



COVID-19 crisis management in Greek airlines

Elen Paraskevi Paraschi^{a,*}, Alkiviadis Panagopoulos^a, Marietta Fragkogianni^b

^a Department of Tourism Management, Faculty of Business Administration, University of Patras, 26334 Achaia, Greece

^b School of Hospitality and Tourism Management, Faculty of Arts and Social Sciences, University of Surrey, United Kingdom



ARTICLE INFO

Keywords:

Crisis management
Airlines
COVID-19
Greece

ABSTRACT

This study provides a comprehensive analysis of Greece's aviation management during the COVID-19 pandemic. Greece was selected as a focal point due to its significant role in European tourism and its burgeoning air transport industry, both of which suffered greatly from the pandemic. The research is exploratory in nature and incorporates an analysis of secondary sources including airline archives, public services, national regulatory authorities, European Union institutions, and public media, along with a series of detailed, semi-structured interviews with six executives from leading Greek airlines. The study illuminates the primary effects of the COVID-19 crisis on Greek air transport, scrutinizes the crisis management strategies employed by the airlines and assesses their perceived effectiveness. It also delves into the guidance and support provided by the Greek government and both national and international civil aviation organizations. Moreover, the study explores the impact of the crisis on emerging opportunities and innovations. Finally, it reflects on the lessons learned and offers recommendations for future improvements.

1. Introduction

The COVID-19 pandemic has impacted all industries, all sectors and all aspects of peoples' lives with overwhelming economic and financial losses. Passengers' health concerns coupled with government-imposed national and local lockdowns had a devastating impact on the air transport industry. Beginning from March 2020, world passenger traffic collapsed up to –60 %, compared to 2019 (ICAO, 2022), forcing numerous airlines to suspend flights or cease operations and ground entire fleets, ending in an overall reduction of approximately USD 372 billion loss of gross passenger operating revenues only for 2020 (ICAO, 2022).

A bulk of the literature has analyzed the impact of COVID-19 on airlines (Suau-Sanchez et al., 2020; Agrawal, 2021; Warnock-Smith, 2020; Halteh et al., 2024; see Sun et al., 2022 for a thorough review); however, most of them focus on passenger demand and financial consequences. Ye et al. (2023) claim that customers' choice strategies may not be uniform for all airlines, indicating large demand heterogeneities on different airlines, depending on the type of their competitive advantage. Likewise, airline's responses to the crisis varied significantly. For example, Air France–KLM retired its A380 fleet prematurely, while Wizz Air planned its expansion into new European markets after the crisis (Albers & Rundshagen, 2020).

The COVID-19 pandemic may have had the most devastating effects so far; nevertheless, crises are not uncommon for the airline industry

(Sun et al., 2022b). Infectious diseases (SARS 2003; H1N1, 2009; MERS, 2015; Ebola, 2014 and Zika, 2014, 2016), terrorist attacks, especially the 9/11 World Trade Center attack, the 2008 economic and financial crisis, the 2011 Fukushima nuclear meltdown, the 2015 migration crisis, and the escalating climate crisis highlight the need to develop crisis management strategies able to safeguard airlines' survival and sustainability. However, in contrast to the crises described above that refer to single large shocks followed by single recoveries, the COVID-19 crisis was unique in that it persisted for a long time and occurred in phases (Rothengatter et al., 2021). The first wave of the COVID-19 pandemic peaked between March and June of 2020, when most countries introduced lockdowns and flight restrictions (Sun et al., 2023a). The reduction of COVID-19 cases and the coming of the tourist season led to the relaxing of the transportation restrictions and a weak restoration of air traffic during the summer of 2020. Nonetheless, new variants of the coronavirus burst between October–December 2020 and March–April 2021, causing the 2nd and the 3rd wave of the pandemic, respectively (Fig. 1). This 'on-off' behavior of the COVID-19 crisis presented airlines with additional difficulties as they were in recovery mode during the summer and had to switch to a different mode during the winter.

The necessity to deal with the COVID-19 pandemic effectively was of particular importance for the Greek airline industry for the following reasons: Greece has the largest share in the tourism sector among EU countries. Tourism accounts for 12.6–33.4 % of Greece's GDP and em-

* Corresponding author at: Department of Business Administration, Faculty of Business Administration, University of Patras and Hellenic Civil Aviation Authority, Greece.

E-mail address: eparaschi@upatras.gr (E.P. Paraschi).

<https://doi.org/10.1016/j.jatrs.2024.100032>

Received 3 June 2024; Received in revised form 10 July 2024; Accepted 10 July 2024

2941-198X/© 2024 The Author(s). Published by Elsevier Inc. on behalf of Air Transport Research Society. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

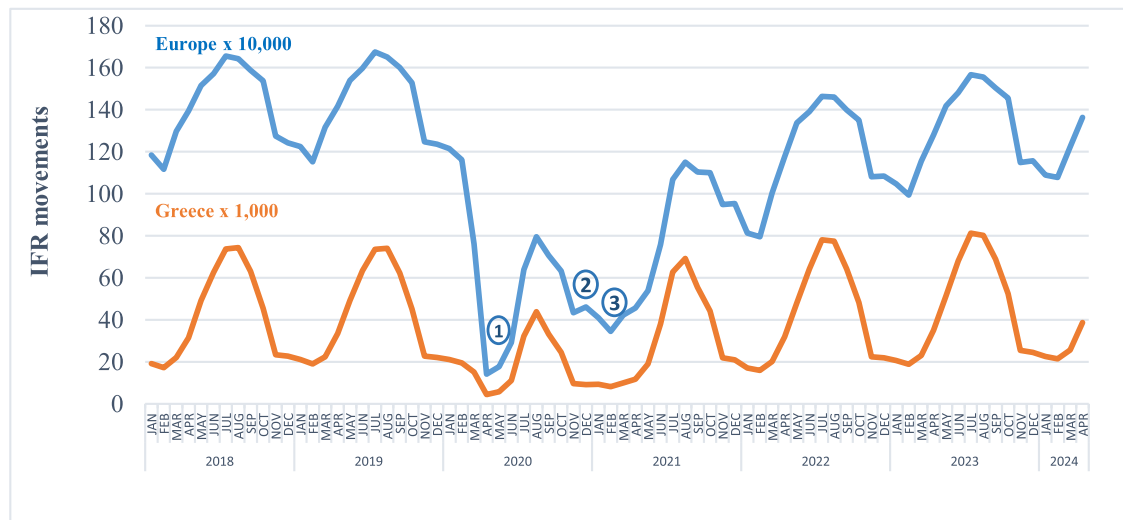


Fig. 1. IFR movements across Europe before, during and after the COVID-19 pandemic.

Note: Numbers in cycles represent the 1st, 2nd and 3rd wave of COVID-19 pandemic

Source: Author's representation based on Eurocontrol (2024) data.

employs more than 900,000 people, accounting for one-fifth of the workforce (MFA, 2021). Moreover, about 79 % of inbound tourism came by air in 2021 (INSETE, 2022), indicating that any situation disturbing air transportation directly impacts tourism, hitting the Greek economy in the heart. What's more, Greece has only recently (2018) exited a long recession period, being in economic turmoil for almost a decade. However, the Greek economy still struggles with inflation hitting a 25-year high, government debt escalating to 237.6 % of Gross Domestic Product (GDP), negative growth rates, and a tourism-dependent economy vulnerable to pandemics and climate change (OECD, 2021). Moreover, the unique Greek insularity that makes the country a world-famous tourist destination exaggerates the need for adequate air connection. Limited accessibility to the islands will further undermine their growth potential and deepen regional inequalities causing problems for the fragile Greek economy.

Having Greece as a focal point, this study aims to expand our knowledge of how airlines can respond effectively to crises, both to safeguard their survival and to contribute to the national economy by serving tourists, visitors, and local habitats altogether. This study examines both internal (i.e. managed solely by the airlines) and external (i.e. managed by the sector or the government) responses in order to classify them, feature best practices, outline key implications for the post-COVID-19 competitive landscape, highlight lessons learned, and raise attention points for aviation managers and policymakers. The focus of this study lies in the airlines' management of the COVID-19 crisis, but the study's conclusions can find further application to future crises of similar or different causes.

The rest of the paper is structured as follows: In Section 2, we explore the theoretical background of the COVID-19 impact on global and European air transport, as well as the airlines' crisis management responses documented in the literature. In Section 3, we describe the study methodology. Section 4 illustrates how Greek civil aviation experienced and dealt with the COVID-19 pandemic, through the lanes of a group of airline executives. Section 5 summarizes the results and Section 6 discusses the study conclusions and their implications for the management of future crises.

2. Literature review

2.1. COVID-19 impact on global and European air transport

The air transport system connects people around the world in a short time. These two characteristics (increased connectivity and short travel

time) turn global aviation into the most effective medium for disease transmission since passengers from one side of the world can arrive on the other side in a time that is shorter than most germs' incubation period (Budd et al., 2009; Sun et al., 2022). Based on this fact, flight suspensions were among the first measures announced in March 2020, upon the official outbreak of the COVID-19 pandemic. The worst decline in global passenger numbers in the history of the aviation industry (−94.4 %) was recorded in April 2020 (ACI, 2020) and a slow recovery started in May 2020 mainly due to the beginning of tourism season in the Northern hemisphere. Passenger load factors that were around 82.5 % in 2019 dropped to 65.1 % in 2020 (IATA, 2021), and gradually recovered to approximately 70 % by the end of 2021 (Sun et al., 2022). By the end of 2020, the global air industry had lost 2.7 billion passengers, 65.9 % in revenue passenger-kilometers (RPKs), 60 % in the number of routes connecting airports, and \$372 billion in gross passenger operating revenues (IATA, 2021; ICAO, 2022). Domestic market demand proved more resistant than international (Sun et al., 2023a; 2024). Notably, cargo flights were not significantly affected compared to commercial passenger flights (Wandelt et al., 2023; Sun et al., 2023b), since the need for carrying vital medical supplies such as vaccines and personal protective equipment and industry-wide available cargo tonne-kilometers (ACTKs) fell only by 21.4 % year-on-year in 2020 (IATA, 2021).

The COVID-19 impact was also significant for European aviation, bringing passenger traffic in the EU back to its 1995 levels (Rodrigues et al., 2021). The decrease in demand brought a decrease in the number of daily flights, with leading groups going down by 53 %, (e.g. Turkish Airlines) up to 67 %, (e.g. Lufthansa and EasyJet). Besides the reduction in the number of flights, the aircraft load factor was around 50–60 %, meaning aircraft were operating half empty, reaching the lowest point in April 2020 with 27 % of occupation (Rodrigues et al., 2021). Overall, European airlines experienced revenue losses amounting to €22.2 billion. In addition, 6.4 million direct aviation and supporting-aviation jobs in Europe were lost by December 2020, and globally 4.8 million more were under threat by the beginning of 2022 (Rodrigues et al., 2021). What is more, the COVID-19 pandemic led to significant declines in Air Traffic Management's (ATM) efficiency, causing heterogeneous effects on different Air Navigation Service Providers (ANSP) units across Europe (Standfuss et al., 2023).

2.2. Airlines' crisis management responses

Aviation and tourism industries are sensitive to various external and internal challenges and crises; however, crisis management in these sec-

tors received insufficient attention for decades, with the relevant literature almost exclusively preoccupied with aircraft accidents, terrorism and natural disasters (Laws et al., 2006). Nowadays, crisis management has again attracted managerial and scholarly attention due to the health, economic and social deterioration caused globally by the COVID-19 pandemic (Wut et al., 2021). Airlines reacted immediately, albeit not homogeneously, to the COVID-19 crisis. Albers & Rundshagen (2020) classified their strategic responses into four categories: Retrenchment, Persevering, Innovating, and Exit.

Retrenchment refers to “reductions in costs, assets, products, product lines, and overhead” (Pearce & Robbins, 1994). Immediately after the COVID-19 pandemic outbreak, all European airlines grounded their fleets more or less completely due to the imposed travel restrictions (Albers & Rundshagen, 2020). As the air traffic was gradually restored, major airlines relaunched many of their routes, however with very low aircraft load factors, partly due to the scant demand and partly due to the US Centers for Disease Control and Prevention (CDC) recommendation that keeping middle seats vacant on airplanes can reduce risk of COVID-19 exposure by up to 57 % (Dietrich et al., 2021). This measure however was soon abandoned because the break-even point of most airlines is well above the suggested 67 %, meaning that the long-term application of this request was simply unfeasible (Fickling, 2021). As cash burn continued, airlines announced job cuts, unpaid leave, reduced work patterns (e.g. seasonal or part-time jobs) and/or salary cuts to decrease unit labor costs (Kotoky et al., 2020). In the long-term, airlines tried to reduce their fixed costs by retiring the unprofitable superjumbo A380 and other large aircraft like B747–400, reducing their fleet and their flights, canceling aircraft orders and stopping their growth strategy, or restructuring their business model to put more emphasis on Low-Cost subsidiaries (Albers & Rundshagen, 2020; Adrienne et al., 2020). In addition, many airlines focused on their domestic market as travel restrictions disrupted mostly the international traffic flows (Suk & Kim, 2021).

Persevering refers to measures aiming to preserve the status quo of the organization and its activities (Wenzel et al., 2020). Although persevering lacks popularity, it may be a good option, at least in the medium run, for protecting firms from operational disruptions, something that may provide a competitive advantage for firms continuing to make “business as usual” (Wenzel, 2020). To do so, most airlines sought government aid through grants and loans at preferred conditions, tax deferrals, state guarantees, or subsidies. In 2020, the aviation industry received government support through capital injections, loans, tax deferrals, and stimulus packages to provide temporary relief to airlines until the air travel demand recovered. The US provided \$25 billion in payroll support, the European Union proposed a €7 billion aid package, and the UK provided £600 million in loans and grants (Halteh et al., 2024). Lufthansa received a German government support package of €9 billion and Air-France KLM received support of approximately €10 billion from France and The Netherlands, under the auspices of the European Commission (Rodrigues et al., 2021). In return, several states increased their ownership of the airlines, which means they will have higher intervention and deciding power, something that represents a major policy turn in European strategy about competition (Rodrigues et al., 2021). To further facilitate the airlines’ survival, the European Commission waived the 80/20 rule (Sun et al., 2022). Under this rule, airlines must operate at least 80 % of their slots, if they are to keep them in the next scheduling period. Because of the 80/20 rule, at the beginning of the COVID-19 pandemic, airlines couldn’t reduce the number of their flights and they were forced to fly nearly empty aircraft in markets with insufficient demand to save their slots. Acknowledging the tremendous impact of COVID-19 on air traffic during this period, the European Commission waived the 80/20 rule in March 2020 and announced a slot relief program in 2021 (Sun et al., 2022).

Innovating refers to the strategic renewal of the organization during a crisis (Wenzel, 2020). The ongoing COVID-19 emergency, coupled with technological breakthroughs, has forced many firms to reconfigure their service provision to ensure their resilience and competitive-

ness (Heinonen & Strandvik, 2021). Innovations emerging out of, rooted in, or accelerated by the COVID-19 crisis, are referred to as “CoviInnovations” (Amankwah-Amoah, 2021). Among the CoviInnovations introduced in air transport, are inflight social distancing, an open-middle-seat policy, aircraft disinfection with UV-light, and cabin air filtration systems equipped with a high-efficiency particulate air (HEPA), COVID-19 insurance, utilizing touchless technologies at airports and biometrics (Rodrigues et al., 2021). Other air carriers enriched their marketing offer, by introducing “flight to nowhere” routes, in which a flight takes off and lands at the same destination (Suk & Kim, 2021).

Exit refers to the discontinuation of an organization’s activities. It can be either a forced outcome of an unviable business setting or a strategic response to the crisis and it is not limited to closing the entire business, but it can also refer to operational, marketing, or strategic downscaling (Wenzel et al., 2020). This category includes airline bankruptcies (e.g. Air Italy) or going into court administration (e.g. CityJet). It also includes withdrawals from specific markets or segments. For example, British Airways (BA) suspended its short-haul European flights London Gatwick for two years (BA, 2022) and Lufthansa closed its Germanwings subsidiary (Albers & Rundshagen, 2020). Market exit (unlike filing for bankruptcy) may be a good alternative strategy to quickly put an end to cash burns, given that the average airline company would run out of cash after 8–9 months (Rodrigues et al., 2021). Therefore, although exits are not costless and potentially leave a stigma of business failure, such responses may be an effective medium-to-long-term option (Albers & Rundshagen, 2020).

3. Methodology

The scope of crisis management includes crisis prevention, crisis preparedness, crisis response and crisis revision (Wut et al., 2021). *Crisis prevention* includes methods intended to keep people from experiencing a future crisis. *Crisis preparedness* usually involves forming crisis management teams, formulating crisis preparedness plans and training spokespersons. *Crisis response* consists of a set of measures undertaken by governments, organizations, communities, or individuals to better respond and cope with the immediate aftermath of a crisis. *Crisis revision* is the mechanism by which we learn from a crisis (Wut et al., 2021). In the case of the COVID-19 pandemic, crisis prevention was out of the hands of the airlines. Conceptually, therefore, the current study aims to cover the other three dimensions of crisis management, exploring the airlines’ already existing mechanisms to cope with a crisis of any cause (crisis preparedness), the measures undertaken after the COVID-19 outbreak (crisis response) and the lessons learned so far (crisis revision). Additionally, this research also explores the operational and organizational impact that the COVID-19 pandemic had on Greek airlines.

The nature of this research is exploratory, aiming to a comprehensive analysis of Greece’s management of the COVID-19 pandemic, aviation-wise. Additionally, it aims to unveil insights from a group of Greek airline executives as to how they perceived and dealt with the COVID-19 crisis. Since the research in this field is based mainly on literature reviews (Albers & Rundshagen, 2020; Amankwah-Amoah, 2021; Suk & Kim, 2021; Sun et al., 2021; 2022), a combination of primary and secondary sources was used in this study. Primary sources refer to interview-based qualitative research used to get a deeper understanding of the underlying phenomenon directly from the participants. Using selective sampling based on airline size and type of operation, this study focused on the category A Greek air carrier population, i.e. airlines operating aircraft with 20 or more seats and/or 10 or more tonnes MTOM (HCAA, 2023). Executives of eleven Greek airlines were approached by email and positive replies from five airlines were received. However, only four airlines (A–D) were finally selected, because one responded airline (E) had ceased operations before the onset of the pandemic, therefore it was not within the scope of this study. It must be noted that Airline A is a consolidation of two carriers (Aegean and Olympic Air) holding separate Air Operator Certificates. According to the Hel-

Table 1
Participating Airlines' profiles.

Airline	Type of operation	Network	Number of aircraft	Annual passengers (2019)
A (Aegean & Olympic Air)	Scheduled/ charter/air-taxi	Greece, Europe	65	15,000,000
B (Sky Express)	Scheduled/ Charter/ business/cargo	Greece, Europe	21	1,200,000
C (Ellinair)	Scheduled/ Charter	Greece, Europe, CIS countries	5	850,000
D (GainJet)	Charter/ business/VIP	Worldwide	8	7,000

Source: Authors' elaboration

lenic Civil Aviation Authority estimations, the four airlines participating in this study conducted more than 90 % of the total flights operated by Greek airlines in 2019 and correspond to 40 % of the population of category A operators (HCAA, 2023). Airlines D's share in the 2019 flights is about 0.8 % while the remaining airlines (not participating in this study) accumulated a share of about 3.3 %. Although the interviews were selective, we aimed for a diverse cohort (Table 1).

Airline A (Aegean & Olympic Air) is the largest Greek airline by total number of passengers carried, by number of destinations served and by fleet size. Aegean commenced operations in 1999 and since it has performed scheduled charter and business aviation flights. In 2013, Aegean completed the acquisition of Olympic Air, which operates in the Greek domestic market and holds a separate AOC.

Airline B (Sky Express) was established in 2005 and is currently serving 35 domestic and 8 international destinations. Sky Express is the second largest airline in Greece, and it operates scheduled, charter, cargo, air taxi, emergency medical services, excursion and sightseeing flights. Sky Express passenger growth was exponential before the pandemic, reaching 70,000 passengers in 2015; 500,000 in 2017 and topping 1.2 million in 2019.

Airline C (Ellinair) was established in 2013 and headquartered in Thessaloniki, operating scheduled and charter flights. The company was initially created to serve the high volume of tourists from Eastern Europe and Russia to North Greece. In 2015, Ellinair launched new domestic routes. Before the onset of COVID-19, Ellinair was awarded by the Athens airport as the fastest-growing airline for its performance in 2017 and 2018. In 2019, Airline's C capacity reached 83.4 %, 6555 flights were carried out and it flew 854,585 passengers. In September 2019, Ellinair added a new Russian destination to its roster after entering a deal with Vnukovo International Airport opening a direct year-round Thessaloniki-Vnukovo flight. The new route aimed at boosting tourist traffic between Greece and Russia and creating new prospects in tourism.

Airline D (GainJet) is a private charter and business aviation airline operating worldwide. GainJet's executive aircraft serve government, corporate, VIP and individual charter, while its aircraft management service is involved in maintenance, sales, and repossession. GainJet headquarters are based in Athens, Greece. The company also has a sales office in London at Heathrow Airport and a subsidiary operation based in Shannon, Ireland.

Six senior aviation executives, two from Airline A (A1, A2), one from Airline B, one from Airline C, and two from Airline D (D1, D2) were interviewed between 19 March 2022 and 17 April 2022. Four of the respondents were male and two were female. Two of them were in the age group of 35–44 years old, three were 45–54 years old and one was above 54 years old. Two were High School graduates, two had a Bachelor's degree, and two had a Master's degree. Regarding their total working experience in airlines, it varied between 9 and 30 years of relevant working experience. Their position at the time of the interview was "Safety & Compliance Administrator", "Chief Operations Officer", "Crisis Manager", "Ground Operations Manager", "Administration Manager" and "Safety Manager". All of them participated in the crisis management team of their organizations. Their roles involved gathering and organizing rules and guidelines from national and international authorities, collaborating with national authorities, sharing information across the organization, issuing guidelines for the staff, updating the organization's

emergency response plan, coordinating operational crisis response, creating operational health protocols in line with the state authorities' instructions, making decisions about the flight schedules, informing the key stakeholders (shareholders, regulators, employees and passengers) and applying for state aid. All research ethical standards, as defined by the General Data Protection Regulation (GDPR), were kept for this research. Based on the literature review discussed in Section 2, an interview protocol (Appendix A) was designed as suggested by Castillo-Montoya (2016), to encourage respondents to express their views while ensuring consistency between all interviews. The interviews had an average time length of thirty-five minutes and all were conducted online. Shortly after each interview, the transcripts were coded and the data were analyzed and structured, according to Gioia's inductive coding method for new concept development and grounded theory articulation (Gioia et al., 2013). Following this technique, first-order concepts from the interviews were organized in second-order themes and then in first-order dimensions. More specifically, preliminary data encoding was conducted going through the transcripts, and a list of topics that emerged more than twice was created (1st-order concepts, e.g. fleet grounding, remote working, deferred payment of VAT). Then, the 1st-order concepts were organized into 2nd-order (theory-centric) themes, e.g. human resources management (HRM) practices, operational practices, government practices, etc. In the third step, the 2nd-order themes were consolidated into 1st-order dimensions, i.e. the four strategies (retrenchment, persevering, innovating and exit) described by Albers and Rundshagen (2020) and the three steps (crisis preparedness, crisis response and crisis revision) described by Wut et al. (2021).

In addition, secondary sources were used as suggested by Greene et al. (1989) to acquire convergence and confirmation of data obtained from the interviews, as a means of further explanation, improvement, exemplification, and elucidation of the findings, to uncover paradoxes and contradictions that prompted a re-evaluation with the interviewees, to utilize the discoveries from one approach to assist informing the other approach and to expand the range and the diversity of the research. Secondary sources included airlines' official websites, archives, press releases, annual reviews and financial reports; national regulatory authorities (Hellenic Aviation Service Provider/HASP and Hellenic Civil Aviation Authority/HCAA); the Greek Ministry of Foreign Affairs; the Hellenic Statistical Authority (ELSTAT); the European Court of Justice (ECJ); the European Commission (EC); the Greek General Commercial Registry (GEMI); the Institute of the Greek Tourism Confederation (INSETE); aviation and tourism websites (WYVERN; the Greek Travel Pages); newspaper and public media documentation (Ethnos, Imerisia, NPR). In the case that data from the secondary sources conflicted with the information provided by the interviewees (e.g. regarding the number of airline employees or the State support the airline received), a supplementary communication with the interviewees took place via phone or email to elucidate these points.

4. Results

4.1. Implications of COVID-19 on Greek air transport

The Greek airline sector is comprised of 11 category A air carriers, operating aircraft with 20 or more seats and/or 10 or more tonnes MTOM and 14 category B operators of aircraft with 19 or fewer seats

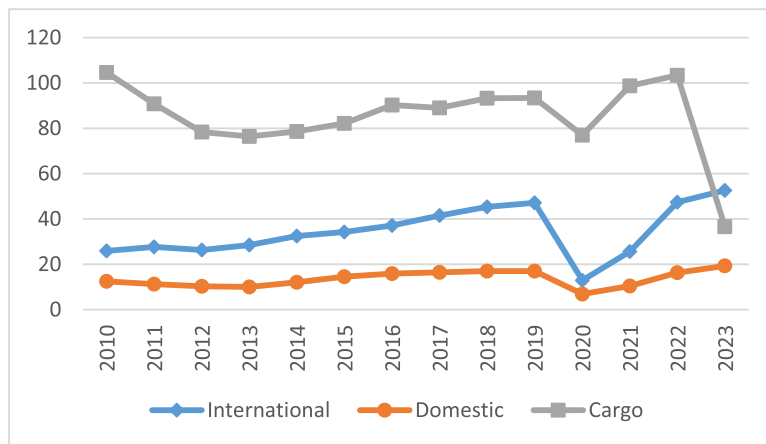


Fig. 2. Evolution of International, Domestic, and Cargo air transport volumes in Greece.

Note: The y-axis corresponds to million passengers/kgrs of freight.

Source: Author's representation based on HASP (2024) data.

and/or less than 10 tonnes MTOM (HCAA, 2023). To give an overview of the Greek airline market, it is known that, for the week of 13-Jul-2015 to 19-Jul-2015, seat capacity in Greece was shared between foreign airlines (75 %) and Aegean airlines (25 % including its subsidiary Olympic Air). Aegean is a member of Star Alliance, the leading global alliance in Greece with a seat share of about 30 %. Foreign airlines include Ryanair (9 %), EasyJet (7.7 %), Thomson Airways (4.7 %), TUIFly (3 %), Travel Service (2.9 %), Thomas Cook (2.8 %), Condor (2.6 %), Air Berlin (2.6 %) and other airlines (41.5 %). The international market is strongly short/medium haul focused and refers to seats to/from Europe (94 %), while the share of international seats taken by LCCs grew to 40 % in 2014 (CAPA, 2015). More recent data reveals that, for the first week of July 2023, the share of the foreign airlines remains at three quarters, Aegean is the biggest operator with a seat share of about 16.5 %, and Sky Express has climbed to 5.2 %. Greek aviation sector is led by leisure demand on short/medium haul routes, and it has also experienced a strong increase in the capacity share taken by low-cost airlines (projected to be 42 %), with Ryanair (10.3 %) and EasyJet (9.2 %) ranking as the second and third largest airlines in Greece by seats, and Jet2.com, Wizz Air, Eurowings and Volotea all in the top ten (CAPA, 2023).

Greece has 39 airports of which 29 serve international air traffic, 6 serve only domestic traffic and 4 are communal airports (Kitsou et al., 2022). Athens International Airport (ATH) is the busiest airport in Greece with more than 25 million passengers in 2019, corresponding to 42 % of the total flights that Greece receives on an annual basis (Paraschi et al., 2022a). International air traffic to Greece is highly seasonal, primarily catering to leisure travelers visiting the various Greek islands. This results in significant fluctuations in demand throughout the year. The peak season, which spans from June to September, sees a substantial surge in air traffic which accounts for approximately 57.9 % of the total annual traffic (Pagoni & Koumoutsidi, 2022). After a decade of constant growth, 2019 was a record year for the Greek airports, which served 526,155 flights, and 64,169,000 passengers (Fig. 2) and the expectations for 2020 were even higher. Following the COVID-19 outbreak, Greece and the other EU member states decided to close their external borders to all non-EU nationals on March 18, 2020 (HCAA, 2020a). A few days later, on 23 March 2020, Greece suspended all commercial, general, and business aviation passenger flights to and from the territory of Italy, Spain, and the UK. Exemptions included cargo, sanitary, humanitarian, state, military, ferry and Frontex flights, as well as flights in support of the Hellenic National Healthcare System, those for repatriation of Greek citizens and emergency flights (HCAA, 2020b). On the same day, the Greek government imposed a total lockdown, restricting all non-essential movement throughout the country. Entry restrictions for international travelers were gradually lifted in mid-June 2020, and entry restrictions on British tourists expired on 15 July 2020, starting an anemic tourist season 2020 (NPR, 2020). The above pandemic-driven restrictions resulted in a total decline of 69.3

% in passenger volumes that fell to 1991 levels (Fig. 2). Again, the impact of COVID-19 was more profound on the international market (−72.6 %) than in the domestic market (−59.6 %). Cargo air transportation resisted the crisis with a slight decline of −6.6 % tonnes of goods carried (HCAA, 2021). These observations are in line with Sun et al. (2023b) analysis concluding that the impact of the COVID-19 pandemic on air freight has been rather minimal, and the process of recovery in domestic markets would be more straightforward.

Examining the five largest Greek airports, which account for 77.7 % of total IFR traffic (Fig. 3), it is clear that (a) ATH airport handles nearly twice the traffic compared to the other airports, (b) traffic seasonality peaks during the summer season and follows a consistent pattern across the years, as noted by Kitsou et al. (2022), and (c) air traffic has gradually rebounded, albeit at different rates across airports. ATH required two years to return to 2019 traffic levels and three years to surpass them. In contrast, peripheral airports (HER, RHO, CFU) reached pre-pandemic traffic levels by the summer of 2021 and maintained this growth trajectory in subsequent years, indicating a strong demand for leisure travel post-COVID-19. Nonetheless, SKG airport did not experience the same level of recovery, primarily due to the Russia-Ukraine war, which cut off crucial markets in northern Greece and contributed to the bankruptcy of Ellinair airlines, whose main hub was SKG.

The reduction in international air traffic in 2020 led to a significant loss in the country's tourism sector, totaling 17 billion euros (GTP, 2021a). In more detail, direct tourism GDP, which constituted 12.6 % of the total Greek GDP in 2019, plummeted to 3.7 % in 2020. Considering the multipliers, the combined direct and induced tourism GDP contribution was 33.4 % before the pandemic and dropped to 9.7 % in 2020 (Greek Ministry of Tourism, 2022). This substantial decline of 73.7 % is directly related to the decrease in international air traffic which is the primary source of inbound Greek tourism. The decline in tourism during 2020 led to a negative national GDP growth of −9.5 % and a 2.6 % increase in unemployment compared to 2019 (Dimitriou & Sartzetaki, 2022). This setback disrupted the gradual recovery of the Greek economy from the major recession of 2011 and highlights the importance of effective crisis management within the Greek air transport sector.

4.2. COVID-19 crisis management in Greek airlines

4.2.1. Crisis preparedness

All airlines participating in the study have a permanent crisis management mechanism as required by the national and international authorities, which includes a crisis management team, a crisis room, emergency response plans (ERP) and standard operating procedures (SAPs), and regular staff training and emergency drills (Executives A1, A2, B, C, D1, D2). Crisis preparedness in airlines deals mainly with aircraft accidents and incidents, safety risks such as adverse weather conditions,

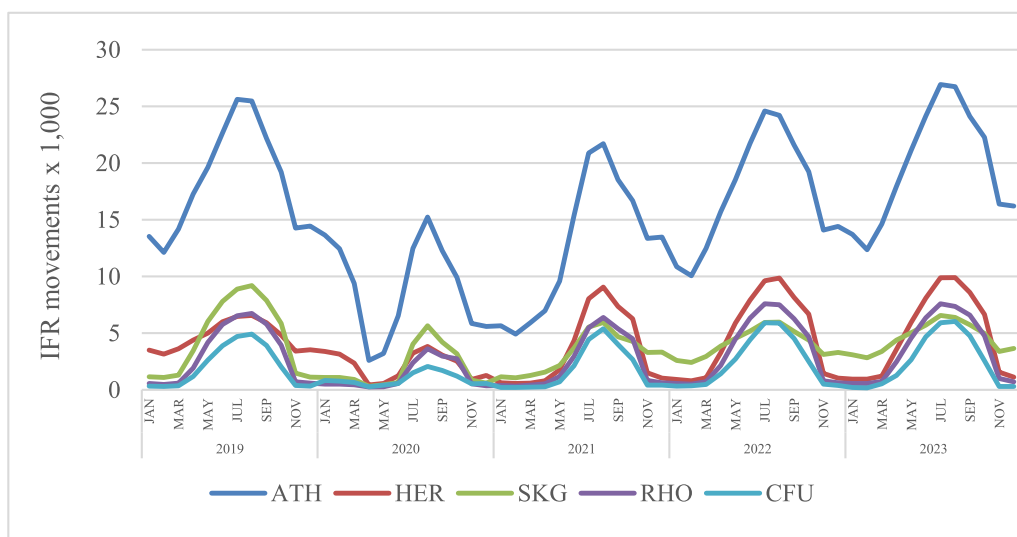


Fig. 3. IFR movements in the five busiest Greek airports before, during and after the COVID-19 pandemic.

Note: ATH=Athens, HER=Heraklion, SKG=Thessaloniki, RHO=Rhodes, CFU=Corfu airport.

Source: Author's representation based on [HASP \(2024\)](#) data

drones or flocks of birds in the vicinity of airports, technical malfunctions, security risks such as unruly passengers, terrorist attacks or cyber-attacks and commercial issues that can disturb the normal operation, like baggage mishandling, mistreatment of passengers, workforce strikes and airport congestion causing long delays. Although chemical, biological, radiological, nuclear and explosive (CBRNE) hazards are often included in the ERPs, airlines did not put public health hazards high on the risk agenda, therefore COVID-19 pandemic found airlines technically unprepared (Executives A2, B, C, D1). This finding reaffirms pre-existing studies on safety and security risks in aviation ([Paraschi et al., 2022b](#)) which reported that aviation professionals ranked pandemic threats as the least likely in 2016.

4.2.2. Crisis impact

All Greek airlines ceased their international operation for three months (March 2020–June 2020) following the Government guidelines. All interviewees reported decreased revenues due to diminished demand and increased costs mainly due to the strict health protocols they had to adhere to, including strong recommendations for an empty middle seat, aircraft cleaning and sanitizing procedures after every flight and personal protection equipment for cabin crew members. However, they did not face remarkable operational problems because of their staff illness. The passenger mix altered slightly in 2020 and mainly on domestic routes, where people avoided non-essential (leisure) travel and flew mainly for work and medical reasons (Executives A1, A2, B, C). More specifically, for Airline A (Aegean Airlines & Olympic Air), the decrease in passenger traffic was 65.5 % in 2020 compared to 2019. International passengers' share of total traffic was reduced from 58% of total passengers in 2019 to 48 % in 2020 and domestic traffic share was increased from 42 % in 2019 to 52 % in 2020 ([Aegean, 2021](#)). Similarly, the decrease in annual turnover in 2020 compared to 2019 amounted to −73.2 % for Airline A, −46.4 % for Airline B and −89 % for Airline C ([Fig. 4](#)). Ellinair's shrinkage was obvious even pro-pandemic, since the airline's turnover in 2018 was €112.45 million and fell to €83.5 million in 2019 ([GEMI, 2023b](#)). Reduction in load factors and flight frequencies that agonized commercial airlines had no application to Airline D (GainJet), which is a private aviation carrier (Executives D1, D2). Airline D specializes in business and VIP flights, and their passengers' volumes were not significantly affected during the crisis.

4.2.3. Crisis responses

The participating airlines resorted to a variety of strategies and tools to manage the COVID-19 crisis. [Table 2](#) gives a detailed overview of the measures taken. Accordingly, the airlines' responses were grouped according to the four strategies (Retrenchment, Persevering, Innovating, and Exit) described by [Albers and Rundshagen \(2020\)](#).

4.2.3.1. Retrenchment strategies. To address the negative consequences of the pandemic, all airlines refrained from hiring new staff and took advantage of the horizontal HRM support schemes promoted by the Greek Government, such as remote working and work contracts suspension arrangements. Airline B made extensive use of part-time staff to serve the weak passenger volumes during the summer season 2020 (Executive B). Airline C followed an austerity HRM strategy resorted to staff redundancies and salary cuts (Executive C). Airline D (GainJet) avoided redundancies during the pandemic, by employing flexible working conditions and making use of the state supportive mechanisms.

To reduce operating costs, Airline A hired 21 % fewer seasonal employees in 2020 and used 10 % fewer aircraft in service. Moreover, the airline reduced the amount of food and beverages offered on board and adopted the 'only one hand baggage' policy to ease congestion and security concerns (Executive A2). Regarding Aegean's investment program, the management negotiated with Airbus and agreed to extend the delivery period of the new aircraft orders until 2026, to protect liquidity and maintain its flexibility in the changing and difficult conditions caused by the pandemic (Executive A1).

4.2.3.2. Persevering strategies. All airlines took advantage of the Greek Governmental measures for private sector employees in response to COVID-19 pandemic. Specifically, from the end of March 2020 till the end of June 2020, when all flights were restricted by the Greek Government, the employment contracts were suspended, and the employees were entitled to a special State benefit on a prorated basis and full social security coverage borne by the State. Starting from July 1st, 2020, the Greek airlines were included in the SYN-ERGASIA measure. Under this program, the State provided financial short-term work support to employees whose working hours had been reduced, corresponding to the time they did not work. Other government measures for financial alleviation included deferred payments of value added tax (VAT) and social security contributions (all Executives). Moreover, for the two airlines (A and B) serving routes under Public Service Obligations (PSO), the Hel-

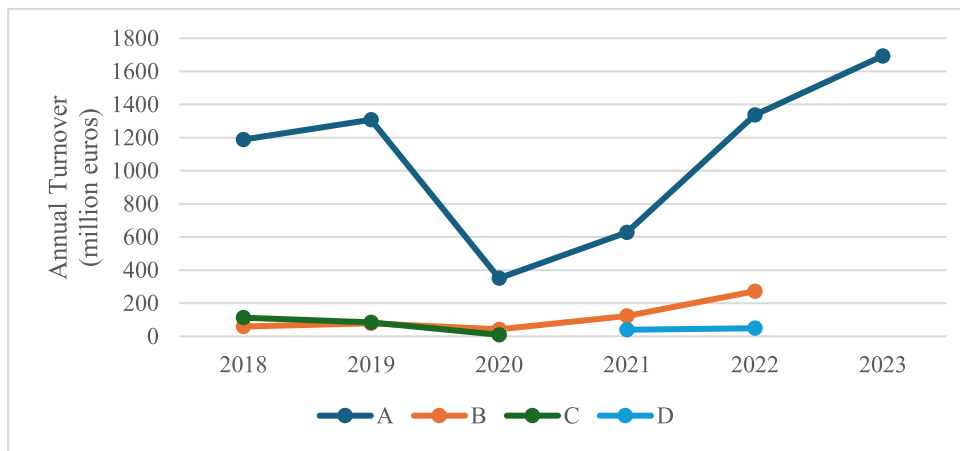


Fig. 4. Evolution of the annual turnover of the participating airlines (A, B, C, D), before, during and after the COVID-19 pandemic.

Note: Only the available financial data, as reported in the airlines' official financial statements, are depicted.

Source: Greek Business Registry (GEMI, n.d.).

lenic Civil Aviation Authority eased the PSO service requirements, e.g. by reducing the flight frequencies (Executives A2, B).

Furthermore, Airline A used the “COVID-19 Enterprise Guarantee Fund” to raise a five-year loan of €150 million with an 80 % State guarantee from four Greek systemic banks (Aegean, 2021). Additional horizontal measures included a deferral of Eurocontrol fees and rent reductions (Executive A1). Despite the aforementioned efforts, the duration and intensity of the crisis and the significant State aid to airlines in other countries resulted in an agreement with the Greek State, for a grant of €120 million as compensation for damages suffered due to the pandemic and travel restrictions (Executive A2). This compensation proposal was approved by the European Commission in December 2020, under the European Union's State aid rules. The Greek State received free rights (without consideration), with a notice price equal to the price that will be offered to investors for the new shares during the share capital increase. The rights can be exercised at any time during the period between 2 and 5 years after the disbursement of the support by the Greek State so that the Greek State can benefit from any future upward trend in the value of the Aegean's share (Aegean, 2021).

4.2.3.3. Innovating and growth strategies. Aiming at increasing cargo transport capacity, Airline A converted two A320/321 aircraft to transfer the largest amount of medicine, equipment, or other medical material possible. Moreover, the airline used innovative health protection techniques, such as ultraviolet light (UV) for aircraft disinfection and HEPA filtration system (Executive A1). The cabin air system is designed to deliver roughly 60 % outside air and 40 % filtered, recirculated air. HEPA (High-Efficiency Particulate Air) filters can filter out bacteria and viruses of extremely small size (from 0.1 to 0.3 μm), with a 99.7 % efficiency rate (Bhuvan et al., 2021). Moreover, Aegean launched in-seat in-flight entertainment (IFE) service in 2021 offering Wi-Fi onboard internet (Executive A1).

Airline B (Sky Express) responded to the COVID-19 crisis with an ambitious growth strategy. With investments of more than 300 million euros for the purchase of twelve new, State-of-the-art aircraft, Sky Express has been trying to establish itself as another “national” carrier (Executive B). The new aircraft (Airbus 320neo and ATR 72-600) have lower energy consumption and higher fuel efficiency, greater autonomy and flight range. The A320neo offers a very safe environment through the highly efficient HEPA filters, while all the air is renewed every 2–3 minutes. The crisis accelerated the acquisition of aircraft, due to the reduced prices that exist internationally. The new aircraft, further enhanced its flight network, allowing Sky Express to enter the most important domestic route, the one that connects Athens with Thessaloniki at the end of 2020 (Executive B). In 2021, Sky Express installed eleven international destinations from Athens and strengthened the position of its secondary hub (Thessaloniki) in its flight program with

an increase of available seats and more frequent itineraries, while in 2022 Sky Express announced direct flights from Thessaloniki to Larnaca, Cyprus (Imerisia, 2021). Furthermore, between 2019 and 2022, Sky Express launched several strategic partnerships, cooperating with Transavia France, Germany's Condor, EasyJet, Emirates and entering into interline agreements (with EL AL Airlines, American Airlines, Air France, KLM, Qatar Airways, Cyprus airways) and signing an interconnection agreement with Middle East Airlines (GTP, 2022). Sky Express established partnerships not only within the aviation sector but in the broader tourism industry. In 2021, it partnered with Let's Ferry, offering consumers the opportunity to combine and manage air and sea travel at the same time (GTP, 2021b). In addition, Sky Express joined forces with HotelBrain, a leading hospitality group that manages or operates 64 accommodation units of all types in 32 Greek destinations, to create attractive travel packages for Greek destinations both for travelers and tourism professionals (GTP, 2020a).

Airline C (Ellinair), after the record year 2019, increased its fleet by leasing two Airbus A320 to meet the demand growth expected for 2020. However, the COVID-19 pandemic frustrated the airline's plans. In March 2020, Ellinair temporarily suspended its flight schedule in response to the travel restrictions applied in Greece and the EU due to the COVID-19 outbreak and waived flight change fees on newly booked tickets, aiming to give passengers more flexibility for their travel plans due to the spread of the coronavirus (Executive C). At the end of June 2020, Ellinair gradually resumed its domestic flights and launched a series of Facebook live events first in Russian and then in English, under the title: #OlaKala (meaning “everything is fine” in Greek), to send a message of optimism and promote Greece as a safe top holiday destination (GTP, 2020b). The same season, Ellinair launched another new route connecting Thessaloniki with Baku, the capital of Azerbaijan. This route expanded the number of destinations it served from Greece, which included Moscow, St. Petersburg and Volgograd in Russia; Kyiv, Lviv, Odesa and Kharkiv in Ukraine; Warsaw, Katowice, Krakow in Poland; Bucharest and Cluj Napoca in Romania; Tbilisi, Georgia and Belgrade in Serbia. In 2020, Ellinair operated flights from five bases to 40 destinations (GTP, 2020c).

After the lift of air traffic restrictions in the summer 2020, Airline D (GainJet) followed a marketing strategy with lower prices and targeted offers to boost demand. The company retained top health safety standards using ultraviolet (UV) light for aircraft disinfecting and establishing a partnership with MedAire 360, which is a company specializing in medical security services. In addition, it signed an agreement with Boeing Digital Solutions to optimize its fleet operation (Boeing, 2019), while in January 2022, GainJet renewed its WYVERN Wingman safety Certification (WYVERN, 2022).

Additionally, airlines A, B and C took corporate social responsibility activities to contribute jointly to the State's effort to handle the unprece-

Table 2
Overview of the airlines' responses.

Airline:	Aegean & Olympic Air (A)	Sky Express (B)	Ellinair (C)	GainJet (D)
CRISIS IMPACT				
Decreased revenue	✓	✓	✓	✓
Increased in costs	✓	✓	✓	✓
Reduced load factors	✓	✓	✓	
Temporal suspension of operations	✓	✓	✓	✓
Cancellation of itineraries due to health restrictions in certain regions	✓	✓	✓	
Reduction of flight frequency	✓	✓	✓	
Operational problems (e.g. due to staff illness)				
Change of passenger mix (e.g. age, work/leisure)	✓	✓	✓	
CRISIS RESPONSE				
A. Retrenchment strategies				
A1. Human Resource Management practices (1)				
Staff Redundancies			✓	✓
Non-recruitment of new staff	✓	✓	✓	✓
Remote working	✓	✓	✓	✓
Part-time staff		✓	✓	
Salary cuts			✓	
A2. Operational practices (2)				
Fleet grounding			✓	
Change in the international/domestic flight ratio	✓	✓	✓	
New aircraft orders cancellation			✓	
Freezing of investments	✓		✓	
Rent reduction	✓	✓	✓	
Renegotiating contracts with suppliers	✓	✓	✓	✓
Reduction of services offered (e.g. in-flight meals)	✓	✓	✓	
Only one hand luggage on board	✓	✓	✓	
B. Persevering strategies				
B1. Government practices (3)				
Soft loan (e.g. through the COVID-19 Enterprise Guarantee Fund or other schemes)	✓			
State funding	✓		✓	
Repayable no interest loan			✓	
SYN-ERGASIA	✓	✓	✓	✓
Suspensions of employment contracts	✓	✓	✓	✓
Credit voucher instead of passenger compensation	✓	✓	✓	
Easing of requirements in the PSO service (e.g. frequency reduction)	✓	✓	n/a	n/a
Deferred payment of social security contributions	✓	✓	✓	✓
Deferred payment of VAT	✓	✓	✓	✓
C. Innovating strategies				
C1. Growth practices (4)				
Fleet increase		✓		
New destinations		✓		
Strategic partnerships		✓	✓	✓
Acquisitions/Mergers				
C2. Innovation practices (5)				
Use of passenger aircraft for cargo transport	✓ (temporarily)			
Wi-fi on board	✓			✓
Use of an airline health certificate/award				
Disinfecting aircraft with ultraviolet light (UV)				✓
HEPA filtration systems	✓	✓		
CSR-related innovation	✓	✓	✓	
C3. Commercial practices (6)				
Increased fares to increase revenue				
Decreased fares to boost demand				
Targeted offers	✓	✓	✓	✓
Network redesign			✓	
Flexibility in bookings	✓	✓	✓	✓
COVID-19 insurance				✓
D. Exit				
Cessation of operations			✓	
Bankruptcy				

Source: Author's elaboration

dented COVID-19 crisis. In this direction, Airline A joined forces with Hellenic Petroleum (which incurred the fuel costs) to offer ten free-of-charge flights for the transport of medical and pharmaceutical materials in March 2020 (Aegean, 2020a). Additionally, Aegean and SETE, the Greek Tourism Confederation, offered a 6-day full holiday package, including flights and accommodation, to the Civil Protection front liners, as a small token of gratitude for their continuing effort to mitigate the impact of COVID-19 since its very beginning (Aegean, 2020b). Similarly, Airline B (Sky Express) strengthened its corporate responsibility profile by offering free tickets to the medical personnel of Greece's Intensive

Care Units, to show solidarity in the time of the coronavirus pandemic (Sky Express, 2020). Ellinair (Airline C), together with BOMO hotels belonging to the same group of enterprises offered free transportation and accommodation in Greece to 50 Russian and 15 Ukrainian doctors and their families, as a "thank you" for their efforts to fight the pandemic (GTP, 2020d).

4.2.3.4. Exit. Exit strategy was put into practice by Airline C, rather unexpectedly. In March 2021, the founder of the Ellinair contacted coronavirus during a business trip to Moscow and died of heart failure. In

June 2021 the partner tour operator Mouzenidis Travel announced that it would suspend operations due to the prolonged health crisis and restrictions on the movement of tourists. Ellinair continued operation during the summer season 2021 making use of the horizontal Government supporting schemes but in November of the same year, it returned its fleet, undergoing a board reshuffle. Finally, in March 2022, the Hellenic Civil Aviation Authority (HCAA) revoked the Air Operator Certificate (AOC) and the Operating License of Ellinair (Executive C). In May 2022 the airline was granted a €6.8 million State compensation for the damage suffered due to the coronavirus pandemic (E.C., 2023). Table 2 summarizes the COVID-19 crisis impact on the participating airlines and specifies their responses.

4.2.4. Recovery and crisis revision

Airline A announced a partial (64 %) recovery of its financial and operating results for 2021, as a result of the tourist season (June–October 2021). Aegean's ratio of domestic and international to total traffic altered slightly (48 % and 52 %, respectively). The passenger load factor stood at 67.4 % about the same level as in 2020 and significantly lower than the usual pre-pandemic (Aegean, 2022a). According to Aegean's representative (Executive A1), the sector as a whole expected a significant recovery for 2022, while the demand for the Greek tourism product looked particularly strong at the time of the interview (March 2022). At the same time, however, Russia's invasion of Ukraine has created new significant uncertainties, while it also has had a significant impact on fuel costs. Aegean has accelerated the investment in new aircraft that reduce the impact of fuel costs and is planning new destinations, new services and products, as well as the gradual return of capacity to pre-pandemic levels for the summer season of 2022.

The executives of the three airlines that remained operational (A, B, C) estimated that the COVID-19 measures taken by their companies were as effective as possible and they wouldn't do something differently at the corporate level. The numbers seem to justify their opinion, since Aegean Airlines' financial results fully recovered in 2022, after two years of significant losses due to the pandemic. Consolidated revenue in 2022 reached €1,34 bil., 98 % higher than 2021 and 2 % more than 2019 (Fig. 4). The effects of the resurgence of robust demand for travel to/from Greece, the significant increase of revenue per available seat, the evolution of Aegean's fleet upgrade with a higher number of deliveries of new technology aircraft in 2022, the benefit from partial fuel hedging all came together to offset the impact of high jet fuel costs and USD appreciation (Aegean, 2023). Moreover, the stock price of Aegean Airlines was about 8.5€ in 2019, plummeted to 2.47€ after the lost summer of 2020, raised to 5.5 in 2021 and 2022 and skyrocketed to 13.10 in the summer 2023 (Yahoo Finance, n.d.). In December 2022, AEGEAN unveiled plans to invest €140 million in establishing Greece's inaugural Maintenance, Repair, and Overhaul Facility (MRO) and the first Simulator Training Facility for pilots and cabin crew members. This investment is projected to generate up to 500 new direct jobs and a total of over 1100 new direct and indirect high-skilled positions within a period of five to seven years (Aegean, 2022b). The growth of Airline B (Sky Express) is also reflected in the firm's turnover (Fig. 4). The company recorded a turnover of €15.9 million in 2016, €32.6 million in 2017, €59.6 million in 2018, €78.7 million in 2019, €42.2 million in 2020 and €122.2 million in 2021 (Metaforespress, 2022). According to the latest balance sheet available for Airline D, GainJet also increased its turnover from 38.2 million in 2020 to 39.6 million in 2021 (GEMI, 2023a).

Regarding the role of the Greek Government, some of the executives (A2, B, C, D2) expressed the opinion that, looking back, lockdowns and mobility restriction measures may be too strict, discouraging travel not only for leisure but even for essential reasons and making air travel procedures too cumbersome. This finding aligns with Sun et al. (2024) who also reported a controversial view of aviation community towards lockdowns, quarantines and departure restrictions. The executives also claimed that the horizontal support received by the Greek Government was sufficient and in the right direction, however,

they believe that the State should have also given an extension in the payment of their tax liabilities along with low-interest, long-term capital loans, guarantees, or even direct subsidies. Moreover, two of the interviewees (B, D2) hinted at the way non-horizontal State support was provided to particular airlines. It should be noted here that the Government support offered to the Greek airlines was two-tier: horizontal measures such as VAT and tax reduction and deferral, payment of social security contributions and employment support mechanism (SYNERGASIA) were applied indiscriminately to aid the Greek air transport sector which employs about 11,000 people and is important for tourism (Reuters, 2020). Individual measures, such as soft loans through the COVID-19 Enterprise Guarantee Fund and State funding were given to specific airlines (Aegean and Ellinair) as a result of individual negotiations. In March 2020, eight Greek airlines (Air Mediterranean, Blue Bird, Ellinair, GainJet, Lumiwings, and Orange2Fly) asked for immediate State financial aid pointing out that their liquidity is exhausted (Ethnos, 2020). Finally, funding was granted to Aegean (€120 million) in 2020 and to Ellinair (€6.8 million) in 2022 (E.C., 2023). There are no published details of the negotiation procedure and the selection criteria, it is known however that the aid given to Aegean has been subject to objection from Ryanair (ECJ, 2021).

At the European level, the interviewees expressed the opinion that the EU decisions significantly affected their operation, especially those concerning the ban on flights and the waive of the 80/20 rule on airport slots. The GainJet representative (D1) expressed the opinion that the COVID-19 crisis will have a long-term impact on the sector, and they have already updated their risk assessment manual to deal with bioterrorism and pandemic hazards. However, they wish that the national and international authorities had better coordination by introducing a single body for crisis management globally, establishing a specific European fund to support the airlines, lowering the airport fees and the slot restrictions and running campaigns to promote travel and tourism. It is noteworthy that the airline executives made no reference to the European Aviation Crisis Coordination Cell (EACCC). EACCC was established by the European Commission following the eruption of the Eyjafjallajökull volcano in Iceland in 2010 (EC, n.d.) to ensure that Europe will be better prepared for any type of crisis that could potentially impact air traffic. The primary function of the EACCC is to support the coordination of responses to network crises that have a negative impact on aviation, in close collaboration with corresponding bodies in States and operational aviation stakeholders. However, it is noteworthy that the airline executives referred to the European Aviation Crisis Coordination Cell.

International organizations' (like IATA, the International Air Transport Association) contributions were criticized for being too general and lacking in attention to detail for each individual nation. As a result, the national aviation authorities could consider adding more details to the general rules published by the transnational organizations. At this point, the executives B, C and D1 believed that the Greek national authority's (HCAA) contribution was rather mediocre. The interviewees explained that HCAA has narrow flexibility opportunities since it has to follow the Government lines. However, HCAA showed understanding, lowering the frequency requirements in the Public Service Obligations (PSO) routes and allowing airlines to offer vouchers instead of cash compensations for flights delayed, canceled or rescheduled.

At the last part of the interview, when the executives were asked if they had something to add, all interviewees expressed their concern about the crisis between Ukraine and Russia that outbreak on February 24, 2022. Even though Russia has only a small contribution (about 2 %) in the total Greek inbound tourism, aviation executives fear that, if the war continues, creating an unstable situation in Europe, both European and USA markets will be affected. The major concern however is the immediate impact that the war and the EU sanctions on Russia have had on the fuel prices that have surged. Given that fuel is the major cost source for an airline (making up 20–25 % of the total operational costs), and that jet fuel traded in February 2022 at more than 75% higher than

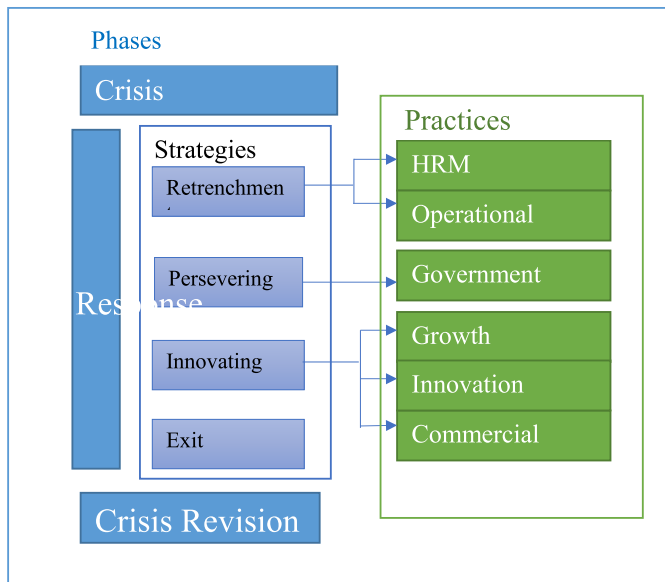


Fig. 5. The airlines' crisis response practices in relation to the crisis management strategies.

Source: Authors' elaboration, based on Wut et al. (2021) and Albers & Rundshagen (2020).

it did in February 2021, airlines trying to recover from the pandemic must cope with the impending fuel crisis, with a number of responses, i.e. by adding fuel clauses in their contracts passing on the impact to the tour operators if prices exceed a certain amount, before applying ticket surcharges to passengers, or by applying fuel hedge contracts, to establish a fixed or capped fuel cost, via a commodity swap or option.

5. Discussion

This paper analyzes crisis management in light of the new challenges that have emerged in the Greek airline sector during the COVID-19 pandemic. By conducting semi-structured interviews with executives from four leading Greek airlines, the main strategic responses were specified and differentiated. The interview content analysis revealed broad consequences that ranged from short- and medium-term decreases in demand to direct threats to airlines' existence. All airlines reported revenue drainage due to quarantines and a rise in their expenses due to stricter health protocols and hygiene measures. The long-lasting decline in travel demand and the small size of the domestic market led some Greek airlines to exit the market. Except for Ellinair, the newly founded FlyGR8 and Orange2Fly also ceased operation in 2021.

Using the four categories of strategic responses (retrenchment, persevering, innovating, exit) described by Albers and Rundshagen (2020) as a springboard, this paper identified six groups of crisis management practices used by the airlines in the crisis response phase: Human Resources Management (HRM), operational, Government, growth, innovation and commercial practices. Retrenchment strategy was materialized into HRM and operational practices which refer to handling airlines' fleet, human resources and other assets to ensure both cost reduction and continuity of essential operations. Persevering strategy was translated mainly into Government practices of financial support and relaxing their obligations towards the Greek State. Innovating strategy materialized with business growth and expansion, innovations and commercial practices to boost demand. The above categorization is illustrated in Fig. 5. The interviewees consider Government practices and innovation practices as more important than operational practices, cost reduction practices and commercial practices; it is possible therefore to rely more on these practices to deal with future crises, too.

Likewise, airlines' responses varied accordingly to their specific characteristics (size, type of operation, growth phase, etc.) and their business model. The study also found that the strategic responses differentiate during the time, supporting Sun et al. (2022) who also describe a time-related menu of airlines' responses. At the beginning of the pandemic (January–March 2020), when the crisis impact was low, most airlines maintained their status quo expecting that the new disease would soon be put under control. Later, when the magnitude of the destruction became high (late March 2020 until late June 2020) they went into a retrenchment mode, grounding their fleet for three months. Afterwards, airlines engaged in persevering strategies implementing capacity adjustments and requesting Government relief measures.

Although global aviation showed signs of recovery in 2021, lasting industrial adversity and uncertainty have made the airlines postpone ambitious investment plans and aggressive takeover opportunities. However, two airlines invested in 'green' aircraft both due to their advanced characteristics (e.g. cabin air renewal, improved fuel efficiency) and the price discounts. Facing massive order cancellations due to COVID-19, the two major aircraft manufacturers (Boeing and Airbus) reduced the values of narrowbody aircraft by between 15 % and 30 % and widebodies aircraft by between 20 % and 45 %. Aging aircraft no longer in production or reaching the end of their product life cycle experienced the most severe discounting (Leighton, n.d.). As fuel prices continue to rise, additional readjustments are expected to the aircraft supply chain, with widebodies (e.g. A380, B747-400, B777) particularly impacted and a realignment towards longer-range narrowbody aircraft such as the A321 that can better match supply and demand.

The two legacy carriers (Aegean and Sky Express) having amounted to a healthy financial situation from the previous, ever-growing, years, and having an all-year-round domestic market to rely on, managed to overcome the deepest phase of the crisis. However, both airlines' executives expressed the opinion that the Greek domestic market is very limited and further investment in the domestic network would be unprofitable, especially during winter, when there is marginally enough market space for two airlines. For this reason, Sky Express decided to invest in the international market, where there are growth opportunities, especially in high-income destinations such as North and Central Europe. This strategy aligns with the findings of Halteh et al. (2024) who claim that an airline's ability to withstand macroeconomic swings and avoid financial difficulty and insolvency can be greatly improved by a combination of company-specific characteristics such as a solid financial position, several sources of income, and the use of fuel hedging techniques. On the other side, the third airline (Ellinair) applied extensive retrenchment practices, both in operational dimensions and in HRM, with staff redundancies and layoffs. This downsizing however didn't have the desired results, but rather deprived the airline of valuable relational reserves undermining its resilience, confirming Gittell et al. (2006). On top of that, the heavy reliance of Ellinair on charter flights from Russia and Ukraine, which suffered long travel restrictions during the pandemic, and which in February 2022 involved in a war with unpredictable consequences further drained its financial reserves and laid a tombstone in its hopes for demand recovery, leading Ellinair to exit the market. GainJet seems to be affected the least by the COVID-19 crisis for a number of reasons. Passenger health concerns and cumbersome travel procedures applied to commercial flights, non-availability or very low frequency of scheduled flights to a particular destination in contrast to the greater comfort and easy-to-use shared private jet programs resulted in an increase in the use of business jets. Moreover, private flights do not depend on high load factors to achieve their break-even points. For the above reasons, private jet GainJet recovered faster than other aviation sectors. Overall, as Gittell et al. (2006) have concluded for the crisis caused in the U.S airlines by the 9/11 terrorist attack, the above findings fully confirm that maintaining strong relational and financial reserves and having a viable and competitive business model is of utmost importance for airlines' ability to recover from crises.

6. Conclusions and lessons learned

By attempting to conceptually aggregate the lessons learnt from this study, we can identify the following concepts that arise in relation to managing the COVID-19 crisis. These concepts, *mutatis mutandis*, could be valuable in controlling future crises of similar or different character. Effective crisis management encompasses flexibility and adaptability, diversification, financial robustness, corporate social responsibility, stakeholder relationship management, innovation, proactive health and safety measures, and the role of institutions.

Flexibility and adaptability involves dynamic scheduling and capacity management, diversification of services and partnership strategies. *Dynamic scheduling and capacity management* will allow airlines to move capacity where demand is likely to be in the near future. This involves securing a blend of short-term leases and supplier and staff contracts adaptable to ramping up or ramping down operations as required. *Diversification* means that airlines continuously reevaluate their business model, their operational portfolio by geographically spreading their network, targeting different market niches and creating new customer offerings. As reported by [Jaroenjitkam et al. \(2023\)](#), internationalization provides airlines with enhanced operational flexibility and increased resources in times of crisis. This is particularly important when domestic markets are small in size or/and restricted, for example by Public Service Obligations that do not allow the entry of new airlines in specific routes. This is also important considering new geopolitical crises restricting travel to particular regions. Furthermore, business portfolio diversification could be a good option for those airlines that can establish a private/business aviation service, since business aviation has a lower price elasticity than commercial aviation, therefore increases in airfares do not cause a proportionately higher decrease in demand. Diversification can also be materialized through cargo services, charter flights, hybrid carrier models between full-service carriers (FSCs) and low-cost carriers (LCCs) and other ancillary revenue streams such as MRO (maintenance, repair, and operations) services, with the latter providing a good alternative source of revenue when passenger demand is low. *Network/Partnership strategies* leverage alliances by intensification of the cooperation and by codeshare agreements, so as the network is retained although specific connections might become uneconomical. The future role of micro-alliances/partnerships in aviation is becoming increasingly significant as reported by [Sun et al. \(2022\)](#). Cultivating a supportive stakeholder network can serve as a safety net in times of crisis according to [Nicolescu and Nicolescu \(2022\)](#). Flexibility and adaptability also mean that the airline leaders are open to change, able to timely recognize new challenges, form their emergency plans in a way that leaves space for unknown challenges ("black swans"), review their strategy regularly and make adjustments accordingly as the situations unfold. Furthermore, given the ever-increasing uncertainty of the business environment, crisis management education and training should become a priority, not only for airlines but for all aviation and tourism stakeholders. International safety and security organizations need to reassess their risk agenda at regular intervals and reallocate their budgets to make them more flexible and adaptable to emerging threats (e.g. cybersecurity, bioterrorism, health and safety, CBRNE threats, etc.) and data privacy issues. Therefore, flexibility and adaptability emerge as core themes in aviation crisis management.

Financial robustness requires increased cash reserves and higher liquidity levels which will be the best shield for airlines when suffering prolonged revenue downturns. This will be achieved by making a prudent financial management and diversification of funding sources. Access to emergency funding such as pre-arranged credit lines and agreements with financial institutions and governments is also important to provide a critical lifeline when crises arise. This includes having an efficient stakeholder management and proactive dialogues with stakeholders to consider what support mechanisms might be in place. Furthermore, embedding permanent cost management strategies in business-as-usual uses makes it less necessary to take despairing measures when

a crisis hits. This might be by reducing the amount of fuel the company uses over a period of time, or it might be by cutting down on wasted resources through improved logistics, or it might be through updating the fleet the company operates to more efficient planes.

Corporate Social Responsibility and stakeholder relationships management means building meaningful partnerships with customers and employees, local communities, governments and industry bodies. CSR can serve as a social image tool, to improve the airlines' brand image and enhance employees' commitment. This discovery corroborates the research conducted by [Athanasiadou et al. \(2024\)](#) which found that CSR mitigated job insecurity caused by the COVID-19 pandemic among employees in the European aviation industry, enhanced organizational pride and work engagement, and ultimately resulted in organizational citizenship behaviors. Furthermore, airlines' CSR can be used to develop passengers' loyalty and induce favorable treatment of the authorities i.e. in relaxing the PSO requirements or allowing airlines to reimburse customers with vouchers instead of financial compensation for rescheduled or canceled flights. Customer CSR involves flexible and refund policies for easy rescheduling and cancellation ([Sun et al., 2024](#)), as well as offering pandemic travel insurance. Providing community support in times of need and engaging in social citizenship behaviors in times of crises can help foster cooperation and drive resilience. Moreover, regular, transparent and timely communication about departure and health measures, operational, commercial and refund policies, contribute to generating trust and loyalty with passengers, employees, and stakeholders. Stakeholder management can be translated into negotiating and collaborating with suppliers about the delivery of aircraft orders, with bankers and investors about financing tools, with regulatory authorities about contractual obligations, with Government about tax accommodations and financial support, with international decision-makers about flight regulations, health protocols and slot rules, with airports about airport fees, with passengers about flight accommodations and with employees about working conditions.

Innovation through technological advancement leads to better operational efficiency and customer experience. Airlines can engage in innovation to improve fleet utilization (e.g. temporary usage of passenger aircraft to cargo) and fleet upgrade (i.e. orders of new, "green" aircraft), improve their services (e.g. wi-fi onboard), meet health requirements (e.g. HEPA filtration systems) and effectively manage their human resources (i.e. work from home). As reported by [Amankwah-Amoah \(2021\)](#), innovation can help airlines and other enterprises overcome obstacles, reduce operational costs, expand their offerings and turn challenges into opportunities. A type of innovation that thrived during COVID-19 is digitization and in airports and airlines. Touchless technologies, such as e-gates and biometrics, along with cloud computing, big data, blockchain, artificial intelligence, the Internet of Things and 6G constitute an emerging field with high potential in facilitating passengers experience and addressing future health-related challenges ([Sun et al. 2022; 2024](#)). Given the rising dependence on digital solutions and touchless technologies, investments in strengthening cybersecurity infrastructure are critical. Investment in transport infrastructure is crucial for sustaining employment, keeping businesses operational, and maintaining the economic productive capacity ([Dimitriou & Sartze-taki, 2022](#)). Such measures would also extend to protecting customer information and securing online transactions and communications. Furthermore, data-driven decision making can give airlines a commercial edge using big data and analytics to track trends, forecast passenger behavior and tailor operations to suit. Airlines can make better on-the-spot decisions during a crisis due to the real-time nature of the data.

Proactive health and safety measures means creating pandemic preparedness plans and implementing specific playbooks for different scenarios, bioterrorism not excluded. This can reduce the response times in future health and safety/security hazards and increase organizational efficiency. Also, innovations in health and safety such as exceptional air-filtration systems to UV cleaning technologies and rapid test facilities at airports will retain customer confidence and preserve travel willingness

as reported by Sun et al. (2024). Finally, periodic health protocols and training through different drills are necessary to prepare staff for health and safety hazards.

Implementing the proposed measures will help airlines be more ready for the next health-related or other global crisis. However, for systemic and devastating crises such as the COVID-19 pandemic that are far beyond corporate control, effective measures are also needed at a macro-level, placing stress on the role of national and international institutions. State authorities can jointly promote campaigns to encourage inbound tourism and to rebuild passengers' confidence in air travel. This is of particular importance for tourism destinations such as Greece, knowing that passengers' perceptions about a destination's policies and situation has a strong impact on their decision to fly to this place (Sun et al., 2024). Airlines also need liquidity and cash flows to be able to cover their high operational costs, which further increased with the health protocols' requirements. In this way, they would be able to protect their financial and relational reserves which are essential for their resiliency, as suggested by Gittel et al. (2006). State aid to airlines is advocated by the aviation community, too (Sun et al., 2024). This attitude was also expressed in other tourist sectors hit by the Covid, such as the Greek hotels (Pavlatos et al., 2021), which reopens the discussion about State intervention in the newly-deregulated Greek aviation sector. There are at least two major reasons for Governments to facilitate airline survival: to preserve essential connectivity and to protect millions of jobs in directly and indirectly affected industries (Sun et al., 2021). While these motivations seem reasonable for each Government, some scholars (Wu et al., 2023) and several airlines' CEOs have expressed concerns that the amount of State aid granted to the aviation sector could jeopardize competition in the internal market, a view also recorded by Sun et al. (2022). They also highlight the risk that Member States could use the current opportunity to support airlines that were already problematic, such as Alitalia (Pantazi, 2022). The same questions could also be raised about the financial compensation approved to Ellinair a few months after the suspension of its operation certification by the Greek State. Ryanair in particular has taken several cases to court (Sun et al., 2022a), challenging subsidiaries given to rival airlines, including Aegean. During the first months of 2023, the European Court of Justice, Europe's second-highest court, sided with the Dublin-based carrier against the European Commission (EC), for the €130m of State aid granted to airlines holding an Italian operating license during the COVID-19 pandemic. Similarly, a case raised against the €6bn of State aid granted to German flag carrier Lufthansa (LH) and against SAS Scandinavian Airlines (SK) granting of €1bn aid (Cross, 2023). For these reasons, it is proposed that the European Commission should carefully reconsider its rules for approving State aid to airlines and Governments and must find a balance point between ensuring connectivity and avoiding competitive distortion by disproportionately supporting flag carriers against other airlines that request equity injections, too. Another point regarding the role of institutions in crisis management comes from the executives' view that a joint civil aviation crisis management body should be created at the European or global level, both for the exchange of best practices and for better coordination and harmonization of hygiene and sanitation protocols for all tourism stakeholders. A single point of (accurate) information would be very useful to alleviate passengers' confusion about the travel restrictions and entry requirements in each country. These statements confirm Sun et al. (2023b; 2024) who claim that there is a need for coordinated responses to emerging outbreaks, as well as the requirement to establish shared regulations and strategies for a synchronized and well-informed recovery; on the other hand, they reveal that airline executives are probably unaware of the role of the European Aviation Crisis Coordination Cell (EACCC). The fact that the airline executives resorted heavily to IATA for guidance during the pandemic, although IATA is not a regulatory body, suggests that the role of EACCC remains vague among aviation stakeholders and should be strengthened. The findings of this study also suggest that IATA's role should be reinforced at the decision-making level, because IATA, as the

trade association of the world's airlines, made numerous recommendations during the pandemic, but only a few of them were adopted by the official institutions (Governments and regulatory authorities) across the world.

In the limitations of this study, we acknowledge a geographical bias, as all of the interviewees belong to Greek airlines. This is partially mitigated by the global perspective of the air transport business, the international operations of the participating airlines, and the global scope of the subject at hand. Additional limitations stem from the non-availability of data published by State authorities regarding the main features of the Greek airline sector (e.g. passenger and flight volumes per airline, market shares, etc.). Therefore, the only way to access this data was by directly asking the participating airlines. Moreover, the methodology of the study is based on interviews, meaning that the information provided by the airline executives depends on the interviewer's ability to shape the interview and ask the right questions and on the interviewee's ability to accurately recall the relevant information avoiding inconsistencies. Other possible drawbacks might be caused by the subjectivity (both personal and corporate) of the executives' perceptions or/and by information not revealed due to confidentiality. To alleviate the above concerns every possible effort was made to cross-check the facts reported by the interviewees with official documents.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Elen Paraskevi Paraschi: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing. **Alkiviadis Panagopoulos:** Methodology, Writing – review & editing. **Marietta Frangkogianni:** Writing – review & editing.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jatrs.2024.100032.

References

- ACI (2020). ACI World data reveals catastrophic impact of pandemic on global traffic. Retrieved from <https://aci.aero/2020/07/31/aci-world-data-reveals-catastrophic-impact-of-pandemic-on-global-traffic/>
- Adrienne, N., Budd, L., & Ison, S. (2020). Grounded aircraft: An airfield operations perspective of the challenges of resuming flights post COVID. *Journal of Air Transport Management*, 89, Article 101921.
- Aegean (2020). AEGEAN and Hellenic Petroleum cooperate and offer together 10 flights for the transport of medical and pharmaceutical supplies. Press release. Retrieved from <https://en.about.aegeanair.com/media-center/press-releases/2020/aegean-kai-ellinika-petrelaia-prosferoyn-mazi/>
- Aegean (2020). AEGEAN Airlines and SETE, the Greek Tourism Confederation, offer a full holiday package to the personnel of the Civil Protection. Press release. Retrieved from <https://en.about.aegeanair.com/media-center/press-releases/2020/aegean-kai-sete-prosferoyn-mazi-ena-olokliromeno-paketo-diakopon/>
- Aegean (2021). Annual Report 2020. Retrieved from file:///C:/Users/User/Downloads/ENG_AEGEAN_ANNUAL_REPORT_2020-2.pdf
- Aegean (2022). Annual Report 2021. Retrieved from <https://www.google.com/search?client=firefox-b-d&q=aegean+annual+report+2021>
- Aegean (2022). AEGEAN to create the first aviation ecosystem for technical support services and training in Greece. Press release. Retrieved from: <https://en.about.aegeanair.com/media-center/press-releases/2022/green-hangar-in-europe/>
- Aegean (2023). Fourth Quarter and Full-year 2022 Results. Press release. Retrieved from: <https://en.about.aegeanair.com/media-center/press-releases/2023/fourth-quarter-and-full-year-2022-results/>
- Agrawal, A. (2021). Sustainability of airlines in India with COVID-19: Challenges ahead and possible way-outs. *Journal of Revenue and Pricing Management*, 20(4), 457–472.
- Albers, S., & Rundshagen, V. (2020). European airlines' strategic responses to the COVID-19 pandemic (January–May, 2020). *Journal of Air Transport Management*, 87, Article 101863.

- Amankwah-Amoah, J. (2021). COVID-19 pandemic and innovation activities in the global airline industry: A review. *Environment International*, 156, Article 106719.
- Athanasiadou, C., Theriou, G., & Chatzoudes, D. (2024). Flying responsibly: effects of perceived corporate social responsibility on attitudes and behaviors of employees in the European aviation industry. *International Journal of Organization Theory & Behavior*, 27(1), 80–96.
- BA (2022). *British Airways returns to short-haul European flying from Gatwick airport*. Press Release 2022/03/29. Retrieved 2024/02/03 from <https://mediacentre.britishairways.com/pressrelease/details/13813>
- Bhuvan, K. C., Shrestha, R., Leggat, P. A., Shankar, P. R., & Shrestha, S. (2021). Safety of air travel during the ongoing COVID-19 pandemic. *Travel Medicine and Infectious Disease*, 43, Article 102103.
- Boeing (2019). *GainJet optimizes fleet operations with suite of Boeing digital solutions*. News release. Retrieved from <https://boeing.mediaroom.com/GainJet-Optimizes-Fleet-Operations-with-Suite-of-Boeing-Digital-Solutions>
- Budd, L., Bell, M., & Brown, T. (2009). Of plagues, planes and politics: Controlling the global spread of infectious diseases by air. *Political Geography*, 28(7), 426–435.
- CAPA (2015). *Greece aviation and tourism - Part 1: potentially major forces in supporting economic re-development*. Retrieved from <https://centreforaviation.com/analysis/reports/greece-aviation-and-tourism--part-1-potentially-major-forces-in-supporting-economic-re-development-236341>.
- CAPA (2023). *Greece recovers aviation capacity faster than other European markets*. Retrieved from <https://centreforaviation.com/analysis/reports/greece-recovers-aviation-capacity-faster-than-other-european-markets-640150>
- Castillo-Montoya, M. (2016). Preparing for interview research: The interview protocol refinement framework. *The Qualitative Report*, 21(5), 811–831.
- Cross, L. (2023). *Ryanair Wins EU Court Battle against Italian Aid for COVID-hit Airlines*. Airways magazine Retrieved from <https://airwaysmag.com/ryanair-wins-eu-court-battle/>.
- Dietrich, W. L., Bennett, J. S., Jones, B. W., & Hosni, M. H. (2021). Laboratory modeling of SARS-CoV-2 exposure reduction through physically distanced seating in aircraft cabins using bacteriophage aerosol—November 2020. *Morbidity and Mortality Weekly Report*, 70(16), 595.
- Dimitriou, D., & Sartzetaki, M. (2022). Criticality of a regional airport development to mitigate covid-19 economic effects. *Case Studies on Transport Policy*, 10(1), 581–590.
- E.C (2023). *Coronavirus Outbreak-List of Member State Measures approved under Articles 107(2)b, 107(3)b and 107(3)c TFEU and under the State Aid Temporary Framework*. Retrieved from https://competition-policy.ec.europa.eu/system/files/2023-05/State_aid_decisions_TF_and_107_2b_107_3b_107_3c.pdf
- E.C (n.d). *European aviation crisis coordination cell – EACCC*. European commission. Retrieved from: <https://transport.ec.europa.eu/transport-modes/air/single-european-sky/european-aviation-crisis-coordination-cell-eacc-en>.
- ECJ. (2021). *Case T-340/21 ryanair v European commission*. European Court of Justice.
- Ethnos (2020). *Corona virus: Greek airlines are in a State of emergency (in Greek)*. Retrieved from <https://www.ethnos.gr/Economy/article/96707/koronoiossekatastashektakhsanagkhsiollhnikesaeroprikesatairaies>
- Eurocontrol (2024). *Airport Traffic Data*. Retrieved from <https://ansperformance.eu/data/>
- Fickling, D. (2021). *Why covid isn't going to free up middle seats on planes*. Bloomberg Opinion Retrieved from: <https://www.bloomberg.com/opinion/articles/2021-04-18/airline-economics-mean-covid-could-never-free-up-middle-seats-for-long>.
- GEMI. (2023a). *GainJet annual financial report 2021 (in Greek)*. Greek General Commercial Registry Retrieved from: file:///C:/Users/User/Downloads/GR_GainJet_Annual%20Report_FINAL.pdf.
- GEMI. (2023b). *Ellinair annual financial report 2019 (in Greek)*. Greek General Commercial Registry Retrieved from: <file:///C:/Users/User/Downloads/ELLINAIR%20OIKONOMIKES%20KATASTASEIS%202021.pdf>
- GEMI (n.d). *Search for Publicity Data*. Greek General Commercial Registry. Available online at: <https://publicity.businessportal.gr/>
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15–31.
- Gittell, J. H., Cameron, K., Lim, S., & Rivas, V. (2006). Relationships, layoffs, and organizational resilience: Airline industry responses to September 11. *The Journal of Applied Behavioral Science*, 42(3), 300–329.
- Greek Ministry of Tourism (2022). *COVID-19 tourism impact assessment report*. Retrieved from <https://mintour.gov.gr/wp-content/uploads/2023/08/669.-UNWTO-EBRD-oAAEAoE-2022-COVID-19-Tourism-Impact-Assessment-Report.pdf>
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3), 255–274.
- GTP. (2020a). *HotelBrain joins forces with sky express owner to form new travel packages for Greece*. Greek Travel Pages Retrieved from <https://news.gtp.gr/2020/11/26/hotelbrain-joins-forces-sky-express-owner-form-new-travel-packages-greece/>.
- GTP. (2020b). *#OlaKala: Mouzenidis to promote Greece through live events on Facebook*. Greek Travel Pages Retrieved from <https://news.gtp.gr/2020/05/18/olakala-mouzenidis-promote-greece-through-live-events-facebook/>.
- GTP. (2020c). *Ellinair announces new Thessaloniki-Baku Route, increases fleet*. Greek Travel Pages Retrieved from <https://news.gtp.gr/2020/02/10/ellinair-new-thessaloniki-baku-route-increases-fleet/>.
- GTP. (2020d). *Mouzenidis says 'thank you' to Russian, Ukrainian doctors with free Greek holidays*. Greek Travel Pages Retrieved from <https://news.gtp.gr/2020/04/30/mouzenidis-says-thank-you-russian-ukrainian-doctors-free-greek-holidays/>.
- GTP (2021). *HCAA added that for 10 consecutive months in 2020 all airports across Greece were in the negative*. Retrieved from <https://news.gtp.gr/2021/01/13/greece-air-traffic-nosedives-30-year-low-2020/>
- GTP. (2021b). *Sky express announces service that combines air and sea travel*. Greek Travel Pages Retrieved from <https://news.gtp.gr/2021/08/09/sky-express-announces-service-that-combines-air-and-sea-travel/>.
- GTP. (2022). *Sky express announces strategic partnership with emirates*. Greek Travel Pages Retrieved from <https://news.gtp.gr/2022/06/29/sky-express-announces-strategic-partnership-with-emirates/>.
- Halthe, K., AlKhouri, R., Ziadat, S. A., Gepp, A., & Kumar, K. (2024). Using machine learning techniques to assess the financial impact of the COVID-19 pandemic on the global aviation industry. *Transportation Research Interdisciplinary Perspectives*, 24, Article 101043.
- HASP (2024). *Historical data*. Retrieved from: <http://www.ypa.gr/en/profile/statistics/historicaldata>
- HCAA (2020a). *NOTAM A0910/20*. Retrieved from <https://www.notams.faa.gov/dinsQueryWeb/>
- HCAA (2020b). *NOTAM A0953/20*. Retrieved from <https://www.notams.faa.gov/dinsQueryWeb/>
- HCAA (2021). *Press release. At the level of 30 years ago the air traffic in 2020 due to COVID-19. The statistics for the twelve months show a decrease of 69.3%*. Hellenic Civil Aviation Authority official webpage. Retrieved from <http://www.ypa.gr/news/se-epipeda-pro-30etias-h-aeroporkh-kinhsh-to-2020-logw-COVID-19-ta-statistika-stoixeia-gia-to-dwdekamhno-deixnoyn-ptwsh-69-3>
- HCAA (2023). *Air Carrier Operating License*. Retrieved from https://hcaa.gov.gr/sites/default/files/documents/greek-air-carriers_1.pdf
- Heinonen, K., & Strandvik, T. (2021). Reframing service innovation: COVID-19 as a catalyst for imposed service innovation. *Journal of Service Management*, 32(1), 101–112.
- IATA (2021). *Press release No: 55. Airline industry statistics confirm 2020 was worst year on record*. Retrieved <https://www.iata.org/en/pressroom/pr/2021-08-03-01/>
- ICAO (2022). *Effects of novel coronavirus (COVID-19) on civil aviation: Economic impact analysis*. Retrieved from: https://www.icao.int/sustainability/Documents/Covid19/ICAO_coronavirus_Econ_Impact.pdf
- Imerisia (2021). *Sky Express: Opens wings with 3.8 million new seats (in Greek)*. Retrieved from https://www.imerisia.gr/epiheiriseis/15130_sky-express-anoigei-ftera-me-38-ekatommyria-nees-theseis
- INSETE (2022). *Tourism's contribution to the Greek Economy 2020-2021*. Retrieved from: https://insete.gr/wp-content/uploads/2022/09/2020-2021_EN.pdf
- Jaroenjitrak, A., Kotcharin, S., & Maneenop, S. (2023). Corporate resilience to the COVID-19 pandemic: Evidence from the airline industry. *The Asian Journal of Shipping and Logistics*, 39(4), 26–36.
- Kitsou, S. P., Koutsoukis, N. S., Chountalas, P., & Rachaniotis, N. P. (2022). International passenger traffic at the Hellenic airports: impact of the COVID-19 pandemic and mid-term forecasting. *Aerospace*, 9(3), 143.
- Kotoky, A., Modi, M., & Turner, M. (2020). *Covid 19 impact: Jobs are being wiped out at airlines worldwide, and there's worse to come*. The Economic Times Retrieved from: <https://economictimes.indiatimes.com/news/international/business/jobs-are-being-wiped-out-at-airlines-and-theres-worse-to-come/articleshow/77140124.cms?from=mdr>.
- Leighton P. (n.d.) *COVID-19's impact on commercial aircraft values*. Retrieved from: <http://interactive.aviationtoday.com/COVID-19s-impact-on-commercial-aircraft-values/>
- Metaforespress (2022). *The "x-ray" of Sky Express's financial performance (in Greek)*. Retrieved from: <https://shorturl.at/sw236>.
- MFA. (2021). *For a sustainable tourism industry*. Greek Ministry of Foreign Affairs Retrieved from: <https://www.mfa.gr/usa/en/about-greece/tourism/for-sustainable-tourism-industry.html>.
- Nicolescu, O., & Nicolescu, C. (2022). *Stakeholder management and social responsibility: Concepts, approaches and tools in the Covid context* (p. 384). Taylor & Francis.
- NPR (2020). *Greece reopens to tourists, but some coronavirus restrictions apply*. Retrieved from <https://www.npr.org/Sections/coronavirus-live-updates/2020/06/15/874850445-greece-reopens-to-tourism-but-some-coronavirus-restrictions-apply?t=1645871515680>
- OECD (2021). *OECD Data. Greece*. Retrieved from: <https://data.oecd.org/greece.htm>
- Pagoni, I., & Koumoutsidi, A. (2022). Efficiency of regional airports: Insights on the effect of airline type and seasonal variations in traffic. *Future Transportation*, 2(4), 774–792.
- Pantazi, T. (2022). State aid to airlines in the context of COVID-19: Damages, disturbances, and equal treatment. *Journal of European Competition Law & Practice*, 13(4), 268–277.
- Paraschi, E. P., Poulaki, I., & Papageorgiou, A. (2022a). From environmental management systems to airport environmental performance: A model assessment. *Journal of Environmental Management and Tourism*, 3(59), 831–852 Volume XIII, Summer.
- Paraschi, E. P., Georgopoulos, A., & Papanikou, M. (2022b). Safety and security implications of crisis-driven austerity HRM practices in commercial aviation: a structural equation modelling approach. *Safety Science*, 147, Article 105570.
- Pavlatos, O., Kostakis, H., & Digkas, D. (2021). Crisis management in the Greek hotel industry in response to COVID-19 pandemic. *Anatolia*, 32(1), 80–92.
- Pearce, J. A., & Robbins, D. K. (1994). Retrenchment remains the foundation of business turnaround. *Strategic Management Journal*, 15(5), 407–417.
- Reuters (2020). *Greece to support air transport sector to soften coronavirus blow*. Retrieved from <https://www.reuters.com/article/health-coronavirus-airlines-greece-idINL8N2DA3XG>
- Rodrigues, M., Sandri, E., Antonucci, B., Knezevic, L., & Teoh, T. (2021). *Research for TRAN committee – Relaunching transport and tourism in the EU after COVID-19 – aviation sector*. Brussels: European Parliament, Policy Department for Structural and Cohesion Policies Retrieved from <https://www.europarl.europa.eu/thinktank/en/document/>.
- Rothengatter, W., Zhang, J., Hayashi, Y., Nosach, A., Wang, K., & Oum, T. H. (2021). *Pandemic waves and the time after COVID-19—consequences for the transport sector*. *Transport Policy*, 110, 225–237.
- Sky Express (2020). *Our "thank you" to Thessaloniki's ICU staff*. Press release. Retrieved from <https://www.skyexpress.gr/en/news/icu-personnel-thank-you>
- Standfuss, T., Fichert, F., Hirte, G., & Fricke, H. (2023). ANSPs in turbulent times - unconv-

- ering the impact of demand shocks on efficiency using the malmquist index. *Journal of the Air Transport Research Society*, 1, 101–116.
- Suau-Sanchez, P., Voltes-Dorta, A., & Cugueró-Escofet, N. (2020). An early assessment of the impact of COVID-19 on air transport: Just another crisis or the end of aviation as we know it? *Journal of Transport Geography*, 86, Article 102749.
- Suk, M., & Kim, W. (2021). COVID-19 and the airline industry: Crisis management and resilience. *Tourism Review*, 76(4), 984–998.
- Sun, X., Wandelt, S., Zheng, C., & Zhang, A. (2021). COVID-19 pandemic and air transportation: Successfully navigating the paper hurricane. *Journal of Air Transport Management*, 94, Article 102062.
- Sun, X., Wandelt, S., & Zhang, A. (2022a). Ghostbusters: Hunting abnormal flights in Europe during COVID-19. *Transport Policy*, 127, 203–217.
- Sun, X., Wandelt, S., & Zhang, A. (2022b). COVID-19 pandemic and air transportation: Summary of recent research, policy consideration and future research directions. *Transportation Research Interdisciplinary Perspectives*, 16, Article 100718.
- Sun, X., Wandelt, S., & Zhang, A. (2023a). Aviation under the COVID-19 pandemic: A synopsis from normalcy to chaos and back. *Journal of the Air Transport Research Society*, 1, 136–151.
- Sun, X., Wandelt, S., & Zhang, A. (2023b). A data-driven analysis of the aviation recovery from the COVID-19 pandemic. *Journal of Air Transport Management*, 109, Article 102401.
- Sun, X., Zheng, C., & Zhang, A. (2024). COVID-19 and aviation, lessons learned from the trenches: A survey among participants at the 26th ATRS World conference. *Journal of the Air Transport Research Society*, 2, Article 100005.
- Wandelt, S., Sun, X., & Zhang, A. (2023). On the contagion leakage via incoming flights during China's aviation policies in the fight against COVID-19. *Journal of Air Transport Management*, 108, Article 102377.
- Warnock-Smith, D. (2020). *Air traffic will take years to return to 2019 levels*. Oxford Analytica Daily Brief.
- Wenzel, M., Stanske, S., & Lieberman, M. B. (2020). Strategic responses to crisis. *Strategic Management Journal*, 41, 7–18.
- Wu, X., Fu, X., Lei, Z., & Wang, K. (2023). Impact of the COVID-19 pandemic on multi-airport systems worldwide. *Journal of the Air Transport Research Society*, 1, 117–135.
- Wut, T. M., Xu, J. B., & Wong, S. M. (2021). Crisis management research (1985–2020) in the hospitality and tourism industry: A review and research agenda. *Tourism Management*, 85, Article 104307.
- WYVERN (2022). *GainJet Aviation Renews their WYVERN Wingman Certification*. Retrieved from <https://www.wyvernlimited.com/wyvern-press-room/GainJet-aviation-renews-their-wyvern-wingman-certification-2/>
- Yahoo finance (n.d). *Aegean Airlines S.A. (AEGN.AT)*. Retrieved from: <https://shorturl.at/jpxyA>.
- Ye, J., Ji, P., & Barthelemy, M. (2023). Scenarios for a post-COVID-19 world airline network. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 33(4), 1–12.