COVID-19 and the airline industry: crisis management and resilience
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Abstract
Purpose – The COVID-19 pandemic has triggered a time of crisis and uncertainty for the air transportation industry. The gloomy prospects for the industry have stretched business resilience to a critical point. The crisis has caused damage and shock that the aviation industry has never endured before. This paper aims to provide a comprehensive understanding of both internally and externally generated airline response strategies by examining business practices for crisis management.

Design/methodology/approach – This study screened research papers and economic reports from authoritative organizations including the International Air Transport Association, International Civil Aviation Organization, World Health Organization and United Nations World Tourism Organization from December 2019 (the month in which the COVID-19 outbreak occurred) to March 2021 (the most recent month at present). The authors also integrated publicly recognized news articles to cover a wide range of business practices in the airline industry. The authors conducted thematic analysis by filtering news articles and economic reports that mentioned the keywords “COVID-19,” “pandemic,” “CoV-2,” “coronavirus” and “corona.” The authors coded the airlines’ response actions along the two-axis matrix (time and magnitude) and generated insights in a timely manner.

Findings – Major airlines have modified decision-making in relation to the exponential spread of the virus, which is in direct proportion to the deterioration level in the airline industry. When the impact was low in the early stage, major airlines maintained their status quo. Before long, the magnitude of the destruction became high, which made airlines implement capacity adjustments and request government relief measures. As industrial deterioration deepens, airlines keep calling for state aid packages and have changed their focus to the cargo transportation of high-demand commodities and pharmaceutical supplies. Lastly, industrial adversity and uncertainty have made them defer aggressive takeover opportunities.

Originality/value – Several researchers have investigated the impacts of the COVID-19 on the airline industry. However, there remains a dearth of scholarship on the hampered business activities and crisis management of the airline industry. In the absence of sufficient response strategies against the COVID-19 panic, this paper is to provide a comprehensive understanding of the major airlines’ response strategies to the COVID-19 pandemic. In addition, this paper yields an opportunity for on-site management to review how major global airlines have responded to the crisis and find managerial insights to restore their business sustainability.

Keywords
- Viewpoint

COVID-19 and the airline industry: crisis management and resilience

研究目的: 冠状病毒大流行诱发了航空业的危机与不确定性。该行业前景黯淡，业务弹性已达到临界点。这场危机给航空业带来了前所未有的破坏和震撼。在本文中，我们概览了用于危机管理的业务实践，对内部和外部因素的航空公司响应策略提供了全面的了解。

研究方法: 我们的研究筛选了IATA、ICAO、WHO和UNWTO等权威组织从2019年12月（首次报道冠状病毒爆发的月份）到2021年3月（目前的近一个月）的研究论文和经济报告。我们还整合了公认的新闻报道，涵盖航空业的广泛业务实践。我们通过过滤关键词“COVID-19”、“大流行”、“CoV-2”、“冠状病毒”的新闻文章和经济报告进行了主题分析。我们沿两轴矩阵（时间和幅度）对航空公司的响应行动进行了编码，并及时产生了我们的见解。

结论: 大型航空公司已在行业内采取了清理有关病毒指数传播的决定。当前的影响很小，主要航空公司保持现状。很快，损失变得如此严重，以至于航空公司不得不调整机动性并要求政府救济。随着航空
COVID-19 y la industria de las aerolíneas: gestión de crisis y resiliencia

Propósitos de investigación: La pandemia de COVID-19 ha desencadenado una época de crisis e incertidumbre para la industria del transporte aéreo. Las sombrías perspectivas para la industria han llevado la resistencia empresarial a un punto crítico. La crisis ha causado daños y conmociones que la industria de la aviación nunca antes había soportado. En este documento, proporcionamos una comprensión integral de las estrategias de respuesta de las aerolíneas generadas tanto interna como externamente mediante el examen de las prácticas comerciales para la gestión de crisis.

Métodos de investigación: Nuestro estudio examinó los documentos de investigación y los informes económicos de organizaciones autoritarias, incluidas la IATA, la OMS y la ONU/WTO, desde diciembre de 2019 (el mes en el que ocurrió el brote de COVID-19) hasta marzo de 2021 (el mes más reciente actualmente). También hemos integrado artículos de noticias reconocidos públicamente para cubrir una amplia gama de prácticas empresariales en la industria aeronáutica. Hemos realizado un análisis temático filtrando artículos de noticias e informes económicos que mencionaban las palabras clave “COVID-19”, “pandemia”, “CoV-2”, “coronavirus” y “corona”. Codificamos las acciones de respuesta de las compañías aéreas a lo largo de la matriz de dos ejes (tiempo y magnitud) y generamos nuestras ideas en un momento oportuno.

Conclusión: Las principales aerolíneas han modificado la toma de decisiones en relación con la propagación exponencial del virus, que es directamente proporcional al nivel de deterioro de la industria aeronáutica. Cuando el impacto fue bajo en la etapa inicial, las principales aerolíneas mantuvieron su status quo. En poco tiempo, la magnitud de la destrucción se hizo alta, lo que hizo que las aerolíneas implementaran ajustes de capacidad y solicitaran medidas de socorro del gobierno. A medida que se profundiza el deterioro industrial, las aerolíneas siguen pidiendo paquetes de ayuda estatal y han cambiado su enfoque hacia el transporte de carga de productos básicos de alta demanda y suministros farmacéuticos. Por último, la adversidad y la incertidumbre industriales les han hecho posponer las oportunidades de adquisición agresivas.

Valor: Varios investigadores han investigado los impactos del COVID-19 en la industria de las aerolíneas. Sin embargo, sigue habiendo escasez de estudios sobre las actividades comerciales obstaculizadas y la gestión de crisis de la industria de las aerolíneas. En ausencia de estrategias de respuesta suficientes contra el pánico de COVID-19, este documento tiene como objetivo proporcionar una comprensión integral de las estrategias de respuesta de las principales aerolíneas a la pandemia de COVID-19. Además, este documento brinda una oportunidad para que la gerencia en el sitio revise cómo las principales aerolíneas mundiales han respondido a la crisis y encuentre información gerencial para restaurar la sostenibilidad de su negocio.

Palabra clave: COVID-19 (coronavirus), Industria aérea, Gestión de crisis, Resiliencia, Estrategia de respuesta

Tipo de papel: Punto de vista

1. Introduction

The outbreak of COVID-19, also known as the coronavirus, occurred in December 2019 in Wuhan, China (Jiang et al., 2020). In March 2020, the World Health Organization (WHO) declared the outbreak to be a pandemic because of its worldwide spread. As of January 2021, the WHO reported that confirmed cases had exceeded 84 million and more than 1.8 million people had died. In contrast to prior crises, such as severe acute respiratory syndrome (SARS) in 2003, Ebola in 2014 and Middle East respiratory syndrome (MERS) in 2015, which diminished air traffic volumes (IATA, 2020a), this crisis was accompanied by an astonishingly rapid worldwide infection followed by mobility restrictions. As a result, the pandemic has resulted in massive disruptions to business. Its human-to-human transmission also gave rise to social distancing measures to hinder its omnidirectional
spread. The tourism industry, and particularly the airline sector, has been hit the hardest because customer-facing services are restricted or unavailable (Dunn, 2020).

In response to COVID-19, all worldwide destinations have enforced travel restrictions, bans or quarantine measures. Of 217 destinations around the globe, 45% introduced either complete or partial closures of their borders to international tourists (UNWTO, 2020). Moreover, 65 destinations suspended all international flights, and 39 destinations banned entries for passengers from certain countries of origin (UNWTO, 2020). Strict measures are still in effect, such as the invalidation of travel documents, requests for health declaration submissions in advance and self-isolation for 14 days. These conditions have caused a sharp fall in both travel demand and flight operations. The International Civil Aviation Organization (ICAO) (ICAO, 2020a) expects the pandemic will reduce the passenger traffic market by around nearly 3 billion passengers by the end of this year. These strict measures have caused commercial carriers to slash their operations by more than 60% (Josephs, 2020). The estimated revenue loss in 2020 was US$314bn, which is a 55% decrease compared to the previous year (IATA, 2020b).

The strategic responses adopted by the airline industry have been mostly ineffective (Wenzel et al., 2020). Several researchers have investigated the epidemic dispersion and the vulnerability index of destination countries to analyze the existential threats stemming from the COVID-19 (Bogoch et al., 2020; Chinazzi et al., 2020; Gilbert et al., 2020; Haider et al., 2020). Some authors have studied the pandemic’s effects on economic decisions or employment disruptions in the airline industry (Eichenbaum et al., 2020; Sobieralski, 2020).

In addition, Albers and Rundshagen (2020) investigated European carriers’ strategic responses to COVID-19 through the content analysis of 148 news items. However, there remains a dearth of scholarship on the hampered business activities and crisis management of the airline industry.

In the absence of sufficient response strategies against the COVID-19 panic, we aim to provide a comprehensive understanding of both internally and externally generated airline response strategies by examining business practices for crisis management. To fulfill our research objective, we have drawn our assessment from a thematic analysis based on scholarly literature reviews, credible news articles and authoritative economic reports from the International Air Transport Association (IATA), ICAO, WHO and United Nations World Tourism Organization (UNWTO). We elaborate our findings corresponding to the intersection of two variables: the duration and magnitude of COVID-19. We also introduce already adopted or forthcoming technology designed to provide biosecurity and hygienic safety for air travel. Finally, we conclude our paper with a summary of our findings, implications and limitations to prompt further studies.

2. Response strategies to environmental variables

Environmental jolts are defined as perturbations that are difficult to predict and that bring about unexpected impacts that seriously hamper firms’ outcomes (Meyer, 1982). During crises, firms respond to unfavorable business conditions by trying to preserve resources such as financial capital, employees and the supply chain and by minimizing the damage incurred (Amankwah-Amoah, 2016; Meyer, 1982; Wenzel et al., 2020). In this regard, the literature has examined firms’ strategic responses to crises and has suggested factors such as timing, destructive magnitude and engagement entities are important in crisis management (Amankwah-Amoah, 2020; Brown and Kline, 2020). We position our analysis within the literature on timing and destructive magnitude by considering that COVID-19 has persisted over the span of a year, and the damages have dramatically changed over the duration of the crisis. In addition, the magnitude of its
destructive impact has been historical, pushing us to reconsider previous discussions on response strategies.

Time is a critical factor when firms determine their strategic responses to environmental variables (Amankwah-Amoah, 2020). The time required to accomplish strategic moves will determine whether firms can enjoy either first- or late-mover advantages (Makadok, 1998). Furthermore, both information and resource availability may change depending on timing, which can influence firms’ decisions in either proactive or reactive ways (Grzymala-Busse, 2011). Accordingly, the duration of an event is important when deciding or evaluating firms’ response strategies for the event (Grzymala-Busse, 2011). By contrast, firms cope with a shock while striving to preserve their key resources and to minimize negative effects (Bluedorn and Martin, 2008). In the long term, firms adopt strategies that move forward to reap cost advantages and exploit networks ahead of their rivals (Bluedorn and Ferris, 2004; Bruton et al., 2003).

A crisis is an event of such magnitude that it disrupts the normal operation of an industry (Boin and McConnell, 2007; Laws and Prideaux, 2006). Disruptive incidents are not new to the tourism industry, and the scale of the impact varies from local and regional to global (Laws and Prideaux, 2006). For example, whereas the 2003 SARS outbreak in Asia infected 8,000 people over 8 months, COVID-19 infected more than 75,000 people globally and killed more than 2,100 people during only 3 months (Pasley, 2020). Considering the global scale of today’s tourism and the interconnectivity of airline networks, the magnitude of a crisis is an important dimension to consider when determining the significance of its impact on tourism flows.

As shown in Figure 1, two variables in the $2 \times 2$ matrix generate four quadrants. Quadrant I is the stage where firms preserve the status quo because of the low magnitude of destruction in the short term. Quadrant II is the stage in which firms consider various strategic alternatives to either neutralize or minimize an event in the short term. Decision-makers in an organization carry out measures to guarantee short-term survival, ranging from internally generated actions (asset or cost reductions) to externally imposed measures (government financial packages). Quadrant III is where the magnitude of destruction is low, but an event lasts a long time. Firms set a course of action and manage the event through ordinary operations. Last, Quadrant IV is where an event causes massive destruction in the long term. Firms suffer from the most deteriorated business environment in this stage. Firms that fall victim to the event do not overcome unviable conditions and often determine an exit strategy or discontinue their business. However, firms that ensure their long-term survival strive to innovate their products or services, which will help them resolve the crisis and prepare for post-crisis operations.

![Figure 1: Response strategy matrix](image)
3. Airlines’ response strategies to COVID-19

3.1 Data collection and analysis

Our study conducted thematic analysis, an independent qualitative descriptive method to identify, analyze and report themes within data (Braun and Clarke, 2006), to investigate the actions taken in response to the pandemic. This methodology was useful to classify a coherent integration of repetitive information patterns, distinguish facets of the phenomena and organize them into themes. From this perspective, our analysis belongs to an inductive approach through examining explicit meanings and identifying common threads from the data (Braun and Clarke, 2006; DeSantis and Ugarriza, 2000).

To achieve our objective, we focused on news articles and business reports available through online sources. Specifically, we gathered aggregated sources of information from Google News that deal with contemporary, diverse and world-wide articles from different publishers such as BBC, CNBC, Fortune, InsideFlyer and Reuters. We also searched for economic reports and press release from international organizations including the IATA, ICAO, WHO and UNWTO. Then, we filtered news articles and reports by the explicitly mentioned keywords of “COVID-19,” “pandemic,” “CoV-2,” “coronavirus” and “corona” from December 2019 (the month in which the COVID-19 outbreak occurred) to March 2021 (the most recent month at present). We assembled semantic contents and organized the airlines’ response actions under each distinct theme (i.e. preserve status quo, state aid package, new industrial directive and takeover) along the two-axis matrix (time and magnitude). Collected over the span of one year since the COVID-19 outbreak, the secondary data were beneficial for ease of access to a wide variety of sources and business cases. Given the pandemic’s rapidly changing status and disastrous impact on the airline industry, our study method efficiently organized points of view by integrating separate information from each source.

3.2 Findings

3.2.1 Quadrant I: a low level of destruction and a short elapsed time. The coronavirus was initially observed on December 12, 2019, in Wuhan, China. During the first month of the outbreak, confirmed cases reached double digits in the Hubei province in which the outbreak originated. The cause was not yet clearly known at this stage, although its symptoms were identified as consistent with the same family of viruses as SARS. Amid growing concerns about infection, the WHO affirmed China's capacity to deal with the outbreak and urged the public not to worry (Chan, 2020; Thaiger, 2020). The airline industry had proved its resilience to exogenous variables derived from the terrorist attacks on September 11, 2001, as well as other epidemiological situations. For example, it took nine months for global passenger traffic to return to the pre-crisis level after SARS. In the case of avian flu, which was much wider but short-lived, air travel demand rebounded quicker (IATA, 2020a). Based on prior experience, IATA forecasts that COVID-19's impact on the airline industry would be temporary (IATA, 2020a). In addition, major passenger carriers in China such as China Eastern or China Southern carried out normal operations. Some other global carriers also took no action in this phase.

3.2.2 Quadrant II: a high level of destruction and a short elapsed time. This phase describes the period from mid-January to early-March 2020, before the pandemic declaration by the WHO on March 11. During this period, there were more than 85,000 cases confirmed in more than 50 countries (BBC, 2020a). The virus intensively spread to neighboring countries, including South Korea, Japan, Taiwan and Thailand (BBC, 2020b; Davies et al., 2020). It then rapidly proliferated outside of Asia and soon threatened both the USA and Europe. Because COVID-19 is a respiratory virus transmitted through droplets, air travelers may be at risk if they are seated around an infected passenger. Accordingly, global carriers were concerned about transmission of the virus by infected travelers. In line with efforts to
mitigate its spread, governments took steps to implement strict travel bans by closing borders, restricting flights, invalidating travel documents and imposing mandatory quarantines. As a result, global carriers cancelled, cut or suspended most of their flights to and from China (Reuters, 2020). Airlines that slashed their operating capacity and suspended routes are listed below (Table 1).

Because of growing concerns about air travel and irregular flight schedules, major airlines unfolded a waiver policy with no penalty fees for customers to cope with the uncertainty of their choices. This generous rule was designed to motivate customers’ purchase decisions by eliminating the risk of losing value (Slotnick, 2020). Airlines that tolerated fee waivers were Alaska, American, Delta, Air Canada, British Airways, Cathay Pacific, Emirate, Etihad, Japan Airlines, KLM, Korean Air, Lufthansa, Qantas, Qatar Airways and Singapore Airlines. In addition, the U.S. Department of Transportation allowed travelers to refund their tickets if airlines cancelled flights departing from, arriving in, or transiting through the USA. The European Union also officially confirmed that customers were eligible for refunds for cancelled flights departing from, arriving in or travelling through Europe (Adams and Lupini, 2020).

A dramatic decline in travel demand and flight capacity led to an estimated revenue loss of $252bn compared to 2019 (IATA, 2020c). Considering many airlines already had suffered from financially fragile conditions, airlines with serious cash flow problems failed to absorb the financial shock and encountered limited cash balances. Accordingly, liquidity became an important issue in their response strategy, which involved either adjusting credit lines or finding other means of financial support. Unsurprisingly, they sought relief measures from governments in various forms, including capital injections, loans, tax deferrals and reductions of their tax liabilities. The estimated amount of aid by mid-May was $123bn, and loans took up the lion’s share at $50.4bn (Bailey, 2020a).

3.2.3 Quadrant III: a low level of destruction and a long elapsed time. The pandemic was declared only three months after its outbreak in December 2019. In contrast to the avian flu in 2005 and 2013 that gave rise to only minor effects and to MERS in 2015 that was regionally concentrated, the coronavirus spread much faster and wider (Woodward, 2020). It infected more than 12 million people globally between December 2019 and June 2020 (WHO, 2020). Unsurprisingly, the rapidity of the worldwide infection and consequent mobility restrictions caused disastrous impacts on air transportation. The virus is ongoing, and negative impacts remain significant. Therefore, this phase is inapplicable to the airline industry.

3.2.4 Quadrant IV: a high level of destruction and a long elapsed time. This phase describes the period from the declaration of the COVID-19 pandemic to the present. The ongoing pandemic has led to a severe financial crisis with abnormal business practices in the airline industry.

Consistent with financial distress, one of the main challenges is cash burn because of the slow recovery of air travel demand. Despite efforts to adjust capacity and cut costs to respond to the deterioration in operating profitability, airlines have gone into near lockdown

<table>
<thead>
<tr>
<th>Flight disruptions</th>
<th>Airline examples (in alphabetical order)</th>
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<tbody>
<tr>
<td>Cancelled all flights to mainland China</td>
<td>American Airlines, Air France, Air India, Air Tanzania, British Airways, Delta Airlines, Iberia Airlines, Kenya Airways, KLM, Qatar Airways, United Airlines and Vietnam Airlines</td>
</tr>
<tr>
<td>Suspended flights to some China flights</td>
<td>Air Canada, Air China, Air New Zealand, All Nippon Airways, Emirates, Etihad, Korean Air, Qantas Airways, Singapore Airlines and Virgin Atlantic</td>
</tr>
<tr>
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<td>※ Suspended or reduced flights to/from Beijing and Shanghai</td>
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Source: Reuters (2020)
for more than half a year. IATA estimated the airline industry would burn $77bn during the second half of 2020 (IATA, 2020d). The total losses of all air carriers across the regions are estimated at $241bn for 2020 (ICAO, 2020b). It is difficult to find financial solutions because of unavoidable fixed costs arising from labor, maintenance and aircraft parking. As a result, externally imposed response strategies are required, such as the extension of government relief measures in ways that do not place a heavier debt burden on the already-indebted balance sheet. Subsidizing air traffic control charges is also financially helpful.

Airlines that do not meet their financial obligations file for bankruptcy. From the market structure perspective, this situation makes the airline market less competitive and allows a few robust airlines to enjoy monopoly status (GlobeTrender, 2020). For example, Australia’s national flag, Qantas, holds a near-monopoly after the voluntary shutdown of the country’s second-largest carrier, Virgin Australia, which had flown to more than 40 destinations with 130 aircraft (BBC, 2020d). Furthermore, International Airline Group (IAG) will dominate 75% of all domestic routes including the entire Barcelona–Madrid route, giving it a near-monopoly if European Commission decides to approve the IAG’s purchase for Air Europa (Ahlgren, 2020). Conversely, takeover opportunities are executed rarely because of the imponderables of business circumstances. Buyers may call for changes to the terms of their acquisitions because government aid has increased the seller’s debt-to-equity ratio. Thus, major airlines do not exert aggressive consolidation but maintain their decisions until the acquired firms liquidate debts and recover their balance sheets. For example, the pending merger between Air Canada and Air Transat raises this question because of the lowered value of Air Transat and the overvalued takeover bid (Wolfsteller, 2020). The IAG faces the same situation in its planned negotiation to acquire Air Europa. Along with other European carriers, Air Europa has been hard-hit by air travel restrictions, particularly in its most profitable market in South America. The carrier requested $472m in state aid to survive the takeover process (Ahlgren, 2020). The IAG intends to walk away from the negotiation unless Air Europa cleans up its balance sheet.

While considering internally generated alternative strategies to respond to the ongoing crisis, major carriers have developed unprecedented operational activities to find new revenue channels. Facing increased preferences for domestic or short-haul destinations that are closer to home, they have focused on domestic markets as travel restrictions disrupt international traffic flows. Airlines in the Asia-Pacific region have adopted this approach, including Korean Air, Japan Airlines, All Nippon Airways, Singapore Airlines, Qantas, Air China, China Eastern Airlines and China Southern Airlines (CAPA, 2020). Air New Zealand focuses on its domestic network and short-haul flights to Australia, with the expectation of resuming its long-haul flights after 2021 (Schofield, 2020). China, one of the largest domestic markets in the world, mitigated the crisis by recovering its domestic flights by 98% over past year (BBC, 2020c). Even the “Big Three” – Air China, China Eastern Airlines and China Southern Airlines – enjoyed growth in domestic traffic (Chua, 2020).

Furthermore, some major airlines introduced “flight to nowhere” routes, in which a flight takes off and lands at the same destination. This product was launched with a combination of duty-free benefits to stimulate tourism-related consumption (Jun, 2020). Legacy carriers such as Singapore Airlines, All Nippon Airways, China Airlines, Eva Air and Royal Brunei Airlines are good examples (Pitrelli, 2020).

However, these response strategies serve as temporary actions for the air passenger business. Major airlines still suffer from sharply declined travel demand and grounded airplanes that inevitably cause high fixed costs. To buffer the losses from their cancelled passenger flights and to remain resilient, they have made a breakthrough with value-generating cargo businesses. In this industry, dedicated freighters typically transport approximately half of the entire air cargo, and the rest relies on the bellies of passenger aircraft (Park and Bloomberg, 2020). However, cargo demand has continued to skyrocket because of e-commerce trade, which is independent of passenger demand (Diamond, 2020). Airlines
have turned underused passenger aircraft into quasi or cargo-only freighters to overcome capacity constraints (Martin, 2020). This strategy is effective because the need to transport smartphones, fresh food, mail and commodities by cross-border shopping has been consistent. For example, Korean Air, American Airlines and Cathay Pacific Airways have committed to operating their fleets as cargo businesses. Korean Air recorded US$137.29m in net profits in the second quarter of 2020 (Jin, 2020). American Airlines has transported over 45 million tons of products to international destinations, including Frankfurt in Germany and Shanghai in China. The reliance on the freight business will continue for years, particularly focusing on medical supplies such as the COVID-19 vaccine (Figure 2).

3.2.5 After Quadrant IV: focus on biosecurity and safety. Looking beyond the COVID-19 pandemic, the sharply declined demand will not return to the pre-crisis level unless customer confidence in travel safety is restored. For this reason, major air carriers such as Korean Air and Qatar Airways have already taken maximum precautions: face shields, gloves and protective clothing for the cabin crew. Blocking off seats is another way to maintain social distancing in the cabin. However, these are either limited measures or financially unfeasible solutions in the long term. Airlines will prioritize various alternatives to assure biosecurity and passengers’ confidence in travel.

First, this crisis has raised awareness of the value of touchless technology to minimize human-to-human contact. Major carriers have been accelerating the generalization of Web or mobile check-ins, electronic bag tags (EBTs) and self-scanning boarding passes. Self-service technology allows travelers to enjoy their travel experience at their own convenience, from seat selection to the electronic boarding pass. It is cost-efficient for airlines because it requires less printing and fewer counter operations. An EBT can be attached to checked baggage at home and be ready for drop off as soon as passengers arrive at the airport. The EBT displays the barcode and flight information (flight number, date and airport name) in accordance with the passengers’ destination via Bluetooth. Customers can register their baggage information easily through the airline’s website or app. Approximately 300 airlines worldwide can handle EBTs, including China Southern Airlines, Lufthansa, KLM Royal Dutch Airlines and SWISS (InsideFlyer, 2020). This streamlined service becomes available only when baggage handling systems are fully supported in a large-scale collaboration with the airport authority (Figure 3).

Second, the COVID-19 crisis may be the turning point for airlines to begin a service paradigm shift, particularly focusing on in-seat in-flight entertainment (IFE). In contrast to
embedded IFE systems that require onboard physical touchpoints and economically inefficient content update methods, wireless IFEs allow passengers to enjoy seamless and convenient entertainment. For example, Korean Air provides its own mobile IFE application called “beyond M” that allows passengers to enjoy various content with wireless portable electronic devices using the Wi-Fi connection in the aircraft. Therefore, new IFE systems help travelers avoid touching hardware-related installations while customizing their entertainment to their taste (Kirby, 2020). Non-essential service elements such as in-flight sales, reading materials and meals are further suspended to minimize interactions between flight attendants and travelers (Pande, 2020) (Figure 4).

Last, cabin hygiene is at the top of the safety-care initiatives for air carriers. No longer content with removed trash and vacuumed floors, passengers now demand a higher level of cleanliness amounting to the sanitization of the entire interior space of the aircraft. Legacy airlines such as American Airlines, Air France, Emirates, Korean Air and United Airlines have provided cabin air filtration systems equipped with a high-efficiency particulate air (HEPA) filter. This filter, also used in hospital operating rooms and medical laboratories, blocks microscopic particles such as bacteria and viruses to keep the air sterile (Choi, 2020). As a result, the filtered air in the cabin keeps recirculating and flows from top to bottom, lowering the possible spread of the coronavirus. In addition, Seattle-based technology firm Teague introduced AirShield to manipulate air movement in the cabin to prevent the spread of
viruses (Bailey, 2020b). This company conducted several computational fluid dynamics simulations and examined particulate movement in the cabin environment. Their results indicated cabin airflow, rather than social distancing measures such as blocking off the middle seat, is the critical factor in preventing the spread of a virus. Eliminating the middle seat is not commercially viable. AirShield is a patent-received germ isolation product fitting directly onto the passenger service unit placed above each passenger in the cabin (Street, 2020). The patented technology is designed for the curved shape of the “air-blades” to maximize the HEPA filtration system’s benefits by circulating the purified air flow around the passenger and by creating protection between rows of seats. In addition, it can be fitted easily to existing air vents inside the cabin and does not require the layout to be reconfigured (Blachly, 2020) (Figure 5).

In the context of the pandemic, airlines that communicate duty-of-care standards to customers will be more welcome than those that do not. Airlines that commit to hygiene initiatives will be more competitive as well. From this perspective, there will continue to be a need for multilayered hygiene technology that will strengthen public health and provide a sense of well-being to air travelers. The standard for evaluating excellent service would shift from warm hospitality to hygienic cleanliness and safety. Finally, confidence in air travel would return when passengers are convinced that resilience to future pandemics is viable.

4. Conclusion

The pandemic has resulted in unprecedented risks and uncertainties for the airline industry. In contrast to previous threats such as 9/11, SARS or MERS that had regional impacts, the virus moves around the world at a varying pace. Worldwide destinations went into virtual lockdown, which brought the entire aviation community to a standstill. The sharp decline in travel confidence also matters. Airports Council International revealed a −59.6% decrease in passenger volumes over the past year (ACI, 2020). This industry has never endured such damages.

From this perspective, the originality of this paper is to provide a comprehensive understanding of the response strategies of major airlines to the COVID-19 crisis. To fulfill our study objective, we conducted the thematic analysis through a $2 \times 2$ matrix of response strategies that results from the intersection of two variables: one continuum of time and one of magnitude. In short, we find major air carriers have modified their decision-making and
strategic priorities in relation to the exponential spread of the virus, which is in direct proportion to the deterioration level in the airline industry. When the impact was low in the early stage of the COVID-19 outbreak, major airlines maintained their status quo. Before long, the magnitude of the destruction became high, which made airlines implement capacity adjustments and ask for government relief measures. As industrial deterioration caused by the pandemic deepens, airlines keep calling for state aid packages to buffer their financial losses. In addition, they have changed their focus to the cargo transportation of high-demand commodities and pharmaceutical supplies. Last, industrial adversity and uncertainty have made them defer aggressive takeover opportunities.

John F. Kennedy said that in the Chinese language, the word “crisis” is composed of two characters: danger and opportunity. Although the airline industry was hit hardest, this hardship could be transformed into an opportunity to strengthen the collective efforts of the relevant parties. For example, a large-scale collaboration among airlines, airports, governments and aviation institutions may ensure the sustainable recovery of global connectivity. The Council Aviation Recovery Task Force Report, published by ICAO to emphasize harmonized measures, is a solid example. Major airlines will be more experienced in coping with other epidemiological situations and more capable of taking proactive approaches to measures for risk mitigation. Airlines will also introduce forward-looking developments for in-flight arrangements, such as staggered seat configurations or fully enclosed personal spaces.

Dependable secondary information allows our study to provide in-depth analyses from a balanced perspective. However, our study has a few limitations. First, the pandemic is still in progress, which makes our study only a snapshot of the airlines’ current actions. Second, other meaningful variables such as state-owned carriers vs private equity-owned carriers might occupy the 2 × 2 matrix. Moreover, conducting numerous customer surveys or on-site interviews to gather deeper insights into these key issues would be meaningful. Finally, each country’s airline industry makes a disproportionate contribution to its economy. Therefore, observing sustainability measures and best practices from the viewpoint of governmental policy designs for the post-pandemic environment would be interesting.

References


Further reading

About the authors
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