg: Seo and Park 2018) had shown that "social networks play an important role in companies' marketing communications, and airlines are no exception as they increasingly use social networks to communicate promotions and deliver marketing activities. Airlines also use these networks for customer management and as an internal channel for communications with and between employees" (Prados-Pena et al 2022 p2). It was also found that airlines active on social media had greater exposure to consumers, and this strengthened the relationship with the brand (eg: Vishnu et al 2019). Facebook was most popular (Prados-Pena et al 2022).

One problem is how to measure the effectiveness of communications on social media. Different metrics have been used, including number of "followers", "likes", or "shares" (Prados-Pena et al 2022).

Prados-Pena et al (2022) analysed the data on Facebook posted by "Iberia" and "Air Europa" between 11th March and 21st June 2020 (lockdown period), and 22nd June and 30th September 2020 ("new normal" - travel with restrictions) [13].

The communication strategy of the two airlines was compared along certain dimensions:

a) Frequency of posting - "Iberia" published sixty-one posts compared to 138 by "Air Europa".

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[11] Details at https://en.wikipedia.org/wiki/Germanwings_Flight_9525.

[12] Details at https://en.wikipedia.org/wiki/Malaysia_Airlines_Flight_370.

[13] "Iberia" had over 1.8 million followers and "Air Europa" over 660 000 as of 1st December 2020 (Prados-Pena et al 2022).

b) Content of posting - "Iberia" posted mainly informational messages, while "Air Europa" had a balance of informational and promotional material.

c) Popularity - Based on "likes", "Iberia" was more popular, particularly during the lockdown period when over 90% of the posts related to covid-19. The average number of comments per post were similar between the two airlines, but "Iberia" had a higher average number of times a post was shared. During the lockdown period, "the most talked-about publication of Iberia was a post providing detailed information on the company's flexible ticketing policy, how to contact the company to request a ticket modification, and how to apply for a compensatory voucher. In the case of Air Europa, the most-commented post informed users of the different booking options and its flexibility policy regarding the date of travel" (Prados-Pena et al 2022 p9).

In summary, "Facebook posts created by Iberia that included informative messages, references to covid-19, with hashtags, and allusions to corporate social responsibility — were more popular than Air Europa posts. Iberia posts generated greater customer brand engagement and virality, and received more positive reactions in terms of likes and loves" (Prados-Pena et al 2022 p1).

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