The effects of COVID-19 on Andalusian tourism and aviation sector

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Abstract

Purpose – This study aims to analyze the effects of COVID-19 on airlines, airports and the destination Andalusia. On this basis, the study has assessed the bankruptcy of some airlines, closure and reduction of the frequency of air routes, COVID-19 measures at airports by governments, etc., to adapt to new circumstances, to be efficient and plan their resources according to the tourist demand.

Design/methodology/approach – A review of the relevant literature on the impact of COVID-19 on the aviation industry, airports and tourism sector are undertaken to understand the link between them. The paper begins by explaining the effects of the pandemic on the aviation industry and discusses its impact in the Andalusian region. Furthermore, this study uses secondary data from IATA, AENA, EUROCONTROL, INE, IAG, UNTWO, etc., to support research results.

Findings – The results of the effects of the pandemic in Andalusia are being devastating and this destination is heavily dependent on tourism. The drastic drop in flight frequencies at airports during the pandemic has caused an average decrease of 85% in passenger arrivals at airports until October 2020 that is 23 million passengers, too many passengers for the Andalusian economy, which depends mainly on the tourism sector.

Originality/value – The study contributes toward assessing the COVID-19 effects on the aviation industry and tourist destinations. Both sectors will re-emerge in the medium term and at different speeds in different regions. The contribution of this study is essential for managers and operators of airlines, airports and tourist destinations to make better future decisions.

Keywords Airlines, Airports, COVID-19, Andalusia, Chapter 11 bankruptcy

Paper type Research paper

COVID-19对安达卢西亚旅游业和航空业的影响

目标：本研究旨在分析COVID-19对航空公司，机场和目的地安达卢西亚的影响。在此基础上，研究评估了部分航空公司破产，关闭和减少航班班次，政府在机场采取的COVID-19措施等，以适应新形势，提高效率，按需规划资源。

设计方法/途径：审查了关于COVID-19对航空业，机场和旅游部门影响的相关文献，以了解它们之间的联系，文章首先解释了这一流行病对航空业的影响，并分析了其对安达卢西亚地区的影响。本研究采用IATA，AENA，EUROCONTROL，INE，UNTWO，OAG等机构的二手数据来支持研究结果。

结果：安达卢西亚大流行的严重影响是毁灭性的。这个目的地严重依赖旅游业。大流行期间，机场的航班频次急剧下降，导致安达卢西亚6个机场至2020年10月的旅客数量平均下降了85%，即2300万人次。对于主要依靠旅游业的安达卢西亚经济来说，旅客数量太多。

原创性/价值：本研究有助于评估COVID-19对航空业和旅游目的地的影响。这两个行业将在中期内重新崛起，并在不同地区以不同的速度发展。本研究的贡献对于航空公司，机场和旅游目的地的管理者和经营者来说是非常必要的，可以使他们在未来做出更明智的决策。

关键词：COVID-19，机场，航空公司，破产第11章，安达卢西亚

文章类型：研究型论文

Los efectos del COVID-19 en el turismo y sector aéreo andaluz

Objetivo：Este estudio tiene la finalidad de analizar los efectos del COVID-19 en las aerolíneas, aeropuertos y el destino Andalucía. Sobre esta base, el estudio ha valorado la quiebra de algunas aerolíneas, el cierre y reducción de la frecuencia de rutas aéreas, las medidas COVID-19 en los...
aeropuertos por parte de los gobiernos, etc., con la finalidad de adaptarse a las nuevas circunstancias, ser eficientes y planificar sus recursos según la demanda.

Diseño/metodología/enfoque: Se realiza una revisión de la literatura relevante sobre el impacto del COVID-19 en la industria de la aviación, los aeropuertos y el sector turístico para comprender el vínculo entre ellos. El artículo comienza explicando los efectos de la pandemia en la industria de la aviación y analiza su impacto en la región de Andalucía. Este estudio utiliza datos secundarios de IATA, AENA, EUROCONTROL, INE, OAG, UNWTO, etc., para respaldar los resultados de la investigación.

Resultados: Los resultados de los efectos de la pandemia en Andalucía están siendo devastadores y este destino depende en gran medida del turismo. La drástica caída de la frecuencia de vuelos en los aeropuertos durante la pandemia ha provocado un descenso medio del 65% en las llegadas de pasajeros en los seis aeropuertos andaluces hasta octubre de 2020, es decir, 23 millones de pasajeros, demasiados pasajeros para una economía andaluza que depende principalmente del sector turístico.

Originalidad/valor: El estudio contribuye a evaluar los efectos del COVID-19 en el sector aéreo y los destinos turísticos. Ambos sectores resurgirán a medio plazo y a distintas velocidades en diferentes regiones. La contribución de este estudio es fundamental para que los gestores y operadores de aerolíneas, aeropuertos y destinos turísticos tomen mejores decisiones futuras.

Palabras clave: COVID-19, Aeropuertos, Aerolíneas, Bancarrota capítulo 11, Andalucía

Tipo de papel: Trabajo de investigación

1. Introduction
The COVID-19 pandemic is causing an unprecedented crisis for the world’s airlines. As a consequence, international and domestic travel have all but ceased, hospitality and leisure, travel agencies and wholesalers or even public transport and restaurants are consciously working to reduce pandemic effects to the minimum. This implies that on many occasions they are obtaining considerable losses. COVID-19 tourism impacts will be uneven in space and time. The tourism industry is one of the most important global employers (1 in 10 jobs are directly related to tourism, UNWTO, 2020a) and the major gross domestic product (GDP) contributor for several countries, tourism and COVID-19 are the epicenter of all international discussions and economies (Sigala, 2020).

This research contributes to prior literature on catastrophes, SARS-CoV-2 and COVID-19 in the aviation industry. Maneenop and Kotcharin (2020) investigated the pandemic impact on the global airline business, and they suggested that if governments believe in market mechanisms and let the airline firms file for bankruptcy, the consequences will be the interruption of the global supply chain and related businesses. For instance, the COVID-19 pandemic has led to an unprecedented crisis in Spain. After Italy, the spread of the virus was quick and Spain became the second epicenter in Europe by number of cases and deceased (Henríquez et al., 2020). To tackle the outbreak and contain the spread, the Spanish authorities undertook exceptional measures based on a generalized lockdown by which the majority of the economic activity ceased for several weeks. According to Serrano and Kazda (2020), suggest that the uncertainty brought by COVID-19 on air transport, the organizations need to ensure that sustainable and safe airport operations can be maintained. Airports will face unpleasant issues caused by the pandemic such as fewer passengers, costly health regulations and airlines and tenants that do not pay their bills on time. The pandemic has changed the landscape of the aviation industry and tourism (Albers and Rundshagen, 2020). Airports are required to be more attractive to airlines and passengers with relevant investment in commercial policies. Airports are vital economic generators providing a gateway to their city, state, region, country. In a competitive environment, airports require expanding and enhancing their appeal to increase their share of air travel and tourism (ACI, 2017). Evidently, air traffic forecasts are essential in airport planning for determining future capacity requirements. As airport infrastructure projects are expensive and involve many resources, an understanding based on data from future demand provides airport planners with the necessary information for effective decision-making in the short, medium and long term. Therefore, the aviation industry requires forecasts to anticipate future scenarios (Rodríguez et al., 2020).
Since the consolidation of low-cost carriers (LCCs) in 2001, the long-term effects of LCCs presence at European airports, have been extraordinary for airports and local economies of the regions. Following Jimenez and Suau-Sanchez (2020), between 2001 and 2019 European air travel supply doubled, yet the low-cost market grew 14 times its size at the turn of the millennium. Thus, by 2019, LCCs had captured 37.3% of the capacity share, providing 534 million seats out of 1.43 billion in total for all the airlines (Figure 1). According to the Official Aviation Guide, OAG (2020a) coronavirus has devastated the aviation and travel market, causing consistent and severe capacity cuts week after week. Globally, overall capacity is down nearly 50 million seats or 47%.

Large airports are moving toward a business more commercially driven, with more creative and technological features and amenities. Air transport is a value chain where passengers become one additional rather than the essential element. Airports’ management must integrate the commercial perspective, as commercial income is a significant source of financing capabilities (Florido-Benitez, 2021). Airports are the gate for tourists to enjoy and satisfy their expectations regarding their chosen destination. Airports are an internal part of the tourism service system (Florido-Benitez and del Alcazar, 2020), as passengers perceive tourism destinations and airports as a single entity. Digital promotion of the airport drives differentiation distributing passengers in a more efficient manner inside and outside the airport. Airports and airlines are positioned differently in the digital media (Zaharia and Pietreanu, 2018).

The aviation industry is a key sector for the economy, and an increasingly important means of transport for citizens and businesses. Enhanced connectivity, cheaper tickets and more flying options have made it easier than ever before for Andalusians to connect with their relatives, develop their business or simply take a spontaneous holiday. The success story of Spanish aviation is destined to go on for the upcoming decades. It is important to highlight that Spain has 17 regions or Autonomous Communities and Andalusia is one of them located in the South of Spain. Florido-Benitez and del Alcazar (2020) claim that 3/4 of tourists arrived in Spain through airports in 2019. This study considers the multiple ways in which the COVID-19 is affecting in tourism, airlines, airports and hospitality and leisure and raise questions about what this means for the future of hospitality and tourism in Andalusia. Following Baum and Hai (2020), how the hospitality industry will survive and revive in a post-COVID-19 world remains an unknown and it will be important to revisit this theme in the future.

Florido-Benitez (2017) argues that the destination depends on not only the physical accessibility offered primarily by airports, but the digital accessibility offered by destination

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**Figure 1** Evolution of available seats at European airports by type of carrier

![Graph showing the evolution of available seats at European airports by type of carrier.](image)

*Source: OAG (2020b)*
marketing organizations (DMOs). DMOs develop tourist visits for a specific area (Prideaux and Cooper, 2002) through master marketing plans and digital tools (Florido-Benitez and del Alcazar, 2020). Airports can play a more active role in the promotion and delivery of tourism products and services in their host cities. An airport becomes an ambassador of a destination, as it exhibits the positive characteristics of a destination. Passengers evaluate the experience within the airport with the promotion of the destination they received in their country of origin.

In this research project we will focus on the six Andalusian airports (Malaga, Seville, Jerez, Granada-Jaen, Almeria and Cordoba) managed by AENA. The Spanish airports are managed by a central authority named AENA, a government-owned company. Fernández et al. (2018) expose that Aeropuertos Españoles y Navegación Aérea (Spanish Airports and Aerial Navigation) AENA is the largest airport operator in the world. This study’s purpose is to analyze the effects of COVID-19 on the airlines, airports and the destination Andalusia. The location of Andalusia as the gateway of the European continent makes this tourist destination in a strategic point at a tourist and aerial level. The incidence of the pandemic in tourism and air transport is being devastating and this destination is highly dependent on both sectors.

2. Literature review

2.1 Airlines vital source of airports and tourist destinations in Andalusia

Cities grow faster at the points where access maximizes the flows of people, products, capital and knowledge. The ones with the highest degree of connectivity become hubs. Businesses have concentrated at the intersections of roads and routes, where the access is the greatest. They especially favored cities where there was multimodality, the more means of transport the better. These businesses generate external economics that attract firms, which supply them (Kassarda and Lindsay, 2011). This study zeroed on airlines as a means of transportation and communication, as the fastest acting catalyst for the expansion and change of airports and destinations in the short and long term in terms of space and time. Following Anguera-Torrell et al. (2021) analyzed the tourism performance on urban destinations during the pandemic outbreak and they claimed that the COVID-19 pandemic has devastating effects on the main global tourism cities.

LCCs are often considered as a “panacea” to revive remote areas and transform them into successful tourist destinations, ensuring economic prosperity and survival of small businesses (Castillo-Manzano et al., 2011; Sarilgan, 2016). They are particularly appreciated for providing accessibility and visibility to the tourist places, by indirectly promoting them, by building their image and attracting additional visitors. The positive benefits LCCs have on destination marketing seem a bit exaggerated. Therefore, for a more efficient promotion, the destinations should initiate themselves certain actions or collaborate with the carriers to enhance the effects of the LCCs flights (Ivanova, 2017). Legacy carriers are using social media to improve their competitiveness (Baghirov et al., 2019). Mhlanga (2019) argues that while all state-owned airlines are perfect statehood symbols that represent their countries, most state carriers in southern Africa are plagued with menaces such as excessive debts, over-staffing and poor management.

Tigu and Stoeneescu (2017) remind us that the airline industry is very dynamic, having an impact on both air transportation and tourism. The increased competitiveness determined the creation of different partnerships and alliances within the industry and made airlines and airports focus on becoming more efficient. This potential has been seized by airlines, airports and tourism authorities, which started to integrate their services in a common strategy. Airports do not have direct demand, the client’s reason for going there is a particular underlying interest at the destination (De Almeida, 2011). Following Álvarez-Díaz et al. (2019) argued that LCCs lead to an increase in tourism demand. However, there is no
conclusive evidence when the airport is located in a region with a large diaspora and outbound tourism. In this context, this study reminds that the relatively short distances between the six airports in Andalusia may lead tourists to choose neighboring provinces’ airports when they decide to travel. That is, Malaga’s airport has a greater competitive advantage in terms of location, two runways, tourist resources and proximity with respect to the remains of the provinces.

For instance, Andalusia Technology Park in Malaga was the first technology park in Spain. It is highly specialized in information technology and has a large presence of foreign capital companies (ICEX, 2017), the proximity of the Malaga airport to this Technology Park (15 min by car) has made the establishment of new companies in this “life valley” more attractive and it reduced the temporary concentration of demand in Malaga. “All destinations, all activities and all companies are restarting from zero and only the best prepared will survive” (Benitez-Aurioles, 2021). One of the keys that makes the destination Malaga more attractive for companies is accessibility because the ratio of flight hours from Malaga’s airport to tourist and companies generating countries are between 1–9 h, this ratio of flight hours is shown in Figure 2.

The introduction of LCC services has enhanced transport connectivity in Andalusia. According to Junta de Andalucía (2019), the percentage of market shares between LCCs and legacy carriers on total arrivals were 75.2% for LCCs and traditional companies with 24.8%. Three airlines, Ryanair, Vueling and Easyjet airlines, account for more than half of total passenger arrivals at Andalusian airports, specifically 51.2% of them. The airline that moved the most passengers in Andalusia was Ryanair in 2018. Button et al. (2018), for example, suggest that the presence of a greater number of such carriers can enhance positively to stimulate the flow of tourists to the airports’ hinterland. This influence varies over time as the number of LCCs fluctuates and also across the airports studied. Figure 3 shows how LCCs obtain the first positions at airports in passenger transport and tourist distribution in the Andalusian tourist destination in 2019. The positioning of the airlines shown for each airport are supported by the AENA (2019) data. We have to point out that the following Figure 3 does not show the airlines that disappeared as a result of bankruptcy. This figure only shows the airlines that currently operate in Andalusian airports.

Following Chaabouni (2019) concluded that there is a difference in the level of efficiency and the status of economic development between regions. However, this does not reflect
some efforts of the government to reduce inequalities and to promote sector tourism. The frequency of flights and timing, together with the nature of the airlines offering services, can affect the quality of the tourists arriving. On the other hand, the position of the destination airport with LCCs can influence a market’s accessible, the fare structure and the types of tourists who will travel (Bieger and Wittmer, 2006). These authors suggest that the tourist offer of the Andalusian destination is very varied and this favors the distribution of tourist flows according to the typology and profiles of the visitors. While the coastal zone is a Sun and beach tourism focused on mass tourism and museums, the indoor areas are focused on ecotourism, adventure tourism and historical monuments. The destinations located in the Andalusian interior have specialized in the monumental, cultural and gastronomic offer. Following Blanco-Cerradelo et al. (2018) suggest that in this type of destination, the achievement of economic results based on tourism is highly regarded, but it becomes preferential only when it provides returns to the local community.

2.2 COVID-19 pandemic in the aviation industry

Governments around the globe have imposed travel bans, lockdowns and shutdowns to enforce social distancing measures in their efforts to prevent further rapid spread of the disease and to safeguard the effectiveness of national healthcare systems. The aviation industry is in dire straits: more than 60% of the world’s commercial aircraft have been grounded (Hollinger, 2020). An extraordinary crisis such as the COVID-19 pandemic means that there is little time for response organization and planning (Wenzel et al., 2020). Following Abraham et al. (2020), the COVID-19 disease has taken an unprecedented toll on travel and tourism, lives and livelihoods. Pandemic can be expected to have far-reaching
impacts on tourists’ consumption behavior (Wen et al., 2020). Nakamura and Managi (2020) suggest that flights must be minimized, and politics should play a significant role in restricting travel to benefit individual countries, as well as global health.

Airlines are turning to their host governments again in many major economies: the US Government committed to a $25bn bailout package (Rushe, 2020) and South Korean state-owned banks will provide $971mn to support Korean Air (Lee and Yang, 2020). In Europe, the Dutch, French, German and Italian Governments are handing out billions of euros to their national airlines, even under the auspices of the European Commission (EC) (Patel and Wilkes, 2020). In Europe, this represents a major policy turn: after more than two decades of retreating (Sinha, 2019), the gates for (financial) government intervention are open again, justified by the unprecedented magnitude of the SARS CoV-2-induced crisis. Yet, even extraordinary crises only last for a limited timespan; exceptional measures will not prevail forever. Following Sharun et al. (2020), there are only a few published reports that prove the occurrence of in-flight SARS-CoV-2 transmission, only four cases of in-flight SARS-CoV-2 transmission were reported in well-documented flights that were linked to mass transmission events.

The aviation industry has been affected by the COVID-19 tremendously. All companies in the industry face the same problem, such as cancellation of flight, employees have to take voluntary leave and some of the airline companies have filed for bankruptcy, such as Flybe, VA Australia, Thai Airways, Level Europe, South African Airways and many more. The air transport faces a huge problem to sustain in the industry and take preventive and proactive actions that guarantee its operability short and long term. According to Mustapha et al. (2020), the travel restrictions are one of the initiatives taken by the affected countries to curb or cut the circuit of COVID-19 from the spread. IATA, which includes 290 airlines among its members, said that the sector faces a revenue drop of a mammoth US$133bn due to the COVID-19 pandemic. Although Chen et al. (2020) suggest that Middle Eastern airlines enjoy great oil advantages, and strong support from the local governments, which enables these airlines to only deliver full services in comparison to other American, European and Asian airlines. Zeigler et al. (2017) claim that connectivity depends on the types of airlines operating at an airport, the scale and geographic scope of their network.

Figure 4 shows the flight scheduled flight departures from Spain on Monday, January 7, 2019 until January 6, 2021. The graph shows the year-on-year growth in flight frequencies each week. On March 14, the Spanish Government declared a state of alarm throughout the
national territory and the fall in flight frequencies began to drop drastically to historical levels never seen before (−95% week 16, April). In summer the frequency of flights recovers slightly, but this is −46% below compared to the same week in 2019. From the end of summer to December 2020, the frequency of flights in Spain has not returned to levels of 2019. These data show a complicated future for the Andalusian economy where tourism and the airline sector are the key to the success of this tourist destination and its connectivity. Similarly, following Gnangnon (2020) suggests that higher tourism receipts could be associated with international tourism and higher profits of companies including both public and private companies (firms, hotels, restaurants, airlines, etc.) involved in tourism activities. Most of the studies involve the tourism destinations within a structural characteristic, a cooperative behavior of the different stakeholders, the relevance of specific actors and the advantages obtainable with good connectivity (Baggio, 2019).

While crises usually tend to create numerous takeover opportunities, we do not expect takeovers to surge as the COVID-19 crisis evolves. So far, takeovers have been prevented or postponed. TAP Air Portugal was considered a takeover target; Lufthansa and United Airlines had reportedly considered a coordinated move to keep their Star Alliance partner on board and Polish LOT’s imminent acquisition of German Condor has been called off (Shotter and Chazan, 2020). All big carriers announced fleet downsizing variations, and accompanying layoffs so that acquisitions of other carriers (bringing fleet and personnel with them) would be more challenging anyway (FAZ, 2020). Continued investment in airlines, airports and hospitality, together with the development of innovative and technological advances will be crucial for counteracting the pandemic and tourist sector.

2.3 Chapter 11 bankruptcy in times of COVID-19

Chapter 11 bankruptcy protection of the US Bankruptcy Law is a mechanism that allows firms to organize and restructure. It is only available to US firms. Under Chapter 11 protection, the bankrupt firm can implement cost reduction strategies. Filing a Chapter 11 petition also automatically facilitates a stay to recover a claim or to enforce a judgment against the debtor. This procedure prevents creditors from recovering claims against the debtor. The core options available to the debtor include: renegotiation on prepetition debts; rejection of executory contracts; rejection of equipment leases; modification of the collective bargaining agreements; termination of pension plans; and modification of retiree benefits. These options can result in significant annual cost savings providing the debtor with a competitive advantage over competitors (Bock et al., 2020). Following McCormack and Wan (2019), a good restructuring and insolvency legal regime is vital to the broader economy in promoting the restructuring of viable businesses and efficient closure and transfer of assets of failed businesses. With the rise of demand for corporate restructuring services worldwide, there are strong incentives among countries, particularly those with international financial centers, continually to review and modernize their restructuring and insolvency laws. The airline industry was severely hit by the COVID-19 crisis with an average demand decrease of about 64% (IATA, 2020), which triggered already several bankruptcies of airline companies all over the world. At the same time, governments have questioned their need to financially support or directly manage, airport operations (Graham, 2019).

Furthermore, the airport also affected the COVID-19 outbreak around the world. As all the travel activities have been banned and all the flights have been canceled, airport revenue also facing a significant decreasing. When the air traffic demand is reduced, then the income of the airport also decreases. In this line, Chapter 11 of the Bankruptcy Code generally provides for reorganization, usually involving a corporation or partnership. A Chapter 11 debtor usually proposes a plan of reorganization to keep its business alive and pay creditors over time. People in business or individuals can also seek relief in Chapter 11. A case filed under Chapter 11 of the US Bankruptcy Code is frequently referred to as a
“reorganization” bankruptcy (United States Courts, 2020). Airlines are going bankrupt internationally, governments help airlines and many other aviation organizations with credits, loans or other financial measures to ensure liquidity shortages. Others try to secure their future without any governmental support, blaming other airlines of misconduct by approaching governments or investors to offer financial shields. One can observe that nearly every aviation organization worldwide is challenged to secure the long-term survival of their organization (Linden, 2021).

Airline managers say that the funding will help them keep hundreds of thousands of employees in the industry as the situation in the USA is worsening every day (Mustapha et al., 2020). Table 1 shows all airlines have that ceased operations, insolvency, filed for administration, company voluntary arrangement, file for bankruptcy protection, liquidation, bankruptcy. The situation of these bankrupt airlines directly and indirectly affects the tourist destination and its local and regional economy. Following Maneenop and Kotcharin (2020) suggest that the government in each country is at an intersection, whether to provide financial support or guarantee existing debt or to believe in market mechanisms and let the airline firms file for bankruptcy.

According to Lordan et al. (2014), there are different reasons why an airline goes bankrupt, but it ultimately boils down to the lack of cash to cover the airline’s liabilities. On the contrary, the prevalence of Chapter 11 and the access to this process has raised concerns that Chapter 11 can be perceived as a form of a subsidy and distorts the level playing field in international markets. This concern has been clearly voiced by the European Union in December 2011, when its delegation to the US-EU Joint Committee, a consensus body that oversees the implementation of the EU-US open skies agreement, expressed its concerns about the competition distorting effects of Chapter 11 in regard to flights under the EU-US open skies agreement (Bock et al., 2020). The aviation consultancy CAPA (2020) claimed that most airlines in the world would be bankrupt without coordinated government and industry intervention. According to the CAPA report, many airline companies have gone into bankruptcy and filed for Chapter 11 protection after being hit by the COVID-19 pandemic. The list of airlines that have filed for bankruptcy as shown in Table 1. However, that list may be longer if the COVID-19 pandemic did not end soon.

On the contrary, following Ciliberto and Schenone (2012), there is no simple theoretical connection between bankruptcy filings and market competition. Bankruptcy filings are the result of wars of attrition over capacity and network cutbacks. Almost every major network carrier in the US has gone through Chapter 11 bankruptcy protection process. Each of these carriers had a presence in international markets, and hence, could have affected the competitive environments in those markets. In each of the cases where the US carriers has filed for Chapter 11, this was done voluntarily and it can be noticed that no conversion to Chapter 7, where the trustee liquidates the debtor’s assets to pay creditors as the company ends its operations has ever occurred in those cases. Possibly, Chapter 11 filing by one firm has initiated a domino effect that ultimately has affected the entire airline industry in the US. Evidently, once a firm enters bankruptcy protection, it enjoys some advantages not available to other firms in the industry, while facing a detrimental risk of moving into Chapter 7 (Bock et al., 2020).

Relations between airlines and states in Europe have been complex (Levy and Ziegler, 2016; Doganis, 2019). After its initial generosity in approving COVID-19-related state aid packages, the EC has recently returned to a more restrictive stance (Economist, 2020). In a European Union committed to the common market, a key principle of which is fair or level playing field competition (Gerard, 2010), the EC’s mandate is to ensure equal competitive conditions and enforce them for airlines. However, government bailout packages, as detailed so far, seem to have provoked heightened heterogeneity and it would have been detrimental for European businesses, passengers and taxpayers if Europe had reverted to pre-liberalization-type flag carriers that provide international connectivity but compromised efficiency, innovation and service quality, which would then be strongholds of independent LCCs.
<table>
<thead>
<tr>
<th>Airline</th>
<th>Country</th>
<th>Status</th>
<th>With effect from</th>
<th>Supposedly for Covid-19 pandemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Berlin</td>
<td>Germany</td>
<td>Ceased operations/filed for insolvency</td>
<td>2017/2015</td>
<td></td>
</tr>
<tr>
<td>Monarch Airline</td>
<td>UK</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2017</td>
<td></td>
</tr>
<tr>
<td>Cobalt Air</td>
<td>Cyprus</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2018</td>
<td></td>
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<tr>
<td>Small Planet Airlines</td>
<td>Lithuania</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2018</td>
<td></td>
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<tr>
<td>Primera Air</td>
<td>Denmark</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2018</td>
<td></td>
</tr>
<tr>
<td>Germania Airline</td>
<td>Germany</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2019</td>
<td></td>
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<tr>
<td>Fly Jamaica</td>
<td>Jamaica</td>
<td>Ceased operations/aircraft incident/made all employee positions redundant due to the of aircraft</td>
<td>2019</td>
<td></td>
</tr>
<tr>
<td>Wow air</td>
<td>Iceland</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2019</td>
<td></td>
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<tr>
<td>California Pacific</td>
<td>EE.UU</td>
<td>Ceased operations/filed for administration</td>
<td>2019</td>
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<tr>
<td>Jet Airways</td>
<td>India</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2019</td>
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<tr>
<td>XL Airways</td>
<td>France</td>
<td>Ceased operations/filed for insolvency</td>
<td>2019</td>
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<tr>
<td>Aigle Azur</td>
<td>France</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2019</td>
<td></td>
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<td>Adria Airways</td>
<td>Slovenia</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2019</td>
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<td>Thomas Cook</td>
<td>UK</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2019</td>
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<tr>
<td>Air Italy</td>
<td>Italy</td>
<td>Ceased operations/in liquidation</td>
<td>2020</td>
<td></td>
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<td>AtlasGlobal</td>
<td>Turkey</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2020</td>
<td></td>
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<tr>
<td>Ernest Airlines</td>
<td>Italy</td>
<td>Ceased operations/company voluntary arrangement</td>
<td>2020/2019</td>
<td></td>
</tr>
<tr>
<td>Flybe</td>
<td>UK</td>
<td>Ceased operations/filed for administration</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Level Europe</td>
<td>Austria</td>
<td>Ceased operations/filed for insolvency</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>SunExpress Deutschland</td>
<td>Germany</td>
<td>Ceased operations/plans liquidation</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Miami Air International</td>
<td>EE.UU</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Trans States Airlines</td>
<td>EE.UU</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Compass Airlines</td>
<td>EE.UU</td>
<td>Ceased operations</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Ravn Air</td>
<td>Alaska</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Virgin Australia</td>
<td>Australia</td>
<td>Ceased operations/company voluntary arrangement</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Colombian Airline Avianca</td>
<td>Colombia</td>
<td>Filed for bankruptcy/*continue operating and use Chapter 11 as a way to strengthen its financial position and liquidity.&quot;</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Avianca Peru</td>
<td>Peru</td>
<td>Filed for bankruptcy/*continue operating and use Chapter 11 as a way to strengthen its financial position and liquidity.&quot;</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Avianca Braszil</td>
<td>Brazil</td>
<td>Filed for bankruptcy/*continue operating and use Chapter 11 as a way to strengthen its financial position and liquidity.&quot;</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>LATAM</td>
<td>Argentina</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Aeromexico</td>
<td>Mexico</td>
<td>Filed for bankruptcy/*continue operating and use Chapter 11 as a way to strengthen its financial position and liquidity.&quot;</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Avianca Holding S. A</td>
<td>Colombia</td>
<td>Filed for bankruptcy/*continue operating and use Chapter 11 as a way to strengthen its financial position and liquidity.&quot;</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Air Mauritius</td>
<td>Mauritius</td>
<td>Continue operating/filed for administration to avoid going bankrupt</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>German Airways</td>
<td>Germany</td>
<td>Ceased operations/filed for insolvency</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Thai Airways</td>
<td>Thailand</td>
<td>Continue operating/file for bankruptcy protection</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>TAME</td>
<td>Ecuador</td>
<td>Ceased operations/plans liquidation</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>One Airlines</td>
<td>Chile</td>
<td>Ceased operations/filed for administration</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>NokScoot Airlines C.L</td>
<td>Thailand</td>
<td>Ceased operations/plans liquidation</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>LIAT</td>
<td>Antigua and Barbuda</td>
<td>Ceased operations/plans liquidation</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>South African Airways</td>
<td>Africa</td>
<td>Ceased operations/filed for bankruptcy</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Norwegian Air Shuttle</td>
<td>Norway</td>
<td>(24 Boeing 737-800 aircraft are registered in Ireland. The total fleet comprises 128 aircraft) has filed for protection from creditors in Ireland. in an equivalent process to chapter 11 bankruptcy</td>
<td>2020</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
3. Methodology

The aims of the research method adopted here is to review the impact of COVID-19 on airlines operating in Andalusian airports and territory. A review of the relevant literature on the impact of COVID-19 on the aviation industry, airports and tourism sector is undertaken to understand the link between them. Furthermore, this study considers the key areas where COVID-19 is affecting, especially on hospitality and tourism at international and regional levels. As we write, COVID-19 is still very much with us so the analysis provided here draws on a range of scientist journals (Baum and Hai, 2020) and secondary sources, which can be formally verified at this time. The literature relation to the COVID-19 pandemic is being extended and this is focused on aviation and tourism sectors (Abraham et al., 2020; Albers and Rundshagen, 2020; Bock et al., 2020; Budd et al., 2021; Chinazzi et al., 2020; Henríquez et al., 2020; Maneenop and Kotcharin, 2020; Melly and Hanrahan, 2020; Mustapha et al., 2020; Nakamura and Managi, 2020; Serrano and Kazda, 2020; Sharun et al., 2020; Suzumura et al., 2020; Uğur et al., 2020; Wen et al., 2020; Wenzel et al., 2020; Winston, 2020; Ye et al., 2020, etc.). The literature shows the link between airports and airlines to attract passengers to the tourist destination.

This study was enriched, notably, as regard its theoretical and practices from scientific journals that have addressed the impact of COVID-19 in the aviation and tourism industry such as Tourism Review, Journal of Hospitality and Tourism Management, Annals of Tourism Research, Journal of Transport Geography, Journal of Travel Research, Gran Tour, Journal of Airline and Airport Management, Journal of Air Transport Management, Tourism Management Perspectives and Transportation Research Part E. Data was collected from journals using University of Malaga databases and verified with reference to Google Scholar searches (Buhalis and Law, 2008). This involves a review of existing literature produced by academic journals, government organizations, magazines, consulting firms and industry bodies (Tisdall and Zhang, 2020).

This exploratory research is based upon theory building from case studies. This approach is especially appropriate for obtaining complex details and helps to focus the research objectives in a more efficient way (Eisenhardt, 1989). Regarding the information of the airlines that ceased their operations, filed for insolvency or bankruptcy, filed for administration to avoid bankruptcy, etc., all these data were collected and updated from 2015 to January 2021 by the major international magazines such as: The Times, The Guardian, Reuters, Economist, Frankfurter Allgemeine and Business Insider. The economic situation data in Andalusia has been collected from (Instituto de Estadística y Catografía de Andalucía) IECA, these results are the sample of the succession of the effects of the pandemic in airlines, airports and finally in the territory.

<table>
<thead>
<tr>
<th>Airline</th>
<th>Country</th>
<th>Status</th>
<th>With effect from</th>
<th>Supposedly for Covid-19 pandemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corsair</td>
<td>France</td>
<td>Continue operating/filed for administration to avoid going bankrupt (EU aid and it consists in €106.7m of restructuring the company)</td>
<td>2020</td>
<td>✓</td>
</tr>
<tr>
<td>TAP</td>
<td>Portugal</td>
<td>Continue operating/filed for administration to avoid going bankrupt (Portugal aid and it consists in €1,600m of restructuring the company)</td>
<td>2020</td>
<td>✓</td>
</tr>
<tr>
<td>Air Europa</td>
<td>Spain</td>
<td>Continue operating/filed for administration to avoid going bankrupt (Spain aid and it consists in €400m of restructuring the company)</td>
<td>2020</td>
<td>✓</td>
</tr>
</tbody>
</table>

Source: Own elaboration
Moreover, this research also uses secondary data from IATA, AENA, EUROCONTROL, ACI, OAG, ICEX, National Institute of Statistics of Spain (INE), TWO, etc.:

Secondary data analysis is a form of research in which the data collected and processed in one study are reanalyzed in a subsequent study. These are part of best practice, which can provide a valuable data source for further research studies (Rubin and Babbie, 2008; Whiteside et al., 2012).

The justification and criteria to evaluate secondary data were (bankrupt airlines; passenger arrivals at Andalusian airports; annual rate of retail sales; companies registered in Social Security (SE); rate of the number of companies registered in SE; the number of visiting tourists; opinions of entrepreneurs, GDP annual variation and the top 10 aircraft operators in Spain), these show the relevance and reliability on the secondary data approach (Hox and Boeije, 2005). The data collected in Table 2 shows passenger arrivals at the six Andalusian airports from 2004 to October 2020 to calculate interannual rates and analyze the evolution of tourist arrivals to Andalusia, especially in the months of 2020 due to the impact of COVID-19 in the tourism and air sector. We acknowledge the limitations of using capacity data in this analysis, given the fact that, for different reasons, some airlines were flying empty aircraft or cancellation of unaccounted flights. Another limitation has been the accuracy of AENA, INE, EUROCONTROL, ICEX, IECA, WTO and OAG data set given the sudden unprecedented market changes. These data represent quantitatively the basic core of why airports are the gateway to tourist destinations and their importance in the accessibility of tourists and companies on the territory. Therefore, the scope of study of this research project has been international, collecting data and patterns of success that support the objectives of this research. “This topic is worthy of attention, especially during the time of crisis where tourism activity may help to stimulate the economy” (Li et al., 2021). Figure 5 shows the methodology used in this research to improve the effect of relevant information and to obtain better results and analytical conclusions.

4. Results of research

4.1 The impact of COVID-19 in passenger arrivals at Andalusian airports

Within countries, the virus affected virtually all parts of the hospitality value chain. The impact of canceled events closed accommodations and shut down attractions became immediately felt in other parts of the supply chain, such as catering and laundry services. Restaurants had to close as well, though in some countries, a switch to take-away/delivery sales allowed some to continue operations. Reports on lay-offs and bankruptcies followed, with British airline FlyBe succumbing first to market pressure, declaring bankruptcy on March 5, 2020 (Business Insider, 2020). Major airlines including Scandinavian Airlines (March 17, 2020), Singapore Airlines (March 27, 2020) and Virgin (March 30, 2020), as well as tour operators including German TUI (March 27, 2020) have already requested tens of billions of US$ in state aid (Gössling et al., 2021). Following Linden (2021) suggests that aviation managers should develop a common strategy language and to manage uncertainty proactively. Aviation managers need to be aware of the cause of the decline, the organization is facing. Thus, managers need to adapt to these environmental jolts properly (Meyer, 1982; Wan and Yiu, 2009).

Lipsitch et al. (2009) found that emerging influence pandemics are a “combination of urgency, uncertainty and the costs of interventions, which makes the effort to control infectious diseases especially difficult.” This is why some organizations might not have dedicated action and strategic plans for globally spread infectious diseases. Organizations were simply not able to quantify the impact of such an event. Managers of aviation organizations now ask themselves: how should I predict, calculate or even make plans for such events? Not being able to answer these questions, the outbreak of COVID-19 is often described as a “black swan” [1] in recent articles (Deloitte, 2020; Winston, 2020). In a
<table>
<thead>
<tr>
<th>Year</th>
<th>Malaga</th>
<th>V. Interanual (%)</th>
<th>Seville</th>
<th>V. Interanual (%)</th>
<th>Jerez</th>
<th>V. Interanual (%)</th>
<th>Granada-Jaen</th>
<th>V. Interanual (%)</th>
<th>Almeria</th>
<th>V. Interanual (%)</th>
<th>Cordoba</th>
<th>V. Interanual (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>12,046,277</td>
<td>4.1</td>
<td>2,678,595</td>
<td>18.0</td>
<td>1,117,447</td>
<td>32.0</td>
<td>590,931</td>
<td>12.4</td>
<td>830,930</td>
<td>-1.1</td>
<td>19,328</td>
<td>15.1</td>
</tr>
<tr>
<td>2005</td>
<td>12,669,019</td>
<td>5.2</td>
<td>3,521,112</td>
<td>31.5</td>
<td>1,297,134</td>
<td>16.1</td>
<td>875,827</td>
<td>48.2</td>
<td>1,073,585</td>
<td>29.2</td>
<td>20,604</td>
<td>6.6</td>
</tr>
<tr>
<td>2006</td>
<td>13,076,252</td>
<td>3.2</td>
<td>3,871,785</td>
<td>10.0</td>
<td>1,381,666</td>
<td>6.5</td>
<td>1,086,236</td>
<td>24.0</td>
<td>1,055,545</td>
<td>-1.7</td>
<td>19,557</td>
<td>-5.1</td>
</tr>
<tr>
<td>2007</td>
<td>13,590,803</td>
<td>3.9</td>
<td>4,507,264</td>
<td>16.4</td>
<td>1,607,968</td>
<td>16.4</td>
<td>1,467,625</td>
<td>35.1</td>
<td>1,206,634</td>
<td>14.3</td>
<td>22,410</td>
<td>14.6</td>
</tr>
<tr>
<td>2008</td>
<td>12,813,472</td>
<td>-0.1</td>
<td>4,392,148</td>
<td>-2.6</td>
<td>1,303,817</td>
<td>-18.9</td>
<td>1,422,014</td>
<td>-3.1</td>
<td>1,024,303</td>
<td>-15.1</td>
<td>22,230</td>
<td>-0.8</td>
</tr>
<tr>
<td>2009</td>
<td>11,622,429</td>
<td>-9.3</td>
<td>4,051,392</td>
<td>-7.8</td>
<td>1,079,616</td>
<td>-17.2</td>
<td>791,837</td>
<td>-22.7</td>
<td>15,474</td>
<td>-30.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>12,864,521</td>
<td>3.8</td>
<td>4,224,718</td>
<td>4.3</td>
<td>1,043,163</td>
<td>-3.4</td>
<td>786,777</td>
<td>-0.6</td>
<td>7,852</td>
<td>-49.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>12,823,117</td>
<td>6.3</td>
<td>4,959,359</td>
<td>17.4</td>
<td>1,032,493</td>
<td>-1.0</td>
<td>780,853</td>
<td>-0.8</td>
<td>8,442</td>
<td>7.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>12,581,944</td>
<td>-1.9</td>
<td>4,292,020</td>
<td>-13.5</td>
<td>913,394</td>
<td>-11.5</td>
<td>749,720</td>
<td>-4.0</td>
<td>9,844</td>
<td>16.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>12,925,186</td>
<td>2.7</td>
<td>3,887,714</td>
<td>-14.1</td>
<td>811,457</td>
<td>-11.2</td>
<td>705,514</td>
<td>-5.9</td>
<td>6,956</td>
<td>-29.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>13,748,976</td>
<td>6.4</td>
<td>3,885,434</td>
<td>5.4</td>
<td>758,309</td>
<td>-6.5</td>
<td>650,542</td>
<td>1.9</td>
<td>745,226</td>
<td>5.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>14,404,206</td>
<td>4.8</td>
<td>4,308,845</td>
<td>10.9</td>
<td>823,160</td>
<td>8.6</td>
<td>707,270</td>
<td>8.7</td>
<td>691,240</td>
<td>-7.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>16,673,151</td>
<td>15.9</td>
<td>4,625,314</td>
<td>7.3</td>
<td>916,906</td>
<td>11.4</td>
<td>751,287</td>
<td>6.2</td>
<td>920,329</td>
<td>33.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>18,626,281</td>
<td>11.7</td>
<td>5,108,817</td>
<td>10.5</td>
<td>1,046,549</td>
<td>14.1</td>
<td>901,967</td>
<td>20.1</td>
<td>1,007,446</td>
<td>9.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>19,021,779</td>
<td>2.1</td>
<td>6,380,483</td>
<td>24.9</td>
<td>1,134,341</td>
<td>8.4</td>
<td>981,992</td>
<td>-1.5</td>
<td>8,254</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>19,856,299</td>
<td>4.4</td>
<td>7,544,473</td>
<td>18.2</td>
<td>1,120,742</td>
<td>-1.2</td>
<td>1,251,926</td>
<td>11.1</td>
<td>978,997</td>
<td>-1.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>4,796,312</td>
<td>-72.7</td>
<td>2,176,853</td>
<td>-65.8</td>
<td>198,514</td>
<td>-80.2</td>
<td>360,888</td>
<td>-65.8</td>
<td>178,636</td>
<td>-80.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** *Data until October 2020*

**Source:** Own elaboration based on data from AENA (2004–2020)*
traveler survey conducted by OAG (2020a) consumers are most afraid of catching coronavirus while on the plane (45%), followed by airport terminals (16%) in Europe. In total, 76% think that requiring all passengers and staff to wear masks is the most effective safety measure for both airlines and airports, followed by improved cleaning procedures. The major path to rebuilding confidence lies with the industry more aggressively communicating to travelers, which is being done to ensure flying is safe (Figure 6).

Budd et al. (2021) suggest that the immediate considerations for airline business and management are twofold. First, there is a need for international coordination as the national specificity of border closures and quarantine interventions was creating considerable challenges for operators and undermining passenger confidence. Consequently, a European (and preferably global) coordinated response in terms of any new biosecurity requirements or passenger screening measures would be desirable. However, there is evidence of divergence between the European and international response with IATA currently examining the idea of “immunity passports” for passengers (IATA, 2020) while European airlines and airports trial temperature scans of passengers and the mandatory use of face coverings in flight (EASA, 2020). Even within Europe, individual countries have
imposed their own requirements, for example, on coronavirus testing at airports or the need to wear face coverings in airports and on-board aircraft.

The second point shows, how airlines will reassure passengers that flying is safe and encourage them back into the air. Already, it has been suggested that airlines will cut fares, but this is only a short-term response and with finances already precarious this is not viable in the longer term. Temperature checks, face masks, social distancing, one-way systems, ultra-violet cleaning of aircraft cabins as a way of safeguarding travelers and staff (EASA, 2020; McKinnell, 2020; Budd et al., 2021). However, any enhanced cleaning regime will impose additional costs and time penalties. The question is, when will everyone be vaccinated? Will it be necessary to plan a COVID-19 scenario plan for five years? We understand a scenario where technology will be our first means of communication and work, besides optimizing the movements of the population in each country.

The tourism sector (included airports and airlines) is very sensitive and easily affected by global crises. With the announcement of the COVID-19 case as a pandemic, travelers decided to cancel their trips immediately and started to discuss travel assurance issues. Important information reaches millions of people instantly because of the internet, which has many benefits and some disadvantages. Technological advances make it compulsory to keep abreast of the volatility, uncertainty, complexity and ambiguity world. Travelers react to sudden changes and tourism businesses need more time to prepare Plan B. Managers in the tourism industry must conduct accurate risk analysis (Uğur and Adem Akbıyık, 2020). Following AENA (2020), the effects of COVID-19 and its limitations caused by it is gradually affecting Andalusian airports, the drop passengers was 81.2% compared to the same month of the previous year, with a total of 541,487 travelers in October 2020 compared to 2,880,392 in the same month of 2019. Table 2 shows these effects in passenger arrivals at airports and tourist destinations in Andalusia, mainly in Malaga and Seville airports, with a drop in passengers of −72.7% and −65.8% that is (15,059,987 and 53,667,620 Pax) too many tourists for an Andalusian economy that depends mainly on the tourism sector. Next, we show the incidence of these data in the Andalusian territory.

4.2 The COVID-19 effects on Andalusian business and economy

The economy in Spain has been particularly hard hit by the pandemic, with tourism impacted by a fall of around 880,000 flights in 2020. Flights to/from/within Spain fell by 72% and the number of passengers was 70% down in 2020 compared to the previous year (Brennan, 2020). Following UNTWO (2020b) COVID-19 represents unprecedented global health. International tourist arrivals declined 74% in 2020 over the previous year due to widespread travel restrictions and a high drop in demand (UNWTO, 2021), this “actual data” puts yearly results between baseline Scenario 2 (−70%) and Scenario 3 (−78%) published in May 2020. Scenario 1 was unlikely despite the lifting of travel restrictions in some countries, as this was mostly limited to Europe and proved to be short-lived (Figure 7). The reality is that vaccinations will play a crucial role in keeping the tourism and aviation industry.

Spain is ranked 3rd in Europe (after UK and Germany) in terms of flights lost with −0.88 million and has lost −150 million passengers. Major airlines operating in Spain were similarly affected with Ryanair operating by −71%, Vueling −65% and Iberia with −72% (From 19 October to 25 October 2020, YoY). Airlines operating mainly in the Canary Islands (Binter, Canarias Airlines and Canary Fly) have suffered much smaller reductions (Figure 8). Domestic flows remain the top flows (−44% over 2019) followed by flows from/to the UK, Germany and France. North-Africa is the top non-European flow closely followed by Middle-East (EUROCONTROL, 2020a).

To examine the impact of COVID-19 on the airlines and the Andalusian territory, the next figures show the economic situation in this destination. Panels A–C in Figure 9 display,
shows how the bankruptcy of some airlines, closure and reduction of the frequency of air routes by airlines, COVID-19 measures at airports by governments, etc., are affecting the Andalusian economy, tourism and population. Especially, in retail sales and companies registered and their contribution to Social Security (SE) in the first three quarters, that fell drastically. The evolution of retail sales in Andalusia, discounting the effect of inflation and considering the series adjusted for seasonal and calendar effects, shows interannual
growth between 2% and 5% approximately until February 2020. From March 2020, total sales plummet, reaching close to –35% in April. Regarding the sale of food, these reached a maximum in March of 11.1%, as of April sales have fallen at negative rates gradually. Following McGraw (2020), claims that airports have led to 3.9% growth in total employment and 3.4% growth in population per decade in EE.UU. All identification strategies imply that some part of this growth pertains to non-tradable employment 2.9% growth. Effects on wages and job creation in airport cities were also observed, on the order of 1% to 3% per
decade. For these reasons, it appears worthwhile for communities to continue to invest in airports, given their mean historical return, to ensure that firms and individuals can benefit from the air sector. Meanwhile, following Fu et al. (2020), airlines have begun to focus on attracting potential customers to further expand revenue.

In line with the COVID-19 pandemic and its impact on the tourism sector, the number of tourists who visited Andalusia in the third quarter of 2020, it reached six million, which represents a decrease of 47.5% compared to the same quarter of the previous year (Panel D in Figure 9). During this period, the tourists who visited Andalusia, 45.3% were Andalusian, 42.0% were from the rest of Spain, 10.5% came from the EU excluding Spain and 2.2% from the rest of the world. In the same period last year, these percentages were 39.8%, 33.2%, 22.2% and 4.8%, respectively. Obviously, COVID-19 adversely impacts on the aviation and tourism sector. Both domestic and international tourists canceled their bookings due to the pandemic. However, travel restrictions in different countries have led to the cancellation of all air travels. Following Baum and Hai (2020), there is little doubt that international and domestic tourism have been major “victims” of the pandemic. Many of the consequences of the COVID-19 pandemic on tourism and our individual mobilities have been enacted by governments, frequently backed up by emergency legislation.

These security-hygienic measures by governments at borders and airports are drastically affecting the loss of business income, and employees are losing their jobs. A special stimulus package from the government is necessary for the travel and tourism industry to survive the current situation and revive after the pandemic. This situation is unsustainable, but in this research, we defend supporting companies, lowering taxes and offering long-term 0% interest credits from governments and the financial sector. We should think about investing in new strategies to activate the tourism and air sector, when surveys show that tourists do not want to travel and are afraid of getting infected on airplanes and public transport (Figure 5). According to Hasan et al. (2017) and Godovykh et al. (2021) suggest that a negative correlation between risk perceptions and tourists’ behavioral intentions. It was reported that higher levels of perceived risk evaluations led to lower levels of satisfaction, loyalty, attitude toward a destination and visit intentions.

Panel E in Figure 9 shows the opinions of the Andalusian business sector on the real situation and their expectations indices in the third quarter of 2020. About the real situation, 10.4% of the establishments in Andalusia think that the progress of their business has been favorable while 48.2% value it as unfavorable. This means that the balance sheet registered in this quarter (difference between favorable and unfavorable opinions) is −37.8 points, improving the expectations that were expressed in the previous quarter, going from −48.5 to −37.8 points. From the point of view of the expectations of the business sector in the fourth quarter of 2020, 8.5% of the establishments are optimistic about the progress of their business, while 49.0% are pessimistic, resulting in a balance expectation (difference between favorable and unfavorable opinions) of −40.4 points. According to Goger and Hadden Loh (2020) suggest that up to 75% of small businesses in the hospitality sector may not reopen after the pandemic in Europe and the USA.

On the other hand, Panel F of Figure 9 shows the real situation index in the third quarter of 2020 is unfavorable in all sectors, whose balance sheets are negative, especially transport and hospitality with −60.4. The expectations indices for the fourth quarter of 2020 are negative in the total with −40.4. Industry is the least unfavorable with a −24.5 index. If we observe the true situation for the provinces of Andalusia, the data shows that the most harmed at the third quarter of 2020 occurred in the establishments was Malaga with −50.6 points. Regarding the expectations for the fourth quarter of 2020, all the provinces have a negative balance, although Almeria is the least negative with −24.1 points and Malaga the most negative in future expectations with −52.4. “A number of studies explored tourists’ risk
perceptions as an important determinant of travel intentions and avoidance of potentially dangerous destinations (Khan et al., 2019).

Dynamic effects of the airports and airlines by COVID-19 pandemic on Andalusia economic outcomes are evident. Several frameworks present a holistic understanding of a disastrous situation and provide suggestions for coping with the COVID-19 at each phase in different territories. According to the Institute of Statistics and Cartography of Andalusia IECA (2020), the Andalusian GDP has fallen considerably in the first three quarters of 2020 compared to 2019, registering a continuous fall of $-4.3\%$, $-19.8\%$ and $-8.5\%$ in those periods (Figure 10). However, the variation in GDP in the third quarter of 2020 grew by $14.5\%$. The pandemic arising from the spread of COVID-19 has caused airlines to reduce capacity and lobby the government for emergency relief. As these reductions in capacity continue to grow and the post-stimulus employment requirements expire, the uncertain future of the airline workforce is apparent (Sobieralski, 2020). The results of this study suggest that major airlines will be the most impacted during uncertain times such as the one faced today by the global pandemic. The major airlines’ size and financial exposure increase their vulnerability to uncertainty shocks throughout history. Following Melly and Hanrahan (2020), the continued and substantial growth of international tourism arrivals and the extent of global communicable disease outbreaks provide clear evidence for destinations worldwide to develop a specific national biosecurity plan.

4.3 The development of aviation industry, destination marketing organization and airports in times of pandemic

The development of air transport and tourism relies heavily on each other, and this can lead to both positive and negative outcomes. This interrelationship between airlines and tourist

![Figure 10](image-url)
destinations is taken into account, either implicitly or explicitly, in the business models adopted, they take time to study each other’s models. In some cases, airlines get involved in the planning and development of tourist destinations, e.g. in advertising initiatives and the planning of airport access facilities. The tourist destinations often have an incentive to invest in local airports that can allow larger aircraft to land and in all weather conditions (Bieger and Wittmer, 2006). It is like a win-win situation whereby the customers spend their money to travel and the company able to gain their revenue. The companies to think about their customer first before their income to maintain in a more extended period (Mustapha et al., 2020). Thus, tourism promotion by DMO is one of the most important tools to encourage national and international tourism in these times of pandemic, to maintain tourism activity and cover short-term fixed costs of companies, airlines and airports.

Tourism-promotion, therefore, is the integration in the tourism value chain of three main stakeholders, namely, airports, DMOs and airlines. The interoperations between regional authorities and airports are evidenced at Seville airport, increasing the operations from 5 to 10 million passengers in Europe, as relating the city of Seville as a tourism destination brand image for the 2030 airport strategy (Florida-Benitez, 2020). The airport image is linked, rather than being independent of the city. Indeed, airports such as Liverpool, Louisville Muhammad Ali Internationaland Malaga airports changed their original names to reflect the link to their respective city, as airports are ambassadors of tourist destinations. Indeed, the change of the airport name from Malaga Airport to Malaga Costa del Sol was a reality in 2011 after finishing the third terminal, which was opened on the 15th of March 2010. This change was done for regional tourist interests and to disseminate and promote the Malaga Costa del Sol airport brand in the international tourism market (Florida-Benitez and del Alcazar, 2020). “Costa del Sol” reflects briefly (at the airport name) what visitors will experiment in the city. Therefore, “Costa del Sol” becomes a brand (image) for the airport and city from June 2011.

This study suggests that the threshold tourism-promotion refers to the efficient management of a destination’s resources and strategic plans by DMOs, to adapt the tourism supply to market trends and will empower tourists to visit such destination. Thus is, to harmonize all promotional efforts to specific market clusters. Tourism-promotion involves a strategic plan, general and specific objectives and an economical budget. Tourism-promotion is managed by a DMO in cooperation and interoperability with the airport, airlines and other stakeholders. Indeed, DMOs should monitor and report the return of tourism promotion at airports to evaluate the efficiency of a strategic approach to target tourism promotion adjusted to market segmented. Some examples of objectives but not limited to are to reduce the dependence on the domestic market, diversify the airlines operating at the airport, increase connectivity with the rest of the world, increase the air cargo export of products and services of the destination, promote the brand image of the airport and destination globally. Following to Wang et al. (2021) suggest that a positive destination overall image (DOI) is a powerful tool indicating the tourist destination relationship and tourist flow. Nazneen et al. (2020) stated that a positive DOI pertained to a rise in tourism demands and economic advantages.

Tourism-promotion is more relevant to the extent that airports are located in popular destinations. Appropriate content and appealing features are essential in the design of destination-related ads to gain the attention of the target audience. Globally, economies are connected by cross-border flows, and especially in the air sector, the optimization of time and distance are the strength of this sector. In the next, Figure 11 shows the channels of COVID-19 economic contagion at Andalusia territory. According to Ghoochari et al. (2020), destinations wishing to exploit their tourist resources, for tourism development are wise to reach consensus among their community’s stakeholders on the policies and practices needed to sustainably manage tourism development and activities.
Following UNWTO (2020b) suggests that a significant amount of services trade requires physical proximity between producers and consumers. All sectors, agriculture, manufacturing industry and of course the tertiary sector will be strongly affected by this crisis (Nicola et al., 2020). In particular, the airline industry was severely hit with many governments that enforced both domestic and international travel restrictions at various degrees. Some countries restricted the flights from severely affected areas while others even canceled almost all flights. These travel restrictions did delay or interrupt the further transmission of the COVID-19 (Chinazzi et al., 2020) but also caused great damage to the world airline network (Suzumura et al., 2020), the most important travel network in today’s world and one of the key infrastructures of today’s global economy. Ye et al. (2020) suggest that the impact on the world airline network connectivity of an airline company failure depends on its coupling with other companies. If the company shares many segments with others, its failure will more strongly affect the world airline network structure. ACI EUROPE (2020) warned of such fundamental risks to business continuity that an estimated 193 airports face insolvency in the coming months if passenger traffic does not start to recover by the year end. These airports between them facilitate 277,000 jobs and €12.4bn of European GDP. Financial support from the government will be crucial in averting rising geographic inequality and damaged social cohesion.

5. Conclusions

The COVID-19 pandemic has had a catastrophic impact on the tourism and air sector worldwide. The purpose of this study has been to analyze the effects of COVID-19 on airlines, airports and the destination Andalusia and the results of the research showed that the COVID-19 outbreak has led to an unprecedented crisis in this territory. The drastic drop in flight frequencies at Andalusian airports during the pandemic has caused an average decrease of ~65% in passenger arrivals in this tourist destination. The loss of 23 million tourist arrivals to this territory during the pandemic should raise new strategies and actions by DMOs and airport managers to reanimate tourist activity in the short and medium term.
The uncertainty brought by COVID-19 on the aviation industry has to be reduced, the organizations need to reassess the different scenarios that can occur onwards and ensure that sustainable and safe airport operations can be maintained. This critical situation is unsustainable, support will be necessary for companies, lowering taxes and offering long-term 0% interest credits from governments and the financial sector. We should think about investing in new strategies to activate the tourism and air sector. Developing action plans with the opinions of passengers and tourists are necessary to understand and resolve the barriers that make it difficult for them to travel. Clearly, the population is learning to live with COVID-19, knows its limitations and its future plans to travel abroad when the vaccine eliminates the virus. Citizens will travel to their most immediate destinations in their own car, increase domestic consumption and take this pandemic period to enjoy more deeply their natural resources, tourist attractions and gastronomy. This is a great opportunity for companies and DMOs to help add value to local products, bet on tourist quality and design customized products with high added value. For instance, Bichler and Peters (2020) suggest that DMOs need to emphasize the benefits of hiking for physical and mental well-being. This can be done by focusing on hedonic product features, such as pleasurable experiences and establishing multisensory adventures. It seems that the “rural moment” has come, but now it is not a choice, it is a need (Pardo and Ladeiras, 2020).

As COVID-19 continues to reduce air travel and airline capacity, airports and the destination Andalusia lose income, companies, employees and the ability to act to develop stimulus actions that keep the regional economy alive. This uncertainty is quickly transmitted in the opinions of the business sector on the real situation and generate unsustainable economic instability. Andalusia has to diversify its productive sectors and reduce its high dependence on tourism. Future analyzes could provide a more complete picture of the impacts by accounting for the indirect effects to tourism, companies registered in Social Security, retail sales and GDP.

Finally, the managers of airport, airlines and DMOs have to adapt to new circumstances, be efficient, plan their resources according to demand. Airports facing insolvency are mainly regional airports, which serve and are integral to local communities. Many airlines have decided to close bases or relocate them, close and reduce routes, lay off employees to adjust costs to current demand. The potential ripple-effect upon local employment and economies Andalusian is clear. Financial support from the Spanish and Andalusian Government will be crucial to avoid a socio-economic debacle, especially in tourism sector. Not forgetting the EC, which has a very important role to play in restoring the European aviation industry fairly over the next four years.

5.1 Implications
This study has some practical implications, which could be implemented by academicians and practitioners.

The present study has wide relevance to the airlines industry, where application of new safety and hygiene techniques must be implemented to guarantee free-virus infection travel. For example, airports, airlines and governments must implement safety-hygiene air corridors to reduce the uncertainty of passengers and companies and establish a roadmap to restore the air and tourism sector. The literature review showed the difficult situation of many airlines before the pandemic (Air Berlin, Monarch Airline, Flybmi, Thomas Cook, etc.) and during the pandemic (Flybe, Virgin Australia, Avianca Peru and Brazil, Aeroméxico, etc.) many of them ceased operations and declared bankruptcy. However, the worst is yet to come because some airlines are availing themselves of Chapter 11 bankruptcy protection so as not to cease operations and to continue operating until everyone is vaccinated and the pandemic is controlled. For example, Maneenop and Kotcharin (2020) suggest that policymakers should deploy prompt and adequate policy interventions (e.g.
loans and loan guarantees) can help restore the aviation industry. From the theoretical implications point of view, academicians should investigate this viral period and its social and economic impact. The results of research on this topic will help us to anticipate potential threats that can destabilize and even paralyze the world economy. Following Akbar and Kisilowski (2020), the pandemic crisis illustrates starkly that scholarly interest in nonmarket strategies has been well-founded. It is clear that the broad array of governmental policies introduced in response to the pandemic have become the single most important factor determining the business future of even the most competitive airlines.

The effects of COVID-19 are gradually affecting airports; the drop in passengers reduce aeronautical and commercial revenues. The low passenger demand and uncertain future of the aviation industry require the recovery of airline operations at airports by managers. In the medium and long term, airports will likely consider planned investments and begin revision new business models in its infrastructures. Following Serrano and Kazda (2020) claim that airports can start collaborating with airport stakeholders in reinstating of service planning.

The pandemic has different impacts on the tourist industry and regions. Following Sigala (2020), the pandemic effects are not being uniform across all the actors of the same tourism stakeholders, due to the decrease of tourist arrivals at destinations. Similarly, the decline in tourist arrivals in most of the world’s tourist destinations is a reality, following UNTWO (2021), international tourist arrivals declined 74% in 2020 over the previous year due to widespread travel restrictions and a high drop in demand. The findings of this study advocate that the management of the pandemic effects in tourist destinations, airports and airlines be unified to make better decisions in the measures and controls of safety and hygiene of the services offered.

5.2 Limitations and future study

This study has contributed to expanding knowledge about the effects of the COVID-19 pandemic in the tourism and airport sector, from a global point of view and interdependent between airports-airlines-destination. However, this study has some limitations that need to be addressed. First, this research project only focused on Andalusia (Spain) a tourist destination where the main economic activity is tourism. The effects of the COVID-19 pandemic may not have the same effects in other regions that have diversified their productive activity and do not depend solely on tourism. Second, government agencies and airport managers are reluctant to give information on current statistics, possibly due to poor economic and health results. The methodology of this research does not collect the opinion of airport managers, airlines and DMOs, this information is a bias in the results of the research. It would be advisable in future research to develop surveys focused on airport managers, airlines and DMOs, to measure the effectiveness of actions against the effects of the pandemic and similar crises. Third and last, this paper analyzes the Bankruptcy Chapter 11 and counts the airlines that ceased operations, filed for insolvency or bankruptcy, filed for administration to avoid bankruptcy, etc., but airlines have not given information on the closure of air routes, reduction of flight frequencies and off-shoring (move operation base to a lower-cost location abroad). Future research should be focused on analyzing the effects of COVID-19 on tourism and the airline sector in different regions where the main economic activity is tourism. Furthermore, to analyze those airlines that are receiving financial aid from governments, to evaluate the operability and accessibility in tourist destinations.

Note

1. The term originates from the author Nassim Nicholas Taleb, N.N., 2007. The black swan: The impact of the highly improbable. Random house. He uses the term to describe extreme impact of rare and unpredictable outlier events and the human tendency to find simplistic explanations for these events, retrospectively – such as financial crises.
References


Further reading

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