

Regional Airports at the Crossroads (Again)
*Stakeholder Relationships, Business Challenges
and Future Uncertainties*

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Thesis submitted for the award of Doctor of Philosophy (PhD)

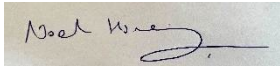
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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Doctor of Philosophy, is entirely my own work, and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work.

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Dedication

I dedicate this thesis to the memories of my beloved parents Mary and Jim, and my stepmother Deirdre. Their unwavering love and support continue to be a guiding light.

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Glossary of Terms and Acronyms

<i>Term/Acronym</i>	<i>Description</i>
ACI	Airports Council International
ACRP	Airport Cooperative Research Programme
ANCA	Airport Noise Competent Authority, Ireland
APD	Air Passenger Duty
ASM	Available Seat Miles
ATC	Air Traffic Control
BAA	British Airports Authority (until 1986); then BAA plc (following privatisation) until 2006.
B2B	Business to Business
B2C	Business to Consumer
BGA	Business and General Aviation
CAA	Civil Aviation Authority, United Kingdom
CAPA	Centre for Aviation
CAPEX	Capital Expenditure
CAR	Commissioner for Aviation Regulation, Ireland
CASM	Cost per Available Seat Mile
CBP	US Customs and Border Pre-Clearance Facility
COVID-19	Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV 2)
CSO	Central Statistics Office, Ireland
CTA	Common Travel Area Between United Kingdom and Republic of Ireland
DAA	daa plc, State owned operator of Dublin and Cork airports and ancillary activities
DCU	Dublin City University
DFT	Department for Transport, United Kingdom
DG-MOVE	EC Department for Mobility and Transport
DMO	Destination Management Organisation
DOT	Department of Transport, Republic of Ireland
EASA	European Union Aviation Safety Agency
EC	European Commission
EEA	European Economic Area

EFTA	European Free Trade Association
EU	European Union
EURAIR	<u>Suggested</u> Assessment Framework for State Aid Considerations
EPRS	European Parliamentary Research Service
FAA	Federal Aviation Administration, United States of America
FBO	Fixed-Base Operator
FSC	Full-Service Carrier Airline (sometimes referred to as network airline)
GA	General Aviation
GDP	Gross Domestic Product
GDS	Global Distribution System
IAA	Irish Aviation Authority
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
JAA	Joint Aviation Authorities
KPI	Key Performance Indicator
LCC	Low-Cost Carrier Airline
MRO	Maintenance, Repair and Overhaul
OAG	Official Airline Guide
O & D	Origin and Destination Passenger Traffic
OPEX	Operational Expenditure
PAX	Passenger(s)
PAXEX	Passenger Experience
PPP	Public Private Partnership
PSO	Public Service Obligation
RASM	Revenue per Available Seat Mile
ROI	Republic of Ireland
RPK	Revenue Passenger Kilometres
SAF	Sustainable Aviation Fuel
SARS	Severe Acute Respiratory Syndrome
SLA	Service Level Agreement
SMP	Significant Market Power
UK	United Kingdom
ULCC	Ultra Low-Cost Carrier Airline
VFR	Visiting Friends and Relatives Passenger Traffic
VUCA	Volatile, Uncertain, Complex and Ambiguous
VUCAIR	<u>Suggested</u> Framework for Airport Response to VUCA Environment
WHO	World Health Organisation

Abstract

Regional Airports at the Crossroads (Again)

Noel Hiney

The principal objective of this PhD thesis has been to assess aspects of the critical role and impact of European regional airports, through the lens of stakeholder theory, a concept that highlights the interconnectedness and potential for value creation between an organisation and its main stakeholders, for example airlines, passengers, suppliers and regulators. A study of Irish airport stakeholder activity identified airlines, government and business/tourism organisations as key stakeholders whose engagement significantly impacts the day-to-day management of regional airport activities. The COVID-19 pandemic and subsequent global events provided stakeholders with an opportunity to consider activities and interactions during crisis times. This research project pursued that opportunity, using the theoretical framework of stakeholder management and through the development of five academic papers, presented in this thesis. For this study, a comprehensive qualitative research methodology was employed, involving a manual in-depth analysis of semi-structured interviews with 64 Irish airport stakeholders and managers. An online survey of airport managers was also conducted, and pandemic-era airport passenger trends were assessed. This approach to the research ensured a nuanced and contextually rich understanding of airport stakeholder activities and engagement practices, and the impact of COVID-19 on these factors. While the nature and frequency of airport stakeholder engagement was found to vary, positive and effective personal relationships were deemed essential. Stakeholder tensions typically arose in daily operations and commercial negotiations. Following high levels of positive initial pandemic collaboration, stakeholder organisations then pivoted internally, focusing on their own particular challenges. Despite being regarded by interviewees as key local economic and social drivers and an essential part of Europe's transport infrastructure, regional airports, especially smaller ones, face financial challenges while seeking to maintain and enhance air connectivity. Vital airline relationships will become more dominant, fundamentally increasing the vulnerability of smaller airports to fractures in such relationships. Regional airports must manage their dependence on non-aeronautical revenue at a time when aeronautical revenue is more fragile than before. Stricter European State aid regulations after 2027 pose an additional challenge, potentially leading to an increased number of airport ownership changes or closures, from current low levels. This research makes a theoretical and practical contribution regarding airport stakeholder management activity when sudden adverse developments affect the aviation industry during increasingly volatile, uncertain, complex and ambiguous (VUCA) times. Informed by this research, a prototype of a strategic framework, Flightpath, an integrated airport business model canvas which includes a stakeholder management focus, is presented. Two further airport frameworks are also put forward in this thesis. The VUCAIR model is designed to support agile airport management in volatile times through identification by airports of the impact of a more volatile external environment, and their planned actions in response to the same. An assessment framework to support factors influencing the assessment of future airport State aid considerations (EURAIR) is also suggested for airports and policymakers. Collectively, these tools seek to assist airport leadership planning, decision-making, agility, and resilience in a complex and ever-changing aviation landscape. They represent a contribution to theory and practice and are expected to be of interest to aviation researchers, practitioners and policymakers.

Keywords: *Regional airports, resilience, airport performance, stakeholder management, airport business models*

1 Introduction

1.1 Introductory Remarks — Thesis Objective

The principal aim and objective of this PhD research is to review the role of regional airports by researching, assessing, and reporting on key factors affecting their performance through the lens of stakeholder management. The study focuses on three main regional airport themes: (1) business performance, (2) stakeholder activity, and (3) resilience during normal and crisis times. It aims to evaluate these themes under normal conditions, during the pandemic crisis, and during the subsequent volatile period. Five research papers are included in this thesis. Collectively and in conjunction with the introduction, discussion and conclusion chapters, these papers consider regional airport characteristics and challenges, along with several vital contemporary factors such as the COVID-19 pandemic and subsequent geopolitical uncertainty:

- Regional airport structures and models
- Airport governance and management activity
- Impact of COVID-19 on Irish airport stakeholder relationships
- Contemporary European regional airport challenges and State aid considerations
- Airport resilience in volatile and uncertain times

This research has also informed the development of three assessment frameworks, which are designed to support regional airport activity and management during challenging periods, providing valuable contemporary and strategic insights for researchers, airport managers, stakeholders, and policymakers.

1.2 Structure of Dissertation

This dissertation consists of several chapters. Chapter 1 describes the scope, objectives, research questions, and expected contributions. It provides a summary overview of airport characteristics, followed by an overview of the role and importance of regional airports and stakeholder management, both generally and in aviation. The chapter presents a brief synopsis of this dissertation's five papers, highlighting the central themes and issues explored in each one, together with their relationship to the research questions. Chapter 2 describes the various research methodologies deployed during this research, the rationale for their selection and how they were used. As required for a PhD by publication, the substantive chapters are presented as they were published/submitted. Chapter 2 provides research detail not included in the articles. Chapters 3 through 7 constitute the complete text of each academic paper. Five papers are presented in support of this dissertation, each of which considers topics and themes focusing on factors affecting regional

airports, including regional airport business performance, airport stakeholder management and activity and airport resilience during challenging times. Chapter 8 (Discussion) explores the impact of recent developments on airport performance, resilience and stakeholder activity and considers a strategic airport framework for such challenging times. Chapter 9 (Conclusions) summarises research findings by reference to the research questions (section 1.6). It highlights the dissertation's key research contributions, limitations, areas for further study and research conclusions. This chapter is followed by References (Chapter 10) and Appendices (Chapter 11).

1.3 Introduction

This chapter outlines details of the dissertation's scope, research areas, research questions, and the contents of the papers. It begins with a discussion of the theoretical framework and research approach adopted, together with a brief overview of the main characteristics of airports and identification of the research gap. The research questions are then outlined. The chapter continues with an introduction to the five research papers, describing each paper's main theme and relevance to the research questions, and linking their research contribution to the thesis. This section is followed by a review of key thesis themes, in particular factors affecting airport activity and performance, stakeholder theory and practice in aviation and airports, and the introduction of a theoretical research framework. The chapter concludes with a summary of the dissertation's research contribution, a topic further considered in the Conclusions chapter.

1.4 Theoretical Framework and Research Approach for this Thesis

Stakeholder management forms the theoretical backdrop for this research. This theory posits that by considering all stakeholders, organisations can create value through increased commitment, trust, innovation, inclusivity, and interconnectedness. These features are crucial in aviation and airports, where activities require significant stakeholder interaction with airlines, passengers, tourist organizations, and local businesses/communities. Each airport stakeholder has distinct characteristics affecting their relationship with the airport, highlighting the value of stakeholder management theory to industry practitioners.

Development of a stakeholder theory framework informed the choice of a primary research approach involving semi-structured interviews with airports and stakeholders. This approach, also used for an airport manager stakeholder survey, ensured that relevant research topics could be fully explored with interviewees in a consistent manner, within a defined theoretical framework.

This research includes output from one of the first uses of Airport Council International's (ACI) Data Intelligence Hub, to assess emerging trends in pre- and post-pandemic passenger performance. This helped test the integrity of the data and delivered useful insights, especially when considered alongside other airport factors such as the presence of government-subsidised air routes, coastal

proximity, cyclicity, and ownership type.

As stakeholder management is the theoretical lens through which these research matters are considered, an assessment framework encompassing stakeholder identification, classification, engagement and evaluation has been developed (Table 1.6) and adapted for airports. It initially consisted of four key stakeholder components, with a fifth, considering the effect of pandemic events on airport stakeholder activity, added subsequently. This framework informed the author's primary research activity, particularly a semi-structured interview process covering 64 interviewees and a subsequent airport manager stakeholder survey focused on (1) stakeholder management in aviation, (2) key airport performance factors and (3) COVID-19 pandemic observations covering these topics.

A comprehensive description of research activities and approaches, including selected methodologies, limitations, and mitigation, is presented in Chapter 2 (Research Methodology).

1.5 Context and Background — European Regional Airports

The air connectivity delivered by European regional airports — smaller airports located in regions or peripheral areas and operating point to point air routes, especially to larger population centres — makes an essential contribution to the effective functioning of local areas and communities in the European Union, particularly with respect to the achievement of key European Union economic and social objectives (European Commission, 2014). Regional airports, of which there are over 400, comprise 90% of the European air route network (ACI, 2017). Acknowledged as essential to their regions, they support/enable business and tourism activity while providing access to core regions for local communities, especially those living in peripheral locations and on islands. These airports' contribution to regional activity is widely acknowledged, if difficult to quantify. Many regional airports are, however, loss-making (ACI, 2023) and face intense competition from other airports and much-improved road and rail networks across mainland Europe. Even before the onset of the 2020 COVID-19 pandemic, they faced many financial challenges, exacerbated by high infrastructure costs relative to passenger numbers and contract deals to attract route business which heavily favoured airlines, for example multi-year periods where airport charges were not applied or were heavily discounted, giving rise to airport financial pressures arising out of the loss of such revenue. These airports, many of whom receive State aid on an ongoing basis, are likely to face increased pressure to improve their viability at a time when future investment requirements are likely to cover sustainability and digitalisation, together with ongoing capital activity to upgrade airport infrastructure from an efficiency, safety and security standpoint. Use of capital in this manner helps airports to enhance operational efficiency amid once again growing passenger volumes, improving the customer experience through the introduction of advanced technology such as 3D security systems and continuation of the transition from paper-based processes to digital ones, enhancing the passenger 'journey'.

The continued global uncertainty and volatility, which increased in intensity due to early 2020s geopolitical events, such as war and conflict in Ukraine and the Middle East, and their possible economic effect, gave rise to a further challenge for organisations, including airports: to achieve resilience during complex and uncertain times.

1.5.1 Research Gap: Regional Airport Stakeholder Management Activity

'Stakeholders are groups and individuals that have a valid interest in the activities and outcomes of a firm, and on whom the firm relies to achieve its objectives.' [Freeman, 1984]

Stakeholder management theory highlights the relationships and interdependencies between an organisation and its main stakeholders, for example airlines, passengers, suppliers and regulators. Recent aviation literature has covered the impact of specific stakeholder activity on airport operations, especially airline and tourism relationships. Other key airport stakeholders include local businesses, concessionaires and other organisations based at an airport, representative organisations, passengers and employees. While the overall impact of stakeholder management on day-to-day regional airport activities is relatively under-reported, an appreciation of its importance in aviation has been increasing in recent times. Previous literature has identified the importance of stakeholder management and airport relationships, including bilateral and triangular ones (Papatheodorou et al., 2019; Stephenson et al., 2018). Much has also been written about the economic impact of airports, including regional airports (Button et al., 2020; Gillen and Hinsch, 2001), while the vital link between regional airports and tourism activity has also been covered (Halpern, 2008; Kazda et al., 2017).

Gaps have remained, however, in the literature, particularly with respect to (a) the nature, structure and underlying dynamics of relationships between airports and stakeholders and (b) the assessment of airport stakeholder importance and contribution, with a more modest level of research available on these topics. These gaps are addressed by the author's research, which features an assessment of the impact of stakeholder engagement on airport activities during normal and challenging (pandemic) times.

Exploratory interview research conducted with airport managers, airlines and local representatives, undertaken by the author at the outset of their study, also highlighted the importance of relationships between regional airports and local stakeholders. In particular, airline managers and stakeholders close to an airport highlighted the importance of local stakeholder engagement and activity in the context of new route selection. The outbreak of the COVID-19 pandemic during the author's research period provided a unique research opportunity to further consider airport stakeholder activities before, during, and after a crisis event.

Importantly, while the primary focus of this research is on regional airports, the author's study

considers certain airport matters, such as the impact of the pandemic, in a more holistic manner, encompassing other types and sizes of airports to ensure a comprehensive understanding of these topics in relation to the entire aviation industry. This approach allows for a more nuanced exploration of the challenges and opportunities that exist across the spectrum of airport sizes and types, highlighting the critical role of regional airports within the broader aviation network. Throughout this document, the terms ‘regional airport’ and ‘smaller airport’ are used interchangeably to refer to airports which primarily facilitate air traffic services from regional locations, typically processing less than five million passengers per annum.

1.6 Research Questions

This focus of this research has been identified as a review of regional airport characteristics and engagement with stakeholders, and an exploration of whether and how stakeholder engagement has helped regional airports address the business challenges they face, particularly before, during, and after a crisis event. In addition to considering the role of regional airports and the impact of stakeholder engagement, this research has also investigated the impact of operational and business activity/resilience levels, sometimes enhanced by effective relationships, on airport activity and performance. The research questions below seek to identify airport stakeholder activity and impact, against the backdrop of their contribution to local regions, their performance, operating aid and the impact of the pandemic and challenging post-pandemic times.

The topics covered by these research questions are considered across the Introduction (Chapter 1), paper (Chapters 3 to 7), Discussion (Chapter 8) and Conclusions (Chapter 9) sections of this dissertation.

Research Question 1 (RQ1): What are the key characteristics that define regional airports in terms of their definition, performance and impact?

Critical features of regional airports are reviewed, including their local impact and contribution and how they are defined/classified.

Research Question 2 (RQ2): How can airport stakeholders be identified and categorised by degrees of importance and levels of collaboration and their impact on the airport business?

Research Question 3 (RQ3): How can stakeholder management activities affect overall airport performance during external shock events, such as the COVID-19 pandemic?

The nature of interactions between airports and stakeholders is considered, including key features, categorisation and how these relationships are assessed in terms of overall

effectiveness. Airport events during the initial and post-COVID-19 pandemic periods are considered primarily through stakeholder management interviews. This question recognises the significant impact of the pandemic on passenger numbers, the rapid recovery from the same, and the likely impact of current and future challenges.

Research Question 4 (RQ4): What is the future role of State aid concerning future European regional airport activity?

Future factors affecting the provision of airport State aid are explored, including its impact on the viability and profitability of these airports at a time when they will increasingly be required to invest in sustainability and digitalisation initiatives to meet decarbonisation targets and achieve greater operational efficiency.

Research Question 5 (RQ5): How might effective planning improve airport activity, performance and business resilience during increasingly uncertain and volatile times?

Factors affecting regional airport performance and resilience in rapidly changing times are considered, alongside the potential contribution of strategic management processes to these factors

1.7 Introduction to Research Papers

The Research Questions described above are addressed by the Discussion and Conclusion chapters (8 and 9) and across the five presented papers. These papers, comprising Chapters 3, 4, 5, 6 and 7, are introduced below, with publication and author details provided at the beginning of each chapter.

1.7.1 Paper 1: Regional Airport Business Models and Case Study

This paper considers airport characteristics, including regional airports' role and local impact, their economic contribution and stakeholder relationships, and factors affecting airport ownership and structure. An airport case study and peer airport comparison are used to amplify some of the features of, and challenges facing, regional airports and to help airport operators and their stakeholders identify common aspects of such airports' role in regional development.

Relevant research themes covered in this paper are most appropriate to Research Question 1, for example regional airport features, performance and positioning, typical contemporary challenges and opportunities affecting regional airports.

Contribution Areas include the identification of contemporary regional airport characteristics; the impact of airport business model and activity diversification on business performance; and

identification of (and subsequent options to address) limitations associated with use of specific strategic frameworks, i.e., lack of holistic organisational perspective.

1.7.2 Paper 2: UK and Ireland Key Airport Characteristics and Governance/Relationships

Focusing on the activities of UK and Irish airports from a governance, regulation, ownership and relationship perspective, this paper also assesses contemporary topics affecting these factors and relationships, such as the impact of the pandemic and Brexit.

Relevant research themes covered in this paper include assessments of airport market structure, performance, ownership and competition in both jurisdictions (Question 1). For both jurisdictions, features of key airport stakeholder relationships, including key policymakers, regulators and, in the case of the Republic of Ireland, State owners, are described (Question 2).

The main contribution areas in this paper comprise a comprehensive outline of airport characteristics in two adjoining jurisdictions and an in-depth account of the features and nature of major airport stakeholder relationships, being regulators, policymakers and owners.

1.7.3 Paper 3: Irish Airport Stakeholder Relationships and COVID-19

This paper reviews the management of airport stakeholder relationships and activities from the perspective of airport managers and their stakeholders. The nature and frequency of engagement are assessed, as is a measurement of the effectiveness of such relationships. The impact of the COVID-19 pandemic on airports, their stakeholders, collaboration and other stakeholder activities is also examined.

Research themes covered focus on the identification of stakeholder activities (relationship identification, categorisation, management and assessment) in Irish airports (Question 2). An assessment of these factors in emergency times, i.e. during and after the onset of the COVID-19 pandemic, is also considered (Question 3). Airport performance during these periods and the role of State aid are also explored (Questions 1 and 4).

From a contribution perspective, this paper contributes to the literature concerning the application of stakeholder management theory to aviation and airports during normal and changing/challenging times. This paper's contribution is enhanced through consideration of these factors during the COVID-19 pandemic crisis. The relevance of this contribution is amplified by the relatively modest level of contemporary research explicitly focusing on stakeholder theory in aviation.

1.7.4 Paper 4: European Regional Airports: Facing a Gathering Storm? State Aid Focus

This paper considers State aid, a critical influence on regional airport performance, particularly during a volatile and uncertain period for aviation and airports.

In the context of post pandemic recovery offset by increased uncertainty, this paper's *key research theme* considers the potential impact of a major contemporary factor affecting regional airport business models, performance, and viability, i.e., operating (financial) aid and other support provided to these airports by their respective states, and approved by the European Union (Question 3).

From a contribution perspective, this paper adds to the literature on State aid to airports. Based on the European Union's likely introduction of a more robust future State aid framework when current arrangements expire in 2027, and informed by interview and survey feedback confirming the importance of such aid to airport viability, this paper's further research contribution is the development of a prototype framework (EURAIR), designed to help airports and policy makers consider the positive and negative factors associated with specific aid considerations.

1.7.5 Paper 5: Airport Resilience in Challenging Times

Key research themes associated with this paper include consideration of factors contributing to the multitude of challenges faced by airports during volatile, uncertain, complex and ambiguous (VUCA) times (Questions 4 and 3). It considers how airports might best anticipate and respond to such an environment. Interview feedback (Paper 3) pointed to high levels of future uncertainty, while narrative survey feedback and more recent literature/reportage pointed towards increasing levels of uncertainty and volatility. In response to such challenges, this research considers what tools might help airports build greater resilience for VUCA times, for example enhanced processes, efficiency, and more effective airport stakeholder relationships (Question 3).

This paper's main contribution area is the development of an action-oriented framework prototype (VUCAIR), designed to help airports anticipate and respond to the impact of this environment on operational and strategic airport activities. A further contribution of this paper is the early assessment of post-pandemic airport passenger trends, including identification of factors affecting recovery and performance, e.g., cyclicity, geography, Public Service Obligation (PSO) air routes and ownership.

The research contribution of these papers is further considered in Section 1.12 and Section 9.5 (Chapter 9).

1.8 Chapters 8 and 9

Chapter 8 (Discussion) considers airport and stakeholder challenges arising out of the initial impact of the COVID-19 pandemic, also synthesising findings included in the papers. This chapter also introduces and expands upon components of a proposed integrated airport business model canvas framework, intended to support airport management during challenging times. Finally, it reflects on the author's experience of conducting qualitative research under pandemic conditions. Chapter 9 (Conclusions) discusses key research findings in the context of the posed research questions and the broader field of study covered. It summarises main research contributions, identifies limitations and

proposes directions for future inquiry, concluding with final remarks.

References and Appendices follow this final chapter. It should be noted that as all papers are replicated in their original form, in line with university requirements, a separate list of references is included with each paper. A combined list of references is provided in Section 10.

1.9 The Role of Airports

This section of the thesis presents an overview of various airport business models, followed by an analysis of the significance and roles of regional airports.

Table 1.1 summarises the perspectives of key stakeholders on the significance of airports, shows how different key stakeholders regard them, and highlights the multifaceted roles airports play. These insights offer real-world stakeholder viewpoints that underscore the importance of airports within the broader context of transportation and regional development, and this research. Further detail on these stakeholders and the nature of their relationships with airports is provided later in this chapter and in Papers 1, 2 and 3.

Table 1.1 On the Importance of Airports — Some Stakeholder Views

Airport Stakeholder	<i>Expressed View</i>
A municipal view	<i>‘The airport runway is the most important main street in any town’</i> Norman Crabtree (1926-2006), Former Aviation Director for the State of Ohio
A regulator’s view	<i>‘Airports are the country’s gateways to opportunity. The Bipartisan Infrastructure Law is a critical investment in our infrastructure and, just as important, our communities.’</i> FAA Deputy Administrator Brad Mims (2023)
An airline view	<i>‘The “next area of competition in air travel” is airports, with them being a big part of how passengers rate the (airline) experience’</i> Paul Jacobson, Delta Airlines Chief Financial Officer, CAPA Airline Leader (2019) <i>‘Airports are an essential part of the aviation supply chain.... critical to the flying experience’</i> IATA — International Air Transport Association (2022)
A tourism view	<i>‘Airport access is vital for any tourism economy to thrive, and for an island nation such as Ireland, this is critically so.’</i> Eoghan O'Mara-Walsh, Managing Director, Irish Tourism Industry Confederation (2024)
A media view	<i>‘Just like every self-respecting country has postage stamps, a currency and an army, every self-respecting city wants its own airport.’</i> Eccles and Hernandez-Morales, Politico (2020)
An airport (over)view	<i>‘Regional airports facilitate the flow of people, goods and services... promoting social, cultural, and economic exchange.’</i> ACI [Airports Council International] (2023)

These stakeholder perspectives describe the importance of airports as perceived by those who are intimately involved in their operation and strategic direction, and the comments help to set the scene for the exploration of airport activity and related stakeholder management undertaken by this thesis. This chapter will explore the activities and business models that underpin these varied viewpoints.

1.9.1 The Role of Airports: Access and Connectivity

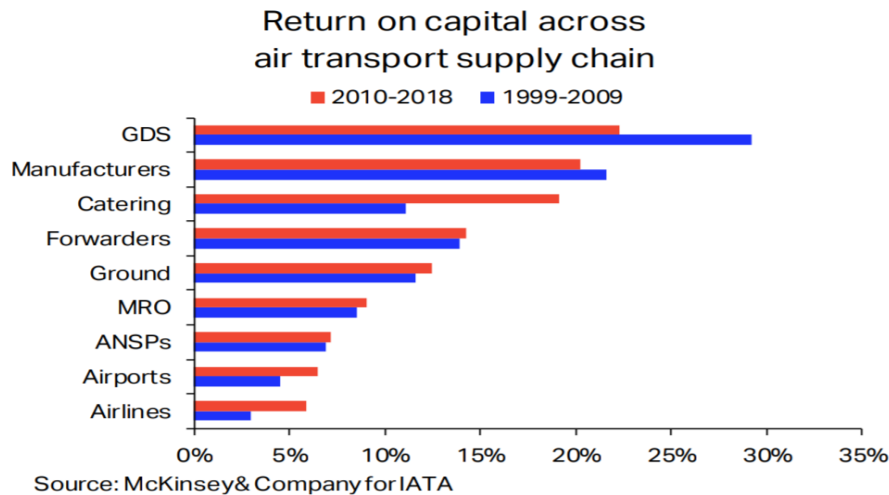
Nationally and internationally, airports provide essential connectivity to facilitate commerce, tourism, leisure and access to essential services. Locally, they contribute to the generation of significant economic output, enabling business and tourism activity and tending to be amongst the largest employment centres within their region. Because of the size of the aviation industry and the impact of the sector on a nation and its economy, most nations (and the E.U.) have a dedicated aviation policy with core objectives, including connectivity and support for growth creation. Airports are a vital part of this with, for example, provision for continued state ownership of large airports in Ireland (National Aviation Policy, 2015) and a State aid framework at the E.U. level providing for approval of national government support to airports processing less than 3 million passengers per annum (European Union, 2014). Airports are also subject to significant regulatory oversight covering safety, security, operational and, in some cases, economic activity.

1.9.2 Airports and the Aviation Value Chain

When exploring the characteristics of airports, it is beneficial to briefly assess the position of airports within the aviation value chain. Such an assessment can highlight characteristics such as perceived risk and return associated with the airport segment of the value chain. Airports have traditionally been regarded as lower-risk enterprises delivering steady returns, with seven of the top 10 pension funds having connections with the airport sector (CAPA, 2023). Many airport companies use this stable risk profile to raise finance for capital investment. In recent years, some cooperation between airports and airlines, e.g., dedicated terminals in London Heathrow (British Airways) and Munich (Lufthansa) airports, have emerged. Measures to ensure the protection of competition are key in these circumstances, e.g., airport access for other airlines without any disadvantage due to these arrangements.

In its recent study on such returns along the aviation value chain from 2010–2018 (Figure 1-1), the International Air Transport Association reported that airlines and airports delivered returns of between 6% and 6.5% (IATA, 2020), higher than for the period 1999–2009, but a lower level than other value chain participants such as ground handlers, aircraft manufacturers and global distribution systems where returns of up to 25% were reported.

Figure 1-1 Return on Capital Across the Air Transport Supply Chain



[Source: IATA, 2020. Reproduced with kind permission of International Air Transport Association, 2020. New study on airline investor returns. All Rights Reserved. Available at <https://www.iata.org/en/publications/economics/>]

The significant levels and long-term nature of capital investment undertaken by airports, including terminal and runway infrastructure, influences the modest returns airports achieve on capital, albeit with a low-risk profile, as highlighted above. Some structural elements of the aviation value chain may impact the level of capital returns elsewhere along it (IATA, 2006). For example, a duopoly of aircraft manufacturers, and its impact on competition and supply, may give rise to higher-than-average returns on capital. The intensity of capital requirements is low for Global Distribution System (GDS) organisations, which provide much of the transaction backbone for ticketing and other travel-related services (Sigala, 2005; Wang, 2010). The difference in returns achieved by airlines and GDS providers over the two periods highlighted (1999–2009 and 2010–2018) likely reflects the increased propensity of consumers to book passenger travel directly with their airline during the second period. For airports, increased returns from non-aeronautical activity are likely to have improved capital returns. The ranking of aviation returns along the value chain between the two periods remained the same, however, with airports still near the bottom (just above airlines) despite the latter's improved profitability. IATA suggested that the results showed a need for more intense competition in other sections of the value chain, without being specific about which parts (IATA, 2020). The enduring impact of current uncertainties on airport and aviation returns has yet to be determined.

1.9.3 Airport Classifications

While there is no standard classification of airport organisations, Airports Council International (ACI) Europe specifically defines regional airports as those which primarily serve short- and medium-range routes on a point-to-point basis (ACI, 2023). In its airport State aid framework

document, the European Commission defines a regional airport as one processing up to three million passengers per annum (European Commission 2014). In the United States, the Federal Aviation Administration (FAA) uses definitions encompassing commercial service, reliever and general aviation categories, with commercial service classifications based on enplanement volumes (FAA, 2023). As part of this research, the author suggests the consideration of an airport classification primarily based on airport route activity for consideration (Table 1.2). The regional airport types listed are considered most relevant to this research.

Table 1.2 Airport Classification Types as Suggested by Airport Activity

<i>Airport Type(s)</i>	<i>Main Route Activity</i>	<i>Some Examples</i>
Major International Hub	Major hub activity, multi-continent, high passenger numbers. All categories of travel.	<i>London Heathrow, Amsterdam Schiphol, Paris Charles de Gaulle, Frankfurt am Main, Istanbul Ataturk, Dubai International</i>
International, Mini-Hub	Some hub activity (continent focus), significant short to medium haul traffic. All categories of travel.	<i>Dublin, Madrid Barajas, Helsinki-Vantaa, Riga</i>
International, point-to-point	International routes, significant long-haul activity. All categories of travel.	<i>London Gatwick, Manchester, Copenhagen, Melbourne, Rome</i>
Large Regional/City	Mainly international routes: domestic volumes influenced by the home country's size. Holiday/leisure locations. Additional Aviation activities.	<i>Leeds/Bradford, Bordeaux, Aberdeen, Malaga-Costa del Sol</i>
Regional, Mid-Sized	Mostly international and domestic routes. Holiday/leisure locations.	<i>Shannon, Southampton, Cork</i>
Regional, Local	Primarily domestic or adjacent country routes. Some holiday/leisure locations.	<i>Donegal, Cornwall Newquay, City of Derry</i>

[Source: Developed by Author]

1.9.4 Evolution of Airport Activity and Structure

Airports have evolved over time. Key determinants covered include the size, operating capability and passenger capacity of passenger aircraft using an airport. Early paved runways had a triangular configuration, providing operating flexibility, especially during inclement and windy weather. Airports increased in size, with runways and terminal buildings becoming longer and larger, during the post-World War 2 years, to accommodate increasingly larger aircraft with higher passenger capacity. Operating capability was enhanced through improved navigation and landing systems. and to accommodate ever-increasing passenger volumes. The provision of ancillary services such as food and beverage services, retail stores, car parking and public transport links further affected the size and shape of airports and the land surrounding them.

Several factors contributed to a significant growth in the aviation and airport markets since the 1970s (Kazda and Caves, 2015). These include sustained economic and tourism growth, deregulation of air transport markets in the United States (1978) and Europe (1997), the ending of the Cold War and the subsequent conversion to commercial use of many European military airports. Such developments were accompanied by the emergence, then rapid growth, of a relatively new airline type, the low-cost carrier (LCC). These trends significantly improved passenger choice and gave rise to increased (albeit still modest) levels of private investment in airport entities. Significant challenges faced by airports during more recent periods have included concerns about their environmental footprint and necessary security steps to prevent terrorist activity, which have affected the airport experience.

One of the most significant factors affecting airports, however, is their economic viability. Small airports are financially challenged, with a minimum throughput of c. 1.2 million passengers per annum suggested as a break-even point for such airports in one study (CAPA, 2022), while ACI (2019) estimated that 61% of airports processing less than five million passengers per annum were loss-making (rising to 71% of airports with less than one million passengers per annum).

Nonetheless, air transport volumes have grown significantly, with pre-pandemic Airbus and Boeing market forecasts envisaging a doubling in the size of aircraft fleets between 2019 and 2038 (Airbus, 2019; Boeing, 2019). Capacity challenges in larger airports, and the market's overall growth, also contributed to the increased growth and development of regional airports (including ex-military facilities) as airlines look to regional airports for additional growth.

While airport infrastructure development is long-term and fixed, airline asset deployment can be short-term and more agile. Table 1.3, reproduced by Taneja (2017), highlights the evolution of airport business models, from organisations providing a basic passenger flight service during the 1950s, to the current environment where every aspect of the passenger journey is designed to deliver an efficient but attractive customer experience. This encourages consumption of services by travellers (and sometimes by non-travelling partners) including car parking, fast-track security processing, food

and beverage and retail outlets. The reduction in airport aeronautical revenue arising from keenly negotiated airline deals has also caused airports to focus more on non-aeronautical revenue.

Table 1.3 Evolution of Airport Business Models

<i>Period</i>	<i>1950–70s</i>	<i>1980–2010s</i>	<i>2010+</i>
<i>Primary Model</i>	Take-offs and landings	Network hub, regional origin and destination	Air city, destination anchor, regional/national multi-modal hub, low-cost terminal
<i>Business Goals</i>	Operational efficiency	Operational efficiency, optimal passenger throughput	Customer experience, operational efficiency. Increased non-aeronautical revenue
<i>Primary Customer</i>	Airline	Airline and passenger	Travellers, together with non-travelling partners, retailers and other value chain participants
<i>Aviation Revenue (e.g. landing fees) %</i>	95% aeronautical	70–90% aeronautical	30–50% aeronautical
<i>Ownership</i>	Local government or State ownership	Local or regional public-private partnership	Global public and private businesses (often multinational)
<i>Customer Ambience</i>	Functional, basic customer service	Functional, crowded, limited but growing retail (mostly duty-free)	Experience-oriented, broad and luxury retail, brand-name dining, comprehensive customer service

[Source: Sabre (Michael Gerra) Adapted from Unpublished Report ‘Airports Reimagined,’ 2015; reproduced in ‘Airline Industry — Poised for Disruptive Innovation’ (Nawal Taneja) 2017 (p100)]

According to ACI (2016), over two-thirds of European airports were either wholly or partially publicly owned. The trend towards private ownership since publication of this report has been modest, and there were no indications of any meaningful change to this ratio during the research period of this thesis. Graham (2011) identified specific categories of airport type (whether privately or publicly owned): stand-alone or part of an airport group, or state-owned but 'corporatised'. Key objectives concerning private airport ownership included efficiency gains, investment, and access to skills/technology. Service improvement and reduced state burden/influence were also highlighted (Graham, 2020; Adler et al., 2013). These objectives can and should equally apply to all airports, of

course. With respect to a 'preferred' structure, ACI (2018) did not 'prescribe any specific type of ownership model', while IATA (2023) maintained that there is no 'one size fits all' ownership solution for airports.

1.10 European Regional Airports — Key Characteristics, Performance and Impact

1.10.1 The Importance of European Regional Airports

This section of the thesis focuses on European regional airports, which are a core component of this research, whose principal objective is to assess aspects of the critical role and impact of these airports from an activity and stakeholder perspective.

The liberalisation of European air services in 1997 (Button, 2001; Gudmundsson, 2011) coincided with an increase in airport supply, influenced by the end of the Cold War and the subsequent transition of military airfields to commercial use (Behnen, 2004). These developments increased airport and airline activity and competition, increasing travel and regional airport demand. Such airports were cheaper for LCCs, with cost benefits translating into lower passenger fares, thereby outweighing (initially, at least) the more remote location of these airports (Graham, 1998). This factor led to more competition and a massive increase in air travel, contributing significantly to economic activity and European integration.

The contribution of regional airports to European air connectivity, and to the economic and social fabric of the communities they serve, has been recognised for many years (European Commission, 2014). In most cases, they provide access to core regions for local communities. Such airports, regarded as essential to local business and tourism activity, accounted for over 50% of total air connectivity and approximately 90% of the European air network, comprising 14,600 routes and 724 destinations, in 2017 (ACI, 2017). While most airports across Europe are entirely or mainly publicly owned, the United Kingdom is a significant outlier, having more privately owned airports than any other country (Budd and Ison, 2021) as a result of a broader policy of privatisation of publicly owned organisations which commenced in the 1980s.

Their economic contribution to regional development makes local communities dependent on their airport's operation, with Halpern and Graham (2015) also noting the public utility role of airports. While difficult to calculate, economic impact reports suggest that airports make a substantial direct, indirect, induced and catalytic economic contribution to the markets which they serve (Oireachtas, 2018).

Regional airports, however, face intense competition from other airports and from much-improved road and rail networks. They face financial challenges resulting from high fixed costs (relative to income) due to major infrastructure capital outlays, while aeronautical income is a challenge, in

comparison to larger airports. Achieving economies of scale is a challenge for these airports, with outsource partners such as ground handlers also identified as more likely to achieve scale in larger rather than smaller airports (ACI, 2017). Many regional airports receive State aid covering economic and non-economic activities. In addition, some of these airports benefit from airline-subsidised Public Service Obligation (PSO) air routes.

Regional airport profitability is challenged by their high-cost structure, while airport revenues come under increasing pressure from keenly contested airline deals, where airport profit margins can be fragile. Their relatively high capital costs, challenges to achieving scale, and evolving airline models have all influenced the business performance of regional airports. Even before the onset of the COVID-19 pandemic, regional airports faced several serious adverse conditions, particularly challenging trading conditions and increased airline competition. These airports will likely increasingly face pressures to either address viability issues, possibly affecting their ownership or continued operations. A European Court of Auditors report found that nearly half of all European airports (48%) were loss-making and that European Union-funded airport infrastructures offered poor value for money (ECA, 2014; Report 21). A Polish study reported net profitability for just four of the largest airports in that market (Huderek-Glapska and Nowak, 2016).

Airport competition for airline business is intense, especially with respect to low-cost carrier (LCC) operations. Indeed, many LCCs have increasingly shifted some business to major airports. Halpern and Graham (2017) identified such challenges for smaller airports due to the increasing use, by United Kingdom airlines, of larger airports with higher local demand over smaller regional airports. Also noting this LCC shift to larger airports as a significant issue when smaller airports are at risk, Dobruszkes (2017) identified an optimum but difficult-to-achieve mix of traffic and activity, i.e., low-cost and full-service carriers; cargo and maintenance operations).

The downward pressure on regional airport revenues from reduced airline charges arising from increased airport competition contributed to an increasing focus on non-aeronautical revenue streams amongst such airports (Puls and Lentz, 2018; Yokomi et al., 2017). The dangers of a regional airport focus on low-cost traffic in terms of impact on the bottom line were highlighted by Cervinka (2017, 2019), who suggested that the absence of State subsidies could result in an airport making a financial loss, raising questions about their viability and whether it is sustainable that they could continue to be permitted to lose money in the long-term. While Grimme et al. (2018) highlighted alternative options to ameliorate the impact of the loss of regional airport subsidies on traffic and performance, such as Public Service Obligation arrangements (PSOs), such support would still ultimately come from taxpayers. Residual fiscal effects arising from the pandemic undoubtedly exacerbated these airport challenges.

In its 2021 assessment of regional airport challenges, the European Parliament summarised several

vital issues, including increasing single-airline dependency and its impact on airport charges, the struggle for profitability and the ongoing importance of State aid (EPRS, 2021). For example, under its national development plan (Project Ireland, 2040), the Irish State had set aside over €70m for regional airports (excluding state airports) under its Regional Airports Programme, up to 2027 (Department of Transport, 2021). Regional airports still need to be subsidised, given their role in providing access to remote locations within countries and at the periphery of the European Union (Kazda et al., 2017). One benefit of airport systems (regional or national), highlighted by Pagliari (2005), was the ability of profitable airports in such groups to cross subsidise smaller and less profitable entities. Beifert (2015), however, noted European Union requirements that State aid should be granted only to viable organisations. Aviation policy and industry liberalisation were considered to conflict with environmental objectives (Graham and Guyer, 1999; Griggs and Howart, 2016). Before the pandemic, Gossling (2019) had also identified the potential impact of environmental issues on future air travel volumes. These factors were important before 2020, and they became even more so in a post-pandemic world when a tightening of State funds was likely to put a greater focus on State aid. Given their lower passenger volumes, smaller airports were also considered more vulnerable to external shocks than larger ones, for example, the significant adverse impact on passenger volumes in Southend and Belfast City airports due to FlyBe's collapse in early 2020, and the impact of 'black swan' events such as the Boeing 737 Max grounding 12 months earlier, which led to the overnight cancellation of three transatlantic routes in Shannon Airport at an estimated cost of €58m to the region that year (Deegan, 2019).

1.10.2 Key Financial Drivers of Airport Activity

Understanding the dynamics of an airport balance sheet and effectively managing essential costs and revenues are fundamental to business performance. Tables 1.4 and 1.5 describe typical airport cost and revenue components.

Table 1.4 Typical Airport Cost Components

<u>Airport Costs — Key Drivers</u>	<u>Breakdown — Typical Cost Lines</u>
<ul style="list-style-type: none">● Capital Costs (Depreciation, Interest)● Personnel Expenses● Contracted Services● Utilities● General and Administration Expenses● Maintenance● Lease/rental costs● Other	<ul style="list-style-type: none">● Capital (financing) costs account for a significant proportion of overall costs (38%). This reflects the capital-intensive nature of airports (infrastructure costs)● More than half of operating expenses (62%) are accounted for by personnel costs and contracted / outsourced services.● Maintenance, lease rental, administration and environmental expenses account for 25% of total airport costs.● Measures will vary by airport type and size.

[Source: State of Airport Economics, ACI and ICAO (2016), Adapted by Author]

The costs associated with capital investments can be proportionally more significant for smaller airports relative to larger airports. Other critical expenses include staff costs and utilities/maintenance.

Two categories of income account for the majority of airport revenue. Aeronautical income is a key financial driver, comprising income from core airport activities, e.g., landing fees, aircraft charges and passenger charges. A significant portion of income is likely dependent on activity generated by one or two key airline relationships. A reduction in income from this source could arise from reduced-cost financial deals to attract airline business. This trend is likely to result in an increased airport focus on non-aeronautical income, such revenue coming from activities such as retailing (including duty-free shopping), hospitality (food and beverage), car parking, airport property leasing and airport advertising.

Table 1.5 Typical Airport Revenue Components

<u>Aeronautical Revenue</u>	<u>Non-Aeronautical Revenue</u>
<ul style="list-style-type: none">● Landing Fees● Aircraft Charges (e.g., Parking, Terminal and Hangar Rental)● Handling and Fuel Charges● Freight Charges● Apron Services● Passenger Charges	<ul style="list-style-type: none">● Car Parking● Retail Income (Directly Operated Activities, e.g., Duty-Free, Food and Beverage)● Income from Airport Concessionaires (Rent or Lease Income from tenants)● Hotels● Real Estate● Digital and other direct (airport-operated) sales● Recharges to tenants (e.g., utilities)

[Source: ACI 2013 via Profitability and Financial Performance Indicators in U.S. Airports — A Preliminary Investigation (Shaban 2018), Adapted by Author]

Other sources of airport revenue (non-aviation income) include government funding and grants, interest earned on surplus cash or investments, airport development fees, and income from activities such as event and conference hosting. Cost reduction activity is another crucial airport lever, with staff-related expenses a likely key target. The risks associated with these actions, however, highlight the potential vulnerability of airports to airline ‘sweetheart’ deals associated with new route activity. Such deals are likely to reduce aeronautical income by offering airlines a significant discount on published aeronautical charges for a predetermined period of time. While airports will seek to increase non-aeronautical revenue to offset this reduction, they are also likely to review costs. Such actions might adversely affect customer service and/or impact the perceived attractiveness of the

airport as an employer if there is any diminution to staff terms and conditions relative to other local employers.

A further income source for smaller airports, alluded to earlier, is State aid and route support. Many airports regard such income almost as a third revenue source, an approach not without risk, given that such aid support schemes will likely come under much greater scrutiny. Furthermore, issues associated with these topics can become amplified during challenging times.

1.10.3 Aeronautical and Non-Aeronautical Revenue: Recent Trends

Although most airport income continues to be derived from aeronautical activity, income from non-aeronautical activity steadily increased over the years prior to the pandemic as airports focused on retailing, hospitality and providing other ancillary services to passengers. This trend was common across much of the airport sector. Commenting on the results of ACI's 2016 airport survey, the Centre for Aviation noted that there was no significant differentiation regarding the impact of airport ownership structures (wholly/partly public/private) or different regulatory models (single/dual/hybrid till) on the generation of non-aeronautical airport revenue (CAPA, 2019). Given their size, regional airports do not have the capacity for significant non-aeronautical activities as seen in larger airports (ACI, 2023).

In the years before the COVID-19 pandemic, the abovementioned trends meant that certain airports were achieving over 40% of their total revenue (and some above 50%) from non-aeronautical activities. For smaller airports, the negative effect of strong airline negotiating positions (due to their more easily moveable aircraft assets), especially with LCCs, adversely affected aeronautical revenue volumes, increases the focus of these airports on improving non-aeronautical income from passengers using its services. Areas of focus included:

1. Customer experience in the airport (in particular airside) — increased spend per passenger targets: retailing, food and beverage.
2. Increasing use of passenger satisfaction and advocacy measures to identify and address gaps.
3. Much more frequent digital engagement (customer targeting via apps, location-based services at the airport, i.e., Bluetooth beacons).

There is a necessary trade-off between an airport giving a no-cost or low-cost charges deal to airlines to get more passengers, on the one hand, and the increased income brought in by these passengers, on the other. Given the focus on customer experience, it is hoped that the passengers will spend more money per person at the airport (on parking, food and hospitality, retail) but this balance needs to be carefully managed by regional airports. There are, however, cost and other limitations to how much additional activity regional airports can undertake in this area. Their increased reliance on aeronautical revenues makes regional airports more vulnerable to the impact of keenly negotiated

airline deals, as highlighted previously. Furthermore, a high ratio of non-aeronautical revenue, if it arises due to low airport charges (and attendant significantly reduced aeronautical income) heightens the risk to airport finances if an airline significantly reduces activity at that location.

Regional airports are essential to the regions they serve and have faced high levels of competition and challenging financial circumstances, which have been further 'stressed' by some of the effects of the pandemic on these organisations. With the aviation industry continuing to grow in a more rapidly changing environment, the interdependence of airports vis-à-vis their stakeholders has become increasingly important, if challenging, to articulate and classify. Effective stakeholder engagement and management is essential for airports navigating ever changing and more turbulent times and achieving resilience in an uncertain and ever-changing industry. It is appropriate to now consider the key features of stakeholder theory and its relevance to regional airports.

1.11 Stakeholder Theory

1.11.1 Definition and Context

This section introduces stakeholder management, the major theoretical framework underpinning this research.

Stakeholder Theory considers the relationship that a range of entities have with an organisation, for example, customers, employees, suppliers, regulators, local communities and competitors. It helps organisations understand how these entities transact and create value for one another. Freeman (1984) highlighted the strongly shareholder-biased external engagement practices of many organisations, with less attention paid by them to other vital organisational parties' engagements. Stakeholder Theory contends that by considering all stakeholders, organisations can help create value, not least of all through increased levels of commitment, trust, innovation, inclusivity and interconnectedness (Freeman et al., 2010). Freeman and Harrison have been involved in the development of stakeholder theory for many years and continue to contribute new thinking in the field, for example the development of concept, strategies and stakeholder tools (Freeman et al., 2018). Deployment of stakeholder theory in other industries and sectors has also been noted, for example the use of stakeholder management by organisations managing their Corporate Social Responsibility activities and obligations (Lim and Greenwood, 2017).

Stakeholder management is sometimes described as 'making friends before you need them'. A healthy company always stays mindful of external and internal parties who participate in its activity and success. A fundamental tenet of stakeholder theory is that a company will be more successful if it engages with and satisfies all its stakeholders, not just the shareholders who benefit from increases in the organisation's share price. The first descriptions of the terms 'stakeholder' and 'stakeholder map' were recorded in Scandinavia, where three fundamental beliefs were proposed: 'jointness of

interests, cooperative strategic posture and the rejection of a narrow economic view of the firm' (Strand and Freeman, 2013). These tenets have become increasingly relevant in today's interconnected world. Stakeholder engagement also has significant internal organisational applications. Although focused on a specific organisational activity, Corporate Social Responsibility, Lim and Greenwood (2017) found that an engagement-focused strategy was more effective than a responsiveness approach when dealing with employee factors.

There is no one-size-fits-all approach to stakeholder activity (Thomas and Lever, 2003), and Malvey et al. (2002) highlight the lack of measurement/assessment criteria for stakeholder engagement, suggesting that, in the absence of such measures, stakeholder activity may appear unproductive or unsuccessful, even if this is not the case. Kivits (2013) categorises stakeholders on multiple levels: salience analysis (analysis of the degree to which stakeholders can influence decisions), frame of reference analysis and network analysis. He argues that engagement policies and strategies, developed according to this analysis, can identify the relative importance of stakeholders for subtle reasons that a more superficial assessment of stakeholders would not uncover. While measurement of the effectiveness of stakeholder management processes is evolving, a recent systematic literature review (Pedrini and Ferri, 2019) identified a progressively more prominent role for more structured stakeholder management in organisations.

Fassin (2012) used a variation of the stakeholder term — *stakeowners* — to identify stakeholders with a significant stake in the interests of (and the ability to affect) an organisation. He suggested a more reciprocal approach than might currently exist concerning such relationships. Banks et al. (2015) argue for the organisational benefits of stakeholder management approach clearly aligned with a firm's strategy. This connection can help to underpin the critical positioning of stakeholder management in an organisation. The authors acknowledge the use of criteria such as power, legitimacy and urgency to prioritise stakeholders but suggest further dimensions, including whether the relationship is 'core or peripheral to competitiveness' and 'exploration (new opportunities, substantial change) or exploitation (incremental change, risk aversion)' in nature. From this exercise, four stakeholder management approaches emerge: Strategic Innovator, Strategic Maintainer (these can be considered primary stakeholders), Tangential Innovator, and Tangential Maintainer (likely to be secondary stakeholders). This topic, further discussed in Paper 3, was also considered by Ackerman and Eden (2011), who suggested a power/interest grid comprising four stakeholder categories. These authors identified an essential aspect of stakeholder management: difficulty legitimising the approach.

While stakeholders may generally be regarded as external to an organisation, Tullberg (2013) identified management as a distinct and influential stakeholder group, differentiating between traits associated with the position of managers and that of owner/shareholder groups.

1.11.2 Stakeholder Framework Assessment Approach

Stakeholder activity is relevant to airport operators, airspace users, local communities, businesses and policymakers. For example, the nature of airline stakeholder relationships and the manner of engagement with them is essential to the operation, and future, of many regional airports. Stakeholder management was the theoretical lens through which airport research factors have been considered.

Using Freeman's stakeholder definition, the following stakeholder theory assessment approach was developed (Figure 1-2) in support of the theoretical framework outlined later in this chapter.

Figure 1-2 Key Stakeholder Theory Assessment Components

<i>1 — Definition and identification of primary and secondary stakeholders</i>	<ul style="list-style-type: none"> • <i>Primary stakeholders</i> — customers, employees, suppliers of material goods and services, financiers / other capital suppliers and communities. Ownership type. • <i>Secondary stakeholders</i> (vary in importance according to the sector) — government / civil service. Regulatory authorities, competitors, media, special interest groups, customer advocates, Non-Governmental Organisations and others. Ownership type. <p>[Secondary stakeholders do not contribute directly or materially to the value-creating processes of the firm (Philips 2003)].</p>
<i>2 — Selected core stakeholder management concepts</i>	<p>Freeman, Harrison and Wicks (2007 and 2010) identified several core stakeholder management concepts:</p> <ul style="list-style-type: none"> • A managerial focus • A moral foundation • An overarching purpose (enterprise strategy) • Creation of economic and non-economic (added) value • Reciprocity • Reputation • Convergence (over time) of stakeholder interests
<i>3 — Stakeholder engagement methodologies</i>	<p>The level of importance and frequency of contact should determine the level of engagement with stakeholders. Different stakeholders will also interact with one another, e.g., local business representatives and local politicians based close to a significant local employer.</p>
<i>4 — Value assessment processes</i>	<p>Identification of stakeholder value and managing stakeholders to increase total value is seen as crucial, and several process tools have been developed to assist this endeavour, including 'stakeholder issues matrix', 'stakeholder strategic postures and stakeholder management strategies', and 'pay-off matrix' processes (Freeman, Harrison and Zyglidopoulos 2018).</p>

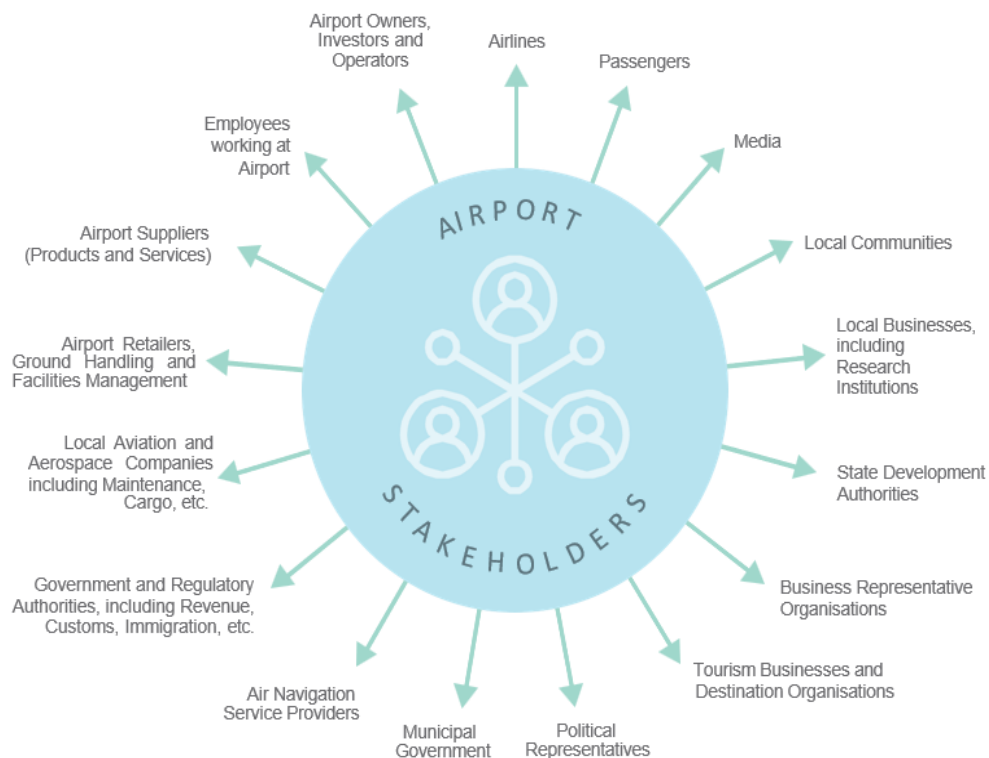
[Source: Developed by author, informed by stakeholder literature review]

1.11.3 Stakeholder Management in Aviation and Airports

Selected stakeholder perspectives in aviation have covered airport ownership and governance (Gillen 2011), the development of international air services (Stephenson et al., 2018), triangular business relationships (Levy 2017) and the importance of (dual) airport–airline stakeholder relationships (Bush and Starkie 2014; Graham 2013). While Lohmann and Vianna (2016) identified a need for airports to invest in building partnerships and route business cases, stakeholder issues were not reported as a factor affecting air route decisions, although effective stakeholder management could help support route retention. Stakeholder relationships and route profitability were identified as crucial drivers of air route development by Stephenson et al. (2018), with collaborative engagement likely to help deliver improved efficiencies. This process was identified as more drawn out for regional airports at that time.

Figure 1-3 demonstrates the nature and broad range of regional airport stakeholders, highlighting the importance of stakeholder theory and engagement, not just for the airports themselves but also for many of those with whom they have key relationships.

Figure 1-3 Typical Airport Stakeholders



[Source: Impact of COVID-19 on Irish Airport Stakeholder Relationships]

These factors are further considered in Paper 3 (Impact of COVID-19 on Irish Airport Stakeholder Relationships).

Commercialisation of the UK airport sector and LCC growth changed the airport–airline relationship to a more business-related and necessarily adaptable one, with a greater focus on added value/partnership agreements, which could also help to identify/address potential vulnerabilities, e.g., the impact of asset cycles (Bush and Starkie, 2014; Graham, 2013). There is little overall doubt that for regional airports, airlines have almost all the bargaining power during route negotiations, a trend exacerbated by the increasing orientation of major and legacy carriers to large/hub airports, with regional subsidiaries (e.g., Lufthansa/Lufthansa Regional) or franchisees (e.g., Aer Lingus/Emerald) more likely to serve regional airports.

Stephenson et al. (2018) contend that stakeholder relationships and route profitability are critical drivers of air route development activity, with collaborative engagement leading to improved efficiencies. Lohmann and Vianna (2016), recognising the under-reporting of stakeholder factors affecting route decisions, suggest that airports need to invest in building partnerships and business cases, arguing that route suspension decision-making is aided by effective stakeholder engagement. Triangular airport relationships build on this airport–airline dynamic, with Levy (2017) and Papatheodorou et al. (2019) focusing on interdependence and the benefits of such three-party relationships. Interdependence and ‘triple-win’ benefits were identified as critical contributors to a positive and successful triangular relationship. Efthymiou and Papatheodorou (2019) contended that the changing business models of airports and airlines have increased complexity, providing an opportunity for these stakeholder relationships to evolve from the transactional to become genuinely transformational. Halpern and Graham (2015) identified the importance of route development for airport growth, noting the airport’s focus on attracting new routes with new airlines. Larger airports were more active than smaller ones in this area, even though regional airports must work harder to attract new routes, given the challenges related to their scale. The impact of increasing large airport capacity constraints was, however, identified as providing more transparent and less encumbered market growth opportunities for smaller airports. Notwithstanding the complexity and interdependence of critical activities and relationships essential to an airport’s (complex) business operation, the manner in which airports manage stakeholder relationships and measure stakeholder contribution individually and collectively is under-reported.

The Airport Cooperative Research Programme (ACRP), a US industry-driven applied research initiative, has however highlighted the need for airport operators to understand stakeholder groups and identify arrangements and partnerships that ‘enhance the airport’s functional capabilities, maintain or enhance aviation services, provide a platform for the airport to be an integral part of the broader community it serves, and/or yield positive economic growth and returns’. (ACRP 2015). Indeed, the key social role of regional airports for regional and community benefit, including connectivity and employment, led Cepolina and Profumo (2011) to identify competition and financial challenges as factors favouring local community cooperative airport strategies for the purpose of improving risk sharing and reducing costs and uncertainty. There was little evidence, however, of

such cooperation, with increased competition between regional airports for new route business frequently reported. For policymakers, a key challenge is to achieve the appropriate balance between public support for regional development, including regional airports, on the one hand, and competition protection and the efficient use of State funds on the other.

Against the challenging background for regional airports described above, and with airlines expanding their networks at an increasing rate and serving more destinations, stakeholder activity has become increasingly important for airport operators, airspace users, local communities, businesses and policymakers. The interdependence of regional airports and their stakeholders is of particular importance during challenging times. Pandemic-related literature on these topics has begun to emerge, including this author's investigations into airport stakeholder management practices before, during and after the onset of the COVID-19 pandemic. These events and this coverage are reviewed in Chapter 8.

1.11.4 Stakeholder Management: A Theoretical Framework for This Research

Combining consideration of the stakeholder processes suggested by Freeman et al. (2007 and 2010), Philips (2003), and Freeman et al. (2018) with the aviation stakeholder factors described above, several core theoretical components were identified. These provided the basis for a structured approach to assessment of Stakeholder Theory and its potential application to regional airports. This theoretical framework for stakeholder management contributed to the design of the research approach described in the next Chapter. The four 'pillars' informed the design and development of interviews undertaken for this research and the airport stakeholder survey. A fifth pillar was subsequently added, representing a focus on the effect of COVID-19 pandemic-related events on stakeholder activity (Table 1.6).

Table 1.6 Stakeholder Management: Theoretical Framework

Theoretical Component	Description
<ul style="list-style-type: none">• Primary versus secondary stakeholders identification• Further categorisation, e.g. public versus private• Who are they and how important are they?	<ul style="list-style-type: none">• <i>Primary stakeholders — material involvement, contribution, impact</i>• <i>Secondary stakeholders — do not contribute as directly or materially to a firm's creation of value</i>
<ul style="list-style-type: none">• Core stakeholder management: concepts assessment• How is value transferred and how do interests align?	<ul style="list-style-type: none">• <i>Focus and foundation</i>• <i>Purpose and creation of value</i>• <i>Reciprocity</i>• <i>Convergence (over time) of stakeholder interests</i>

<ul style="list-style-type: none"> • Stakeholder engagement methodologies, e.g. 'Level of influence versus frequency of contact.' • How often and in what way does engagement occur? 	<ul style="list-style-type: none"> • <i>Level of engagement and frequency of contact a function of level of importance</i> • <i>Different stakeholders will interact directly with each other</i>
<ul style="list-style-type: none"> • How to assess the value of stakeholder management, e.g. 'pay-off' matrices • How is the value of this activity assessed? 	<ul style="list-style-type: none"> • <i>Identification of stakeholder value and how to increase this value</i> • <i>Management strategies</i> • <i>'Pay-off' matrix processes</i>
<ul style="list-style-type: none"> • Impact of COVID-19 on organisational stakeholders and activities • How did the pandemic affect these components? 	<ul style="list-style-type: none"> • <i>Effect of pandemic on organisation and stakeholders</i> • <i>Current actions to mitigate same</i> • <i>View on recovery timeframes</i>

[Sources: Freeman et al. (2007 and 2010); Philips (2003); Freeman et al. (2018). Adapted by Author]

1.12 Research Contribution of this Dissertation

This PhD thesis makes a meaningful contribution to contemporary aviation research through the presentation of five research papers, together with consideration of key themes during the introduction, discussion and conclusion chapters. It achieves this by providing researchers and practitioners with a deepened understanding of regional airport and stakeholder management characteristics and activities, both during stable periods and at times of crisis, such as a pandemic event. The relevance of this contribution to the body of airport and stakeholder knowledge is enhanced by the importance of the topic and the relatively modest level of contemporary research explicitly focusing on stakeholder theory in aviation. The application of stakeholder management theory to complex entities like regional airports, which are heavily regulated local/national organisations with international reach, often experiencing financial losses or minimal profits, makes this contribution novel in an aviation context. This dissertation's specific research contributions are highlighted below, and these areas are considered in greater detail in Chapter 9 (Conclusions; Section 9.5):

1. This thesis adds to the body of academic knowledge regarding airport stakeholder management and its potential impact on future regional airport activities and performance.
2. The thesis makes a further theoretical contribution to research for scholars and practitioners regarding the immediate impact of, and likely stakeholder response to, future shock events like the pandemic on regional airports and stakeholder activities/relationships.
3. This research has also contributed to stakeholder management research by highlighting the need for aviation organisations to become more multi-directional and proactive, identifying trends and

developments potentially affecting key stakeholders and responding to the increased importance of others, for example, employees.

4. With a focus on airport organisations, this thesis contributes to the strategic management framework discourse, suggesting the development of airport-focused strategic frameworks (*Flightpath, EURAIR and VUCAIR*), which have the potential to reflect an organisation's key features and challenges in a unified manner during uncertain and changing times.

These research findings and insights will likely be of interest to, and valuable for, airports and their stakeholders, particularly policymakers and potential investors in the sector.

This dissertation's first chapter has introduced the principal features and topic areas associated with this European regional airport research project. Chapter 2 builds on this foundation by detailing the research philosophies, methodologies and activities associated with this PhD dissertation.

2 Research Methodology

2.1 Introduction

The objective of this chapter is to introduce and describe the research methodology adopted by the author to address the regional airport and stakeholder research questions in the previous chapter, and to further detail the research approaches highlighted in the manuscript for each research paper (Chapters 3 through 7). The author's research intent and motivation have been driven by a number of factors. These include the author's belief in the relevance of aviation from a social, local, economic, and political perspective, combined with their personal interest in the topic and previous professional experience in organisational stakeholder management. The author has identified gaps in the existing literature, and has sought to apply this research to address the highlighted gaps on the topics of stakeholder interactions and their role in airport activity.

Airport characteristics and activities, including their interactions with the communities and environments in which they operate, were introduced in Chapter 1 of this dissertation. An introduction to stakeholder theory was also presented. A structured research approach was adopted when studying these topics, in order to better identify, understand, consider and articulate them.

This chapter is structured as follows. First, it describes the philosophy guiding the research approach, in the context of selection of the theoretical framework used to guide research activity, i.e. stakeholder management. Research design elements are considered, and the decision to adopt a primarily qualitative research approach is discussed. Details of the specific methodologies used are summarised, being semi-structured interviews for a journal publication, an airport manager survey and an assessment of European airport passenger traffic trends from 2019–2022. The approach to interviewee selection and survey distribution is also documented. The chapter provides a description of the approach to data analysis, including identification of key interview themes and components. The chapter then provides a timeline outlining research activity during the PhD period, from September 2018 to February 2024. The chapter continues with a description of the research approach associated with the development of a number of strategic frameworks associated with this thesis. Potential research limitations are also highlighted, together with comments and mitigating actions.

2.1.1 Research Framework: Approach and Rationale

When choosing a methodology with which to conduct research into regional airports, it is necessary to select an appropriate theoretical approach in order to provide for an effective assessment of the multi-dimensional nature of these entities and the environment they populate. Stakeholder activity was identified as a driver of the close interaction between such airports and the regions in which they operate (together with airports and other aviation stakeholders). For example, regional airport operations involve a significant level of external stakeholder activity involving airlines, passengers,

tourist organisations, local businesses/communities and government bodies, to mention just the main ones. Each of these stakeholder groups has different characteristics, dependencies and intentions with respect to their relationship with an airport, e.g. characteristics of the core airport–airline relationship. These factors combined point to the benefit of a detailed appreciation of stakeholder relationships.

Further research and airport and stakeholder literature reviews indicated low but increasing levels of coverage of stakeholder activity in aviation, with many articles focused on the key airport–airline relationship and triangular relationships which added destination management organisations or municipal authorities' relationships to this dual one. Some literature identified the creation of value as a positive factor, however, assessment of the effectiveness of stakeholder relationships was not researched holistically or systematically to any major extent (a research gap), notwithstanding more recent coverage of topic-specific stakeholder research in aviation, e.g. the airport–airline and triangular stakeholder relationships described above.

While other research approaches were considered, each had specific research limitations.

Economic and financial measures, including benchmarking. These approaches could offer insights into the financial aspects of regional airport operations, such as input-output models, revenue analysis, cost-benefit investment analysis and (for example) a review of travel demand and pricing strategies. One significant limitation of such an approach, however, is inconsistency and the lack of availability of airport financial information, particularly with respect to smaller airports, many of which are publicly owned. Published information on pricing may also be at variance with actual financial outcomes. For example, airlines often negotiate very deep (and very confidential) discounts on published rates for airport charges, particularly with smaller airports. Furthermore, purely economic research approaches may not adequately address non-financial factors and the interaction of different airport stakeholders' interests, which are essential to an understanding of regional airport activity.

Structural Frameworks (e.g. Ownership type): This approach has the potential to highlight the influence of organisation structure and ownership type on airport activity and performance. For example, the impact of State versus private ownership. Airport regulation and operational factors are, however, standardised to a very high level irrespective of ownership type. Furthermore, use of this approach may mean that engagement with stakeholders involved with other day to day airport activities will not be covered to the same extent.

Network activity. A study of the airport network ecosystem might help to identify and analyse the points of contact between airports and the stakeholders described above. While potentially useful for mapping relationships between an airport and its stakeholders, such an approach may, however, not fully explain the underlying relationship dynamics that exist between airports and their stakeholders,

for example differing features and goals. While various research approaches and theories were considered, the above factors contributed to the author's appreciation of the value of stakeholder management theory in airports and aviation, and its selection as the theoretical research framework for this study.

Stakeholder management is best positioned to identify, consider and address the elaborate and interdependent relationships between the broad range of stakeholders involved in regional airport operations. It allows for the development of a framework capable of identifying and understanding the relationships and dynamics among various parties involved in regional airport activities, including the sometimes-competing interests of different stakeholders. Each airport stakeholder has distinct characteristics affecting their relationship to the airport.

By aligning key thesis objectives with an assessment of regional airport stakeholder management activity, this approach allowed for a nuanced assessment and analysis of stakeholder interactions, dependencies, and even tensions. Its use of semi structured interviews, in particular, provided for a review and assessment of airport stakeholder interactions, strategic intent, stakeholder dependencies and the identification of challenges/tensions. Research findings, which contribute to regional airport activity and prospects, are expected to be of interest and relevance to researchers, practitioners and policymakers.

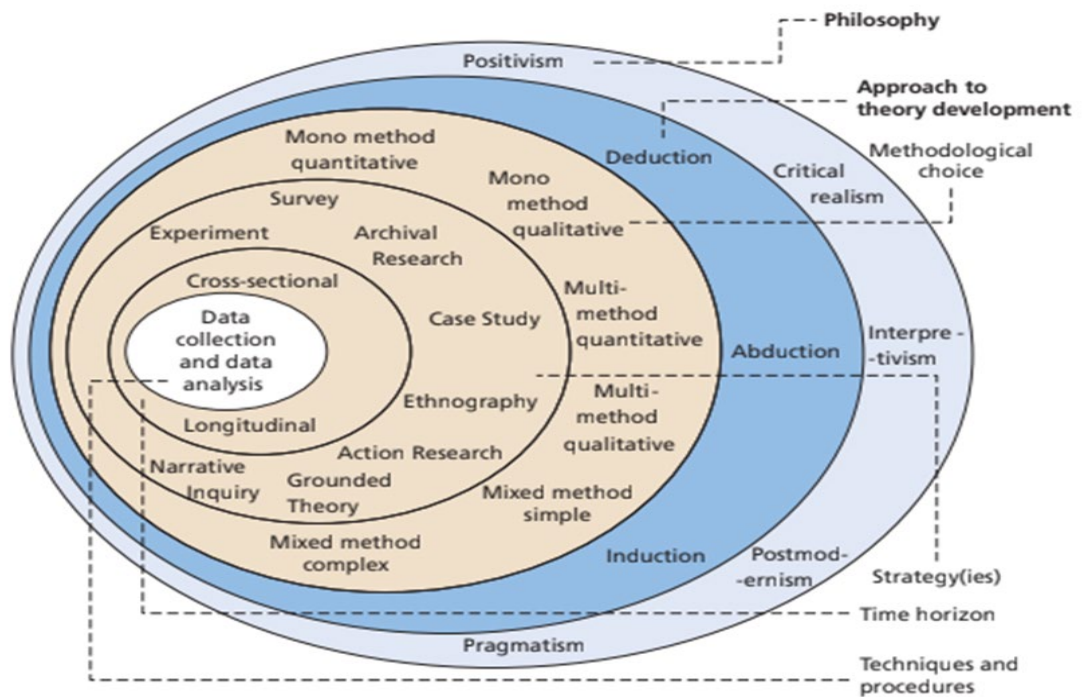
2.2 Research Philosophy and Design

The objective of this section of the research methodology chapter is to consider the applicability of various philosophies of research to the author's study and to outline how and why specific components thereof might apply to this research.

2.2.1 Philosophical Concepts

Understanding the philosophical underpinnings of research, and how they influence this study, is beneficial to this airport stakeholder research, given that the selected style(s) inform and influence the consideration of research methodologies together with the approach to data collection and analysis (Sutrisna, 2009). Saunders et al. (2015) position research philosophies as the outer layer of the authors' 'research onion', with their selection influencing the approach to theory development, research approach and data analysis (Figure 2-1). The philosophical concepts discussed here include positivism, interpretivism, constructionism, and pragmatism (Goldkuhl, 2012).

Figure 2-1 Research 'Onion' Description



[Source: Saunders, Lewis, and Thornhill (2015).]

Each research philosophy suggests a particular approach to identifying, generating and comprehending knowledge pertinent to research (Crossan, 2003). These philosophies comprise a critical component of any academic study, guiding the methodology and shaping the approach to data collection and analysis. Broadly, research philosophies can be categorised into several traditions, including positivism, interpretivism, constructionism, and pragmatism. Each philosophy offers a distinct perspective on how knowledge is generated and understood.

2.2.2 Research Philosophy Foundations and Stakeholder Theory

When conducting social science research, study foundations can further be informed by philosophical positions (assumptions and beliefs) on issues such as ontology, epistemology, and praxeology. Ontology asks, 'what is the nature of reality?' and 'what constitutes a fact?'. Capturing this reality becomes the objective of the selected research methodology. Epistemology concerns knowledge's nature and scope (the theory), and the processes through which it can be acquired. A third topic, praxeology, focuses on human actions and practical methodologies, including research processes (Isley and Rider, 2018; Rothbard, 1973; Tsoukas, 2017).

Key to this airport and stakeholder research is a comprehensive assessment of airport stakeholder relationship dynamics and interactions. From the perspective of this study, ontology is the philosophy that guides an understanding of regional airports, what and who airport stakeholders are, and why they exist. It is known that these airports are smaller in nature, operate point-to-point air routes and, when located peripherally, provide vital connectivity with a country's main population centre.

Airport stakeholders are also known and understood, with airlines universally regarded as the most important such stakeholder. Ontology is less relevant, however, to how airport stakeholder relationships are managed and the factors affecting the conduct of such relationships, such as the nature and frequency of airport stakeholder activity. Epistemology can consider how airports gather knowledge to understand stakeholders, for example, the structure and performance of a business stakeholder or the governance and regulatory backdrops influencing policymakers. This philosophy alone does not, however, consider airport actions and strategies concerning specific stakeholders/stakeholder types.

A third framework, praxeology, provides for the application of theory and theoretical principles to real-world scenarios. Because of its focus on human behaviour (goals and actions) and methodologies, the author considers the praxeology framework to be the most relevant to stakeholder management's practical and ever-changing nature, i.e. it does not 'stand still'. It can provide a foundation for airports to assess the factors described above and develop effective stakeholder engagement strategies. Stakeholder management requires an understanding of and influence over airport stakeholder activity, such as strategic planning, airline route selection and gate allocation, implementation of aviation regulations and policy, and internal (employee) engagement. Tension management is also supported through negotiation and solution-focused processes, e.g., steering meetings.

In conclusion, while ontology and epistemology help researchers understand questions such as who stakeholders are and what types of engagement exist, praxeology is the philosophy that appears to fit more closely than others to activities critical to this study's assessment of airport stakeholder relationship management, particularly its support for human interactions and stakeholder decision-making processes that support the organisation's strategic objectives.

2.2.3 Research Paradigms: Positivism versus Constructionism/Interpretivism

Consideration of the rationale behind key research paradigms such as positivism and constructionism can support research design decisions and approaches (Alharahsheh and Pius, 2020). According to positivism, reality is objective and factual and can be observed and measured through data gathering. This philosophy often aligns with quantitative research methods, given that data can be subject to objective hypothesis testing, with results obtained through robust statistical processes (Goldkuhl, 2012; Ryan, 2018).

The philosophy of constructionism, closely related to interpretivism, argues that reality is co-created by individuals through a combination of interactions and shared experiences. Constructionism highlights the formation of knowledge in social settings, contributing to the collective emergence of reality. On the other hand, interpretivism considers that reality is more subjective, any appreciation of what it means being generated through observation and understanding of subject experiences and

interactions. Interpretivism-influenced research seeks to understand individuals' motivations and actions, and is more closely associated with qualitative research methodologies. (Goldkuhl, 2012.). Finally, the philosophy of pragmatism (within research) calls for a practical approach, with quantitative and qualitative methodologies used to address the research topic(s) being undertaken.

The availability of a positivistic theory may be indicative of a more 'mature' stage of research within a certain sector (in this case, airports). This research's focus on understanding the nature of and processes associated with stakeholder activity is, however, not as definitive or directive about how these activities should be regarded as might be the case with a positivist approach. Therefore, this author suggests that stakeholder theory's focus on gaining an understanding of the characteristics of airport relationships and perceptions aligns more with constructionist than positivist principles, given the former's focus on an understanding the nuances of relationships and perceptions.

2.2.4 Stakeholder Research: Constructionism Supported by Interpretivism

For airports, the identification of stakeholders and assessment of their positioning requires subjective assessment (by airport managers) and subsequent engagement. The review of the literature found very few dedicated studies of airport stakeholders, suggesting that an appreciation of the topic in aviation and airports was at a relatively low level. This study on stakeholder management in airports was therefore guided by a constructionist philosophy supported by interpretivism. This positioning reflected the objective to obtain desired insights from practitioners to better understand the complex and dynamic interactions between various airport stakeholders. This choice was particularly suited to exploring how stakeholders perceive and influence their roles within the airport ecosystem.

Interpretivism, as a supporting philosophy, complements constructionism by focusing on the subjective meanings and motivations that underpin stakeholder behaviours and decisions. This dual philosophical framework enables a deeper exploration of how stakeholders interpret their roles and interactions within the airport ecosystem. The qualitative research methods employed in this study, particularly semi-structured interviews, are well-suited to this combined philosophical approach. Semi-structured interviews provide the flexibility to delve into the complexities of stakeholder experiences and extract rich, detailed data that quantitative methods might overlook. This approach allows for the capture of diverse viewpoints and the identification of underlying themes that inform stakeholder management practices in airports.

A constructionist approach aligns with the goals of this study by emphasising the importance of context and the nuanced understanding of stakeholder perspectives. Airports operate in a dynamic environment where the interests and influences of various stakeholders, such as airlines, regulatory bodies, government agencies, and passengers, evolve continually. Constructionism is especially suited to such an environment. It guides exploration of how airports and stakeholders perceive and influence their roles within an airport ecosystem, and development of a 'reality' that explains the

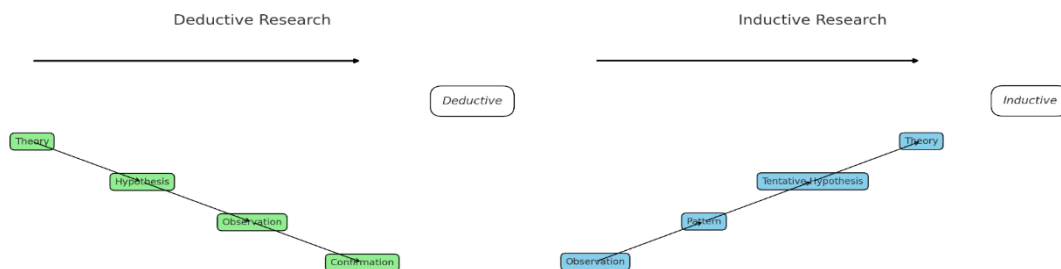
nature of these relationships. By adopting a constructionist stance, this research shows that stakeholder relationships are not static but evolve in response to ongoing interactions, decisions, behaviours and other factors such as airport competition, airline route selection, economic conditions and financial performance.

The constructionist approach informed the design of the theoretical stakeholder framework and the structure of the semi-structured interview questions. This enabled the author to adopt a consistent research methodology and design approach, seeking to identify and highlight the relationships and interrelationships (e.g., triangular engagement) between airport stakeholders, and how these engagements occur (e.g. regular/ad-hoc meetings; committees, etc.).

2.2.5 Deductive versus Inductive Research

Several options must be considered when choosing the critical building blocks of research activity, which determine the mode of reasoning associated with theory development. In particular the choice of whether to adopt of an inductive or deductive strategy must be made, influenced by the selection of a constructionist or positivist research philosophy (Figure 2-2).

Figure 2-2 Deductive and Inductive Research



[Source: Brown (2021).]

The core difference between these methods is in their starting points (Table 2.1). *Deductive reasoning* seeks to test a specific theoretical suggestion or component by constructing and developing a research approach with this objective. Inductive reasoning moves from initial specific observations of data/information through identifying (for example) practices, patterns and outcomes, followed by developing a theory to document, categorise and account for such observations. Such a deductive approach requires a specific established theory, while an inductive research approach does not (Luckmann and Farber, 2016).

Table 2.1 Comparison of Selected Characteristics — Deduction versus Induction

	<i>Deduction</i>	<i>Induction</i>
<i>Theory</i>	Theory verification or falsification	Theory generation and building
<i>Use of Data</i>	Data collection is used to evaluate propositions or hypotheses related to existing theory	Data collection is used to explore a phenomenon, identify themes and patterns, contributing to the creation of a conceptual framework
<i>Generalisability</i>	From the general to the specific	From the specific to the general

[Source: Adapted from Saunders et al. (2019).]

2.2.6 Stakeholder Theory — An Inductive Approach

Describing the structured collection and analysis of data, inductive (grounded) theory (Glaser and Strauss, 1965) was identified by the author as the research methodology most appropriate to the collection and analysis of semi-structured interview information — in the case of this research, interviews with airport stakeholders and managers. Stakeholder theory has emerged from research that considers organisational practices and the identification of key stakeholders, such as customers and suppliers, together with recognising their importance to interconnectedness and creating value in an organisation (Freeman, 1984). The development of stakeholder theory seeks to document and explain findings based on these observations. These findings can help to identify the components of stakeholder relationships that impact the effectiveness of such arrangements.

Most stakeholder engagement studies are inductive, particularly in terms of theory generation and the focus on stakeholder engagement practices (Pedrini and Ferri, 2019; Sachs and Kujala, 2021). Future research looking more deeply into the different constructs of stakeholder engagement might be more likely to consider elements of the deductive approach. This categorisation of stakeholder theory development as being inductive in both nature and practice has also been suggested by Luckmann and Faber (2016), Pedrini and Ferri (2019), and Sachs and Kujala (2021). As the theory matures and reflects contemporary events such as the pandemic and subsequent occurrences, there may be a secondary role for deductive reasoning with respect to the study of the perception of the impact of a specific element of these relationships. For example, a (deductive) hypothesis that strong and stable personal relationships are more important than structured stakeholder arrangements could be tested by using a deductive approach. Based on its current characteristics, however, stakeholder theory continues to be primarily informed by an inductive research approach.

2.3 Research Methodology

2.3.1 Research Approach and Methodology — Options

Selection of the most appropriate research methodology must be informed by factors including a study's research objectives, the knowledge being sought, the theoretical framework being considered and the predominant research philosophy appropriate to the selected topic (Sutrisna, 2009). Bell (2005) identified qualitative researchers as those who seek to gain insights into a subject based on the perception of individuals. The qualitative approach is designed to investigate the experience and motivation of subjects concerning their observations, opinions and views regarding matters relevant to the research topic. Interviews are a primary method for the collection of such information. They can be conducted in a structured, semi-structured or thorough manner, depending on the topic and research question(s). King (2004) considers semi-structured or unstructured (very detailed) interviews as core qualitative research components. Healey and Rawlinson (1994) identify that interviews can be further classified as standardised (structured, suitable for 'closed' interviews/surveys) or non-standardised (semi-structured, suitable for less closed but still structured research interviews). Chesebro and Borisoff (2007) suggest that approaches to qualitative research design and methodology can be tailored to take account of emerging insights and approaches.

When considering the deployment of mixed research methodologies to a study, a number of positive factors and challenges associated with such an approach should be taken into account. First, the suitability of mixed methodologies should be suitable for the research being undertaken, i.e. is it feasible to conduct qualitative and quantitative research in a manner which enables achievement of key research objectives? Almalki (2016) argues that its use potentially provides greater depth and colour not available with a single research approach. The researcher skillset and training gaps may also impact the ability to apply a mixed methods approach effectively (Creswell and Clark, 2011). Burke et al. (2007) highlight the need to identify the optimum mixed-methods design, whether balanced or substantially favouring a qualitative or quantitative research approach. While the use of mixed methods in a balanced manner can deliver a more complete result, this benefit must be balanced with limitations such as any divergence between them, together with the 'cost' of additional time and effort relative to any (incremental) research benefit arising out of this additional activity (Gobo 2015). Fetters and Freshwater (2015), commenting on the challenge of integrating mixed-methods research, also highlight the question of whether combined qualitative and quantitative research together produce more than either component would deliver on its own. Akerblad et al. (2021) further highlight the potentially worthwhile challenge of integrating mixed-methods research activity across the research activity chain, i.e. philosophy, theory, data collection and analysis and reporting of findings (Merterns et al., 2016). With respect to stakeholder theory, the deployment of mixed methods is challenged by the absence of quantitative measures to assess the effectiveness of stakeholder practices.

Inductive theory, strongly associated with the collection of semi-structured interview information (Pasquero, 1996), is consistent with the constructionist stakeholder approach previously identified by the author as most suitable to the study of airport stakeholder activities and arrangements. Saunders et al. (2019) also note that an inductive approach provides for the use of elements of existing theory to identify research questions, objectives and concepts to be explored.

From the standpoint of research into aviation, previous airport stakeholder-focused studies have assessed relationships and activities associated with key airport stakeholders, including airlines, destination management organisations and local government. The range of research approaches deployed included semi-structured interviews (Lohmann and Vianna, 2016; Stephenson et al., 2018), surveys (Halpern and Graham, 2015), case studies (Cepolina and Profumo, 2011; Levy, 2017) and comprehensive desktop analyses (Alderighi and Gaggero, 2017; Gillen, 2011; Schaar and Sherry, 2010).

2.3.2 Research Methodology — Selection

While quantitative options were considered, the nature of the research being undertaken, combined with the deficit in publicly available airport financial information (as opposed to passenger information), would limit the effectiveness of such an approach.

Considering the above factors, in particular the alignment of inductive methods with stakeholder research studies and the substantial degree of informality associated with airport stakeholder relationships, qualitative research was identified and selected as the primary approach considered most suitable for this study, in support of and consistent with the study's research questions and stakeholder framework.

This predominantly qualitative research approach was identified as providing the best opportunity to obtain deep insights covering airport stakeholder activity during normal and crisis times, primarily through semi-structured interviews and an airport manager stakeholder survey. Interviews and surveys were planned accordingly. From a quantitative perspective, the majority of available comparative regional airport data comprises passenger numbers, flight movements and cargo activity. Other performance information, e.g. financial, is normally unpublished/withheld. This study considered emerging trends with respect to pre- and post-pandemic passenger performance on airport passenger number trends, using Airport Council International's (ACI) Data Intelligence Hub, from 2019 to 2022. The impact of other airport factors such as Public Service Obligation (PSO) air routes, coastal proximity, cyclicity and ownership on passenger performance during this period was also considered.

2.4 Qualitative Research Approach — Introduction

With qualitative research selected as the predominant primary research method to be employed

throughout the author's PhD studies, a stakeholder theory framework was developed and used to inform the structure of interview and survey processes. The semi-structured interview approach was selected as the key qualitative research methodology, primarily due to its flexibility and depth. This provided for the delivery, almost in real time, of comprehensive insights into the nature of rapidly changing stakeholder interactions and responses to the pandemic. These interviews also allowed for a more nuanced exploration, not captured as readily through quantitative methods, of stakeholder and manager experiences and perspectives, covering an assessment of pre- and post-pandemic stakeholder activities and relationships, together with opinions on industry recovery from the pandemic. The semi-structured format contributed to a deep understanding of the evolving landscape of airport operations and stakeholder engagement during this unprecedented period. These interview outputs formed much of the basis and content associated with the now-published and central Paper 3, 'COVID-19 and Irish Airport Stakeholder Relationships'.

A combination of qualitative and quantitative primary research methods informed Paper 5, 'Navigating Recovery and Uncertainty: Airport Resilience in Challenging Times'. First, a survey of airport managers was undertaken in 2022. The question suite covered stakeholder arrangements from an airport manager's perspective, views on the importance and effectiveness of the same, observations on the immediate post-pandemic environment and opinions on prospects. A modest level of content from these interviews and surveys was also alluded to in Paper 4, 'Emerging from the Storm; Regional Airports Facing Challenging Times'. This paper also presents some findings from the analysis of a 2000–2022 airport passenger database from Airports Council International (ACI), together with associated data from other external sources.

2.4.1 Summary of Primary and Secondary Research Sources Used

A broad range of primary and secondary research informed activities undertaken during the entire PhD research period, from late 2018 to early 2024. Table 2.2 identifies key research sources. Primary research activities have been described in the previous section. Secondary research sources further informed the author's research. Literature, aviation and economic data, industry/professional reports and commentary from aviation bodies such as EUROCONTROL, European Commission, Airports Council International, and the International Air Transport Association, together with country-level information from statistical agencies, were accessed.

Table 2.2 Research Methodology by Research Paper

Research Methodology (Primary/Secondary)	Relevant Paper(s)*, most important listed first (see below)
<i>Airport Stakeholder and Manager Semi-Structured Interviews (Primary)</i> . Semi-structured airport stakeholder (executive and manager) expert interviews.	[Paper 3] <i>Impact of COVID-19 on Irish Airport Stakeholder Relationships.</i>
<i>Stakeholder Survey (Primary)</i> . A questionnaire-based survey targeted at airport managers.	[Paper 5] <i>Airport Resilience in Challenging Times: Navigating Recovery and Uncertainty.</i> [Brief reference in Paper 4. <i>European Regional Airports: Emerging From the Storm or Facing a Gathering Storm?</i>].
<i>The Literature (Secondary — Desktop Analysis)</i> Literature reviews covering aviation/airport and stakeholder factors. A considerable amount of COVID-19 related literature has been published since 2020, both general and aviation-specific.	[Applies to papers 1, 2 ,3, 4, 5] Case Study Approach [Paper 1. <i>Regional Airport Business Models — Case Study.</i>]
<i>Airports Council International (ACI) Intelligence Hub (Secondary — Desktop Analysis)</i> . Airport Council International's (ACI) Intelligence Hub (iHub). Assessment of European airport passenger performance between 2019 and the end of 2022 (910 airports).	[Paper 5] <i>Airport Resilience in Challenging Times: Navigating Recovery and Uncertainty.</i> [Brief reference in Paper 4. <i>European Regional Airports: Emerging from the Storm or Facing a Gathering Storm?</i>].
<i>Information Gathering: [Formal Sources and Industry Reports] (Secondary — Desktop Analysis)</i> . Identification, review and analysis of International Air Transport Association (IATA), Airports Council International (ACI), Official Airline Guide (OAG), EUROCONTROL, International Civil Aviation Organisation (ICAO), National Statistical Offices, Government Departments.	[Applies to papers 1, 2 ,3, 4, 5] [Government and Regulatory Content in Paper 2: <i>Aviation Governance in The United Kingdom and Republic of Ireland: A Study of Airport Arrangements in the Common Travel Area.</i>]
<i>Opinion and Insight (Secondary — Desktop Analysis)</i> . Assessment and analysis of professional service providers, industry practitioners and sector webinars. COVID-19 related content. [Official Airline Guide, Aviation Week, Centre for Aviation (CAPA), EUROCONTROL, German Aviation Research Society (GARS)].	[Papers 3, 4 and 5] <i>Impact of COVID-19 on Irish Airport Stakeholder Relationships.</i> <i>European Regional Airports: Emerging from the Storm or Facing a Gathering Storm?</i>

	<i>Airport Resilience in Challenging Times: Navigating Recovery and Uncertainty.</i>
<i>Information Gathering: News (Secondary — Desktop Analysis).</i> Print and broadcast media, investor reports, wire services	[Applies to papers 1, 2, 3, 4, 5]

Papers 1 (Regional Airport Business Models; Shannon Group as a Case Study), 2 (Aviation Governance in The United Kingdom and Republic of Ireland — A Study of Airport Arrangements in the Common Travel Area) and 4 (European Regional Airports: Emerging From the Storm or Facing a Gathering Storm?) were prepared primarily using a *secondary* research approach, comprising an analysis and critique of information sources. An airport case study formed part of Paper 1, with Eisenhardt (1989) and Rowley (2002) noting that such studies comprise a crucial research component complementing other research methodologies deployed.

2.4.2 Research Framework

The approach to this study was influenced by the identification of stakeholder management as the theoretical backdrop for much of the author's research and applicable research philosophies, as previously reported. The development of an airport stakeholder management assessment framework, informed by literature and theory, guided primary research activities, including the structure of interview and survey processes. This approach sought to identify airport activities with relationship components and gather broader observations covering stakeholder identification, categorisation, engagement and assessment in a structured manner (Table 2.3).

Table 2.3 Stakeholder Management: Research Framework

Theoretical Component	Descriptions
<ul style="list-style-type: none"> • <i>Primary versus Secondary Stakeholders identification</i> • Further categorisation, e.g. public versus private • Who are they and how important are they? 	<ul style="list-style-type: none"> • <i>Primary stakeholders — material involvement, contribution, impact</i> • <i>Secondary stakeholders — do not contribute as directly or materially to a firm's creation of value</i>
<ul style="list-style-type: none"> • <i>Core stakeholder management: concepts assessment</i> • How is value transferred and how do interests align? 	<ul style="list-style-type: none"> • <i>Focus and foundation</i> • <i>Purpose and creation of value</i> • <i>Reciprocity</i> • <i>Convergence (over time) of stakeholder interests</i>

<ul style="list-style-type: none"> • <i>Stakeholder engagement methodologies, e.g. 'Level of influence versus frequency of contact.'</i> • How often and in what way does engagement occur? 	<ul style="list-style-type: none"> • <i>Level of engagement and frequency of contact a function of level of importance</i> • <i>Different stakeholders will interact directly with each other</i>
<ul style="list-style-type: none"> • <i>How to assess the value of stakeholder management, e.g. 'pay-off' matrices</i> • How is the value of this activity assessed? 	<ul style="list-style-type: none"> • <i>Identification of stakeholder value and how to increase this value</i> • <i>Management strategies</i> • <i>'Pay-off' matrix processes</i>
<ul style="list-style-type: none"> • <i>Impact of COVID-19 on organisational stakeholders and activities</i> • How did the pandemic affect these components? 	<ul style="list-style-type: none"> • <i>Effect of pandemic on organisation and stakeholders</i> • <i>Current actions to mitigate same</i> • <i>View on recovery timeframes</i>

[Adapted by Author. Sources: Freeman et al. (2007 and 2010); Philips (2003); Freeman et al. (2018).]

2.4.3 Formulating Primary Research Activity

Research Interviews — Airport Stakeholders: The framework approach described above was designed to ensure that relevant research topics could be explored fully and consistently with interviewees, against a specific stakeholder management framework. Topic areas were identified through literature review and exploratory interviews, which provided further assurance with respect to relevance. From a research methodology perspective, interview rigour and validity were enhanced by alignment of interview and survey structures with this stakeholder theory framework. Interview activity was primarily connected with development of the article later published in the *Annals of Tourism Research* (Paper 3), while their structure and content remained consistent with the research objectives and the framework. The arrival of the COVID-19 pandemic provided an additional research opportunity, reflected above: a review of Irish airport stakeholder relationships and activity before, during and after the pandemic.

2.4.4 Interview Population

The geographic and organisational scope of Paper 3 was Irish airports and their stakeholder relationships. Airport stakeholder groupings were identified, including airport managers. Given the small number of such Irish airports (six), it was viable for the research to cover all airports and a sampling approach was not necessary. Representatives from all Irish airports were interviewed, with more than one interviewee in larger airports. For other categories, main groupings were identified (e.g. airlines, regulators, airport-based organisations and policymakers) and comprehensive sampling ensured comprehensive coverage. Airlines were identified via airport route networks and adjacent business representative organisations were identified through geographical proximity. The pandemic

shift to virtual communication facilitated completion of a higher volume of manager and stakeholder interviews than would otherwise have been the case, as previously noted. Interview groupings are listed in Table 2.4.

Table 2.4 Interviewees by Stakeholder Type

<i>Stakeholder Type</i>	<i>Number of Interviewees</i>
Airlines	9
Representative Bodies	9
Tourist Sector	5
MRO, Cargo, Ground Handling, Airport Retail	9
Local and Central Government; State Agency	6
Aviation Regulators	5
Other (e.g. Sustainability, Business Aviation, Business User, Academic)	8
Airports	13
<i>Total</i>	<i>64</i>

These interviews took place between November 2020 and April 2021, with the majority completed by mid-February 2021. The relatively large primary research sample size of 64 interviewees ensured greater representativeness. A broad range of experiences and opinions were recorded from this large sample of stakeholders and managers. This approach significantly enhanced the relevance and robustness of the research findings, providing an accurate reflection of the Irish airport stakeholder landscape and reducing the influence of outlier responses, thereby increasing the legitimacy of interview outputs. Confidence in the reliability of the research was further improved by the consistency observed across this more substantial number of interviews. By covering a broader and more nuanced range of viewpoints, the research provides for a more comprehensive understanding of stakeholder characteristics and challenges.

Given the above factors, and the high level of standardisation across many airport processes and activities, these findings are likely to be generalisable across a wider range of airports and stakeholders, not just those dealing with Irish airports, thus increasing the overall applicability and impact of this component of the PhD thesis.

2.4.5 Survey of Airport Managers

The survey component of this study's qualitative research activity was launched during summer

2022. This survey was designed to be completed by airport managers, with a stakeholder activity questionnaire containing 25 questions, three of these being open-ended. Airport managers were contacted through a sharing of the survey questionnaire link/QR code using a combination of digital channels, including email communication with airport academic networks, airport stakeholder interviewees, aviation alumni, academic conferences and promulgation through the author's professional social media networks. 27 full responses were received, primarily from managers in European airports, the majority of these coming from Ireland and the rest of Europe (Table 2.5).

Table 2.5 Survey Responses by Geography

<i>Location</i>	<i>Number</i>
Ireland	14
United Kingdom	3
Europe	5
Rest of the World/ Not provided	5
Total	27

A list of survey questions is contained in Appendix D and highlighted survey findings are included in Paper 5.

2.4.6 European Airport Passenger Performance Assessment

An analysis of European airport passenger trends between 2019 and 2022 was undertaken as part of the development of Paper 5 (Airport Resilience in Challenging Times). This passenger data was extracted from the Intelligence Hub (iHub) of Airports Council International (ACI), the premier global airport representative organisation, through a formal arrangement with Dublin City University Business School. The ACI iHub includes a dataset of airport traffic, passenger and cargo data, covering over 2,600 airports in more than 180 countries and territories. Member airports provide this information to ACI both monthly and annually, enhancing its integrity and reliability. 910 of these airports are located in Europe (ACI, 2022), the focus of this paper's assessment of airport passenger performance. Passenger volumes were downloaded on an airport-by-airport basis. They were analysed by country, region and passenger band. Airport passenger activity from the beginning of the last full year before the pandemic (2019) to the end of 2022 is considered in Paper 5, which presents an analysis of annual passenger data movements at European airports during this period. Results were reported by expressing 2022 passenger totals (by country, region or category level) as a percentage of 2019 passenger volumes. Further research analysis considered 2019 versus 2022 passenger performance by airport geography, size, cyclicity, the presence of Public Service Obligation (PSO) routes and differing ownership types.

2.5 Research Analysis

2.5.1 Qualitative Data Analysis (Interviews)

A primary audience for findings arising out of research interviews conducted during this study is readers of the journal article covering Irish airport stakeholders and COVID-19, published in the *Annals of Tourism Research* in July 2023. The stakeholder framework described above facilitated manual triangulation of research activity, in particular the consistent and focused collection, and subsequent analysis, of complementary information from different airport stakeholders and managers. This information was analysed with reference to framework content, and findings formed a core component of this paper through the following three-pronged approach to the presentation of research findings in the *Annals of Tourism Research* journal article:

- (1) Airport Stakeholder Activity in Normal Times
- (2) Airport Stakeholder Engagement during pandemic
- (3) Airport Stakeholder Engagement beyond the pandemic

2.5.2 Interview Assessment Activity

The use of codes for assigning units of meaning (tags or labels) to information gathered during a study such as a research interview has been described by Miles and Huberman (1994), who suggest that ‘codes are usually attached to “chunks” of varying size — words, phrases, sentences or whole paragraphs’. Braun and Clarke (2006) identify how, during qualitative research, when important findings of relevance to the research study emerge, they are highlighted as ‘themes’. They add that the term can denote ‘some level of patterned response or meaning within the data set’ discerned through transcript familiarisation or identification of key codes (Braun and Clarke, 2006, p. 82).

All research interviews were recorded and transcribed. Interviewee confidentiality guarantees were critical, given the small size and heavily networked nature of Ireland’s airport and aviation market. The manual identification of codes and themes across interview topic areas, categories and periods was enabled by key stakeholder theory framework characteristics and descriptions (Table 2.3), as developed and reported. Data familiarisation was achieved through the development of interview questions aligned with the framework combined with a consistent assessment of each interview transcript, using the thematic approach as described (Table 2.6).

Table 2.6 Alignment of Stakeholder Theory Framework and Interview Question Areas

Stakeholder Theory Framework	Theory Component	Interview Framework Section [As presented in journal article]	Interview Question Areas
<p><i>Primary versus Secondary Stakeholders identification.</i></p> <p><i>Further categorisation, e.g., public versus private</i></p> <p><u><i>Who are they and how important are they?</i></u></p> <p><i>Core stakeholder management: concepts assessment</i></p> <p><u><i>How is value transferred and how do interests align?</i></u></p>	<p>Primary stakeholders — material involvement, contribution, impact</p> <p>Secondary stakeholders — do not contribute as directly or materially to a firm's creation of value</p> <p>Focus and foundation</p> <p>Purpose and creation of value</p> <p>Reciprocity</p> <p>Convergence (over time) of stakeholder interests</p>	<p>Stakeholder Activity in Normal Times [+ Effect of pandemic on these views]</p>	<ul style="list-style-type: none"> ○ <i>Airport detail, interviewee responsibility, experience level</i> ○ <i>Who are the main airport stakeholders?</i> ○ <i>What is their level of importance?</i>
<p><i>Stakeholder engagement methodologies, e.g. 'Level of influence versus frequency of contact'.</i></p> <p><u><i>How often and in what way does engagement occur?</i></u></p>	<p>Level of engagement and frequency of contact a function of level of importance</p> <p>Different stakeholders will interact directly with each other</p>	<p>Stakeholder Activity in Normal Times [+ Effect of pandemic on these views]</p>	<ul style="list-style-type: none"> ○ <i>What type of engagement is undertaken?</i> ○ <i>Nature and frequency of contact</i> ○ <i>Key engagement objective — general / stakeholder-specific</i> ○ <i>Structured / unstructured?</i> ○ <i>Frequent / irregular?</i>
<p><i>How to assess the value of stakeholder management, e.g., 'pay-off' matrices</i></p> <p><u><i>How is the value of this activity assessed?</i></u></p>	<p>Identification of stakeholder value and how to increase this value</p> <p>Management strategies</p> <p>'Pay-off' matrix processes</p>	<p>Stakeholder Activity in Normal Times [+ Effect of pandemic on these views]</p>	<ul style="list-style-type: none"> ○ <i>How is success/effectiveness assessed/measured?</i> ○ <i>Review of overall approach?</i>

<p><i>Impact of COVID-19 on airport stakeholders and activities</i></p> <p><u>How did the pandemic affect these components?</u></p>	<p>Effect on airport and stakeholders</p> <p>Current actions to mitigate same</p> <p>View on recovery timeframes</p>	<p>Stakeholder Engagement During COVID-19 Pandemic</p>	<ul style="list-style-type: none"> ○ <i>Nature of impact</i> ○ <i>Recovery path since March</i> ○ <i>Future stakeholder engagement impact</i>
<p><u>Looking Forward</u></p>		<p>Airport Stakeholders Looking Forward Beyond Pandemic</p>	<ul style="list-style-type: none"> ○ <i>The future</i> ○ <i>Recovery timeframes</i> ○ <i>Key expected airport developments</i> ○ <i>Stakeholder Role — Recovery</i> ○ <i>Additional comments</i>

[Sources: (Freeman et al., 2008 and 2010; Philips et al., 2003; Freeman et al., 2018) Adapted by Author]

2.5.3 Thematic Analysis of Interview Transcripts

The ability to conduct remote interviews during the research period ensured comprehensive coverage of Irish airport stakeholders and managers, with a total of 64 interviewees across all main stakeholder categories, as previously grouped (Table 2.4). The selection of interviewees and the coding process were carefully aligned with the stakeholder management theoretical framework. Conducting and manually analysing semi-structured interviews with airport stakeholders and managers provided a thorough and nuanced understanding of the data. Interview data was analysed and assessed through transcript assessment and manual coding. This involved detailed, interview-by-interview transcript analysis, using the stakeholder framework developed by the author. The analysis considered key stakeholder themes as they emerged, from the interviews, during both normal and pandemic periods. This approach generated stakeholder theory insights inductively from the interview data.

The assessment framework, as summarised below (Table 2.7), shows how data from each individual interview was categorised for analysis. This summary version, presented by interview category, includes a small sample of content from each stakeholder category, across the following headings:

- Pre-COVID-19 Identification of Key Stakeholders and Their Importance (1a)
- Pre-COVID-19 Frequency and Objectives of Engagement (1b)
- Pre-COVID-19 Assessment of Success/Effectiveness (1c)

- Stakeholder Activity During the Onset of COVID-19 (2*)
- Stakeholder Activity in the Post-COVID-19 Phase (3*)

* These sections focused on stakeholder perspectives during the COVID-19 pandemic period specified, however interviewee perspectives on how ‘normal’ stakeholder activity (1a, 1b and 1c) was affected by pandemic and post pandemic events were also expressed by interviewees, recorded and reported.

Table 2.7 Master Interview Set: Structure and Sub-Theme Examples

Journal Article Framework*	Airport Stakeholder Activity in Normal Times			Airport Stakeholder Engagement during pandemic	Airport Stakeholder Engagement beyond the pandemic
	1a	1b	1c	2	3
Category (Interviewee Number)	Identification of Key Stakeholders and Their Importance	Frequency and Objectives of Stakeholder Engagement	Assessment of Success/ Effectiveness of Stakeholder Relationships	Stakeholder Activity During Arrival and Onset of COVID-19 Pandemic	Stakeholder Activity and Perspectives in Post-Pandemic Phase
Airports (13)	<i>Airlines, Local authorities, regional governments, chambers of commerce, government regulators, tourism bodies.</i>	<i>Monthly meetings with airlines and other stakeholders to discuss traffic growth, funding, operational efficiencies.</i>	<i>Growth in traffic and load factors, effective chamber and tourism body engagement</i>	<i>Immediate impact on operations with focus on crisis management and safe operations.</i>	<i>Increased engagement with airlines, tourism bodies and local authorities to restore traffic and confidence in air travel.</i>
Airlines (9)	<i>Airports, ground handlers, tourism groups.</i>	<i>Frequent operational meetings, ad hoc commercial engagements, route conferences, AOC meetings.</i>	<i>Ability to address operational issues, maintain open communication channels critical., Personal relationships vital.</i>	<i>Shift to virtual meetings, maintaining operational continuity, collaboration with airports and ground handlers.</i>	<i>Emphasis on restoring operations, rebuilding passenger confidence, continued virtual engagement.</i>
Local/Central Government; State Agencies (6)	<i>Airports, tourism bodies, local authorities, state development agencies.</i>	<i>Combination of formal and informal engagements; annual presentations, frequent thematic meetings.</i>	<i>Growth in air connectivity, effectiveness of mutual support during crises.</i>	<i>Intense engagement through government task forces and virtual meetings to address challenges and support recovery.</i>	<i>Continued virtual engagement, focus on infrastructure projects, economic stimulus measures to support recovery.</i>

Regional Airports at the Crossroads (Again)

MRO; Concessionaires; Cargo; Ground Handling (9)	<i>Airports, airlines, other service providers within the airport ecosystem.</i>	<i>Regular operational and commercial meetings, informal but frequent to address day-to-day issues.</i>	<i>Operational success, ability to resolve issues promptly, relationship strength (personal relationships).</i>	<i>Focus on managing operational impacts, adapting to new health and safety requirements.</i>	<i>Efforts to maintain operational continuity, rebuild stakeholder relationships, increased virtual meetings.</i>
Aviation Regulators (5)	<i>Airports, airlines, international regulatory bodies (EASA, ICAO).</i>	<i>Regular inspections, audits, compliance meetings; structured and formal engagement.</i>	<i>Compliance with international standards; effective resolution of regulatory issues.</i>	<i>Establishment of pandemic response groups; frequent virtual meetings to address regulatory challenges.</i>	<i>Ongoing virtual engagement, maintaining safety standards; facilitating resumption of normal operations.</i>
Tourism Organisations (5)	<i>Airlines, airports, local chambers of commerce; PR companies, journalists.</i>	<i>Regular contact to promote tourism, manage public relations.</i>	<i>Level of tourism activity, successful promotion of the destination.</i>	<i>Managing crisis impacts, supporting safe closure of operations.</i>	<i>Rebuilding tourism, adapting to new market conditions; Increased collaboration with govt. and industry stakeholders.</i>
Representative Bodies (9)	<i>Member businesses, local politicians, municipalities, adjacent chambers.</i>	<i>Regular structured and ad hoc meetings to represent member interests, influence policy.</i>	<i>Membership engagement, ability to influence policy outcomes.</i>	<i>Significant increase in virtual engagement to manage crisis impacts, support members.</i>	<i>Continued virtual engagement, focus on recovery; supporting member businesses.</i>
Other (8)	<i>Broad range of stakeholders across the aviation value chain (regulators, policymakers, industry practitioners).</i>	<i>Regular engagement to address climate and environmental issues, support industry standards, facilitate policy development.</i>	<i>Ability to influence policy, achieve sustainability goals.</i>	<i>Addressing immediate crisis impacts, Adapting to new regulatory requirements.</i>	<i>Continued focus on environment; supporting industry recovery through strategic engagement.</i>
Total (64)					

This information was analysed with reference to framework content, and the findings formed a core component of this journal article, through the following three-pronged approach to the presentation of research findings:

- (1) Airport Stakeholder Activity in Normal Times (1a, 1b and 1c)

- (2) Airport Stakeholder Engagement During Pandemic (2*)
- (3) Airport Stakeholder Engagement Beyond the Pandemic (3*)

By engaging with the data in the above manner, it was possible to identify themes and patterns, particularly in the context of complex topics such as the impact of COVID-19 on airport operations. Furthermore, this manual approach brought with it a more substantial understanding of interview content, enabling a more consistent, and where necessary more nuanced, understanding of airport stakeholder activities and engagements before the pandemic (normal times), during the initial 'shutdown' phase and the subsequent pandemic period. This approach ensured that the analysis was not only comprehensive but also contextually rich, capturing the intricacies of each stakeholder's perspective. The ability to iteratively review coding schemes based on emerging insights, for example differences between pre and post pandemic stakeholder management activity, further enhanced the accuracy and relevance of the findings.

The thoroughness of this coding approach informed the detailed stakeholder identification, categorisation, and assessment frameworks prepared as part of the *Annals of Tourism Research* article, including identification of stakeholder importance and influence, and identification of the manner in which stakeholders assess the effectiveness of such relationships. Furthermore, manual analysis provided the flexibility to understand qualitative data in the context of each specific stakeholder and each stakeholder type in a more nuanced manner than might otherwise be the case. The key output from this approach, being the interview findings section of the published *Annals of Tourism Research* article (Section 5.4), provided detailed and rich insights into airport activity from many stakeholder perspectives during this exceptional period for airports.

The trustworthiness of these research findings is underpinned by the detailed level of thematic analysis, which forms a solid and flexible building block. The credibility of the findings is enhanced by the significant levels of interview participation across key categories. Furthermore, the high level of aviation and airport industry standardisation means that findings are robust, dependable, confirmable and transferable to airports and airport stakeholders in other jurisdictions. In summary, the manual approach ensured a high level of rigour and depth, crucial for capturing the complex and multifaceted nature of airport stakeholder activities in both regular and pandemic times.

While this manual review was time-consuming, the use of a third-party transcription service and adherence to the stakeholder framework allowed for a focused analysis which contributed to the publication of the journal article in a widely respected journal (Paper 3). Additionally, the analysis facilitated the identification of consistent and comparable findings across all categories, while also recognising unique insights, such as the benefits of listening to a 'contrarian voice' in stakeholder groups.

2.5.4 Airport Manager Stakeholder Survey

During the summer of 2022, airport managers were invited to complete a twenty-minute stakeholder questionnaire. The survey, which was open to managers of any airport, was disseminated via selected social media channels and directly into specific airport groups. Other recipients included members of the authors' professional and academic aviation and research networks. The survey was also distributed to the Dublin City University (DCU) aviation alumni cohort and promoted during academic conference attendance at this time. Twenty-seven completed surveys were returned. Most survey responses came from managers in European airports, the majority of these coming from Ireland. Respondents held airport management roles across a range of disciplines, including operations, strategy, finance, policy and planning, relationship management and regulation, ensuring a representative, albeit small, sample of managers. Larger airport managers accounted for 60% of responses, relative to 40% for those from smaller airports. Survey questions were consistent with stakeholder framework topics (Appendix D). Most questions were 'closed', with response options clearly presented, e.g. using the Likert Scale or a fixed number of response options. For a number of questions, such as the relative importance of airport stakeholders, pre- and post- pandemic assessments were sought. A small but important number of narrative questions were included to capture other topics, such as the greatest challenges and opportunities facing a respondent's area, and to enable the respondent to make any further comments not covered by other parts of the survey. While answers to these questions were analysed manually, results from other questions were processed using Qualtrics survey software (Dublin City University license). Survey findings and commentary form a key part of Paper 5.

2.6 Research Timeline

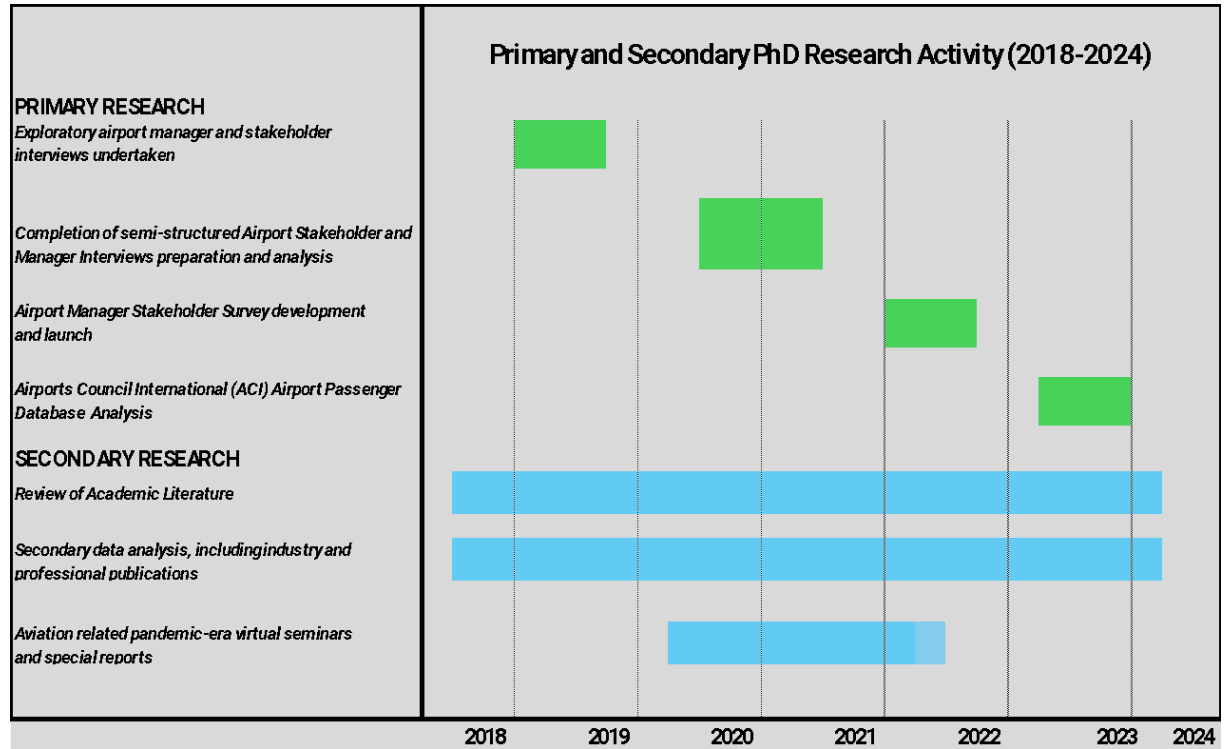
During the core research period associated with the author's PhD programme, which commenced in late September 2018 and concluded in February 2024, study activity focused on the following key primary and secondary research activities:

- *Exploratory interviews*
- *Review of literature focusing on aviation, stakeholder management, airport management and the COVID-19 pandemic*
- *Review of industry publications and media reportage*
- *Semi-structured interviews of airport stakeholders and managers*
- *Airport manager stakeholder survey*
- *Analysis of European airport passenger trends between 2019 and 2022, using ACI's Intelligence Hub database.*

A timeline of these research activities is set out below (Figure 2-3), encompassing literature reviews, research gathering activity, analysis of findings, and writing. While these timeframes reflect a core

period of research for each of the topics, some research activity also took place before and after the given dates. Research and analysis activity was also conducted simultaneously across many research topics and papers.

Figure 2-3 Primary and Secondary Research Design 2018–2024



The following summary highlight key primary and secondary research activities, including the type of information/data gathered and in which paper(s) the corresponding outputs were presented:

- March 2019 to September 2019: Exploratory airport manager and stakeholder interviews undertaken.
- August 2020 to June 2021: Primary Research: Completion of semi-structured Airport Stakeholder and Manager Interviews preparation and analysis (*Paper 3*).
- January 2022 to September 2022: Primary Research: Airport Manager Stakeholder Survey development and launch (*Paper 5*; *brief coverage in Paper 4*).
- June 2023 to November 2023: Airports Council International (ACI) Airport Passenger Database Analysis (*Paper 5*; *brief coverage in Paper 4*).
- Review of Academic Literature (Full Period) (*All papers, Case Study approach in Paper 1*).
- Secondary data analysis and research, including industry and professional publications, quality media reportage, company information. (Full Period) (*All papers*).

- Aviation related pandemic-era virtual seminars (April 2020 to March 2022) (*Papers 3 and 4*).

The timeframes described above represent the *core research period*, including primary and secondary research, analysis and manuscript preparation. Further related research activity took place before and after the period shown. Please note that research outputs (primary and secondary) also informed the preparation of this dissertation's Introduction, Discussion and Conclusion chapters.

2.7 Research Approach to Development of Strategic Frameworks

A number of methodological contributions have arisen out of this research, including the development of strategic framework prototypes to support airport management activity. These include an integrated airport business model canvas (Flightpath), being a framework which extends the Business Model Canvas (Osterwalder, 2005; Osterwalder and Pigneur, 2010) in a manner that seeks to support airport management activity. Further strategic frameworks focus on the assessment of airport State aid characteristics by policymakers and practitioners (EURAIR), and a model for airport management in volatile and uncertain times (VUCAIR).

2.7.1 How This Research Informed Development of Strategic Frameworks

In their previous professional roles, covering senior strategy and stakeholder positions in a major Irish bank, the author already had an appreciation of (a) the benefit of strategic frameworks in assessing/assisting company performance and prospects and (b) the need to use a range of models when considering these matters. Throughout much of the PhD research period, the author also considered the benefits of a framework for airport management which would provide a basis for a research contribution to airport practice.

The author's development of the three strategic frameworks presented in subsequent thesis chapters was informed by selected research findings arising out of the primary and secondary research activities undertaken through the overall period of the author's PhD research (2018 to 2024). Many such research findings gathered during the second half of the research period, for example narrative interview and survey feedback and contemporary literature/reportage, highlighted the increased uncertainty arising out of exogenous factors (e.g. political uncertainty, State aid) and endogenous challenges (e.g. retaining staff). These findings influenced the author's view that strategic frameworks could assist airports in understanding and responding to these ever-emerging challenges.

The first published paper, which was part of a series of case studies produced by the EU-funded Air Transport and Regional Development (ATARD) Group, noted that when considering company performance, the use of a range of strategic assessment models was always necessary. This shortcoming, combined with their previous strategy experience, contributed to the author's belief that such a challenge was potentially addressable through development of a new model or refinement

of an existing one. Osterwalder's Business Model Canvas was considered to be the most suitable existing framework to build upon. It provides a comprehensive 'current' picture of an airport's activities, propositions and customers/stakeholders. Because of its design, the author concluded that additional components could be added around the canvas to provide a more holistic visual representation of factors affecting the airports performance and prospects, as highlighted by research undertaken, for example, key exogenous and endogenous factors as described above, organisational headwinds and tailwinds and strategic positioning/intent. With respect to further design elements, the second paper, which documented the high levels of formality around certain stakeholder relationships where strong governance is key, such as those with regulators, policymakers and owners, contributed to design of the prototype. The lack of structure associated with stakeholder activity in smaller airports, as identified when reviewing Irish airport stakeholder relationships in Paper 3, further influenced the design of the model, by providing for such a structured approach, with stakeholder language used and stakeholder templates included in the prototype.

Research findings also showed high levels of stakeholder uncertainty with respect to future developments affecting airports. Derived from primary and secondary research, these pointed to a more uncertain future environment which would require close airport management attention and action. A key overall research finding across all research channels was the continued high level of regional airport dependence on State aid. A potential transformational development affecting this topic is the introduction of a new European Commission State aid regime from April 2027, as reported in Paper 4. These factors, together with the likely greater level of future scrutiny of State aid applications by policymakers, contributed to the author's drafting of a potential assessment framework for considering eligibility for such aid (EURAIR). The components of this framework have been highlighted throughout this research in the literature, during research interviewees and by policymakers, for example the European Parliament 2021 report on regional airports.

The research finding of an increasingly volatile post pandemic period, alluded to in Paper 5, points to the need for organisations to be more agile and resilient in such challenging times. Clear strategic direction and intent is a key enabler of such resilience, and development of the specific VUCAIR framework (Paper 5) and Flightpath prototype recognises and responds to this research finding.

In summary, the holistic approach suggested by the Flightpath prototype is designed to support an airport's response to the author's key research findings by delivering a framework which fulfils two objectives:

(1) Provides airports with an additional tool to address key current challenges using a more structured and integrated approach, by delivering a more complete action-oriented organisational overview in one place. This representation takes account of airport structure and strategy, key existing and future internal and external factors, competitive forces, headwinds and tailwinds and articulation of future

strategic intent.

(2) The Flightpath prototype also provides a potential ‘home’ for the EURAIR and VUCAIR frameworks in addition to specific strategic activity highlighted by this research, e.g. it encompasses existing strategic models, the development of stakeholder engagement frameworks and consideration of State aid assessment factors, together with identification of and response to the features and challenges of an increasingly VUCA environment.

Further development and dissemination of the Flightpath prototype has been identified as a key area for future research following the conclusion of the PhD period. The structure can be developed further in terms of presentation and dynamic use, with a key objective being to confirm its research contribution to airport management practice. Finally, development of these frameworks reflects the emergence of a key long-term impact which has emerged during the course of this research — the future landscape for regional airports is more likely to be analogous to the post-pandemic volatile period rather than the comparatively more predictable pre-pandemic period.

2.8 Assessment of research limitations and ethical considerations

It is essential to recognise the limitations inherent in any research methodology, in order to ensure that challenges associated with gathering primary and secondary research are understood, and that steps to mitigate the adverse impact of such limitations are considered and actioned. This section identifies potential research limitations and/or constraints relevant to the analysis of airport and stakeholder research topics, also detailing mitigation points and/or actions taken.

2.8.1 Research Factors, Potential Limitations and Mitigation

How representative were the research interviewees, given that they primarily represented airport activities in Irish airports?

Key airport stakeholder groups and airports accounted for at least six interviews each. Many other stakeholders, e.g., aviation scholars, were also included. The large number of interviewees (64) significantly enhances the relevance and robustness of the research findings by capturing a wide array of perspectives and experiences from diverse stakeholders.

The availability of remote interviewing technology substantially increased the number of interviewees without compromising the face-to-face element to any noticeable extent, a topic more fully covered in Chapter 8 (Section 8.9). This greater representativeness ensured a broad range of participants from all key airport stakeholder groups, with the most important ones, such as airlines and airports, very well represented. This provided for a broad and nuanced range of viewpoints, increasing the validity of the results and providing an accurate reflection of the stakeholder landscape. From a geographic perspective, while the concentration on Irish airports and activities

might risk limiting the diversity of perspectives and opinions expressed, a structured and consistent interview approach was adopted. Furthermore, the aviation and airport sectors are highly standardised globally, with international regulations and standards ensuring uniformity in operations, safety protocols, and service quality. Many interviewees also had experience of the topics covered in locations outside Ireland, for example airline managers whose responsibility extended to Irish and European airports. The high levels of airport standardisation globally suggest the relevance and applicability of these insights to airports and stakeholders outside Ireland, thereby enhancing the generalisability of the research findings.

How did your approach to interviewees encourage and obtain candid responses? Interview and Survey Plain Language Statements, issued in advance to candidates and referred to at the commencement of each interview, were explicit concerning confidentiality and anonymity of response guarantees, with the importance and benefits of such contemporary research also highlighted, especially given the pandemic backdrop against which interviews took place.

Was the fact that some of your PhD educational costs were funded by the Shannon (Airport) Group an issue? A sentence to the effect that educational support was provided in this manner was contained in each Plain Language Statement. When contacting other Irish airports, email communications included additional sentences, to make this connection more transparent and explicit. Section 2.8.2 provides further detail regarding ethical considerations and actions associated with this research

How did you keep the semi-structured interviews and survey focused on getting the information you sought? Using the stakeholder theoretical framework to determine question areas, as outlined in Paper 3, helped ensure answer relevance and consistency across each key stakeholder topic area and pandemic events. The semi-structured approach encouraged open but relevant answers to the questions posed. Interviewees and survey respondents could add any other comments they wished at the end of the survey/interview. At the same time, interviewees were allowed appropriate latitude, subject to critical topics being covered.

Did you have access to appropriate secondary information during the pandemic? During this research period, especially during 2020 and 2021, there was a significant 'democratisation' of otherwise scarce/expensive aviation industry information and insights. Regularly held aviation webinars and publications, hosted by respected aviation organisations such as Airports Council International, the Centre for Aviation, EUROCONTROL and Cirium, delivered updates from key industry leaders on key trends and issues that were unfolding and emerging. This information was available free of charge and provided valuable contemporary insights during this period.

2.8.2 Ethical Considerations

The ethical approach to this study was carefully considered, with a policy of anonymity and

confidentiality adopted with respect to interviewees and survey respondents. Primary research approaches were formally approved by Dublin City University, with ethics approval for interview and survey research activity formally obtained from the University's Research Ethics Committee (REC) (Appendix E). Interviews and surveys were planned to be conducted on a confidential and anonymous basis, with no personal information gathered. These guarantees were emphasised in Plain Language Statements and Informed Consent statements sent by email to all participants in advance of the interview date and included at the beginning of the survey questionnaire (Appendices C and D). The recording and transcribing of interviews was also highlighted in these communications.

Because of the relatively small size of the Irish market, a cautious approach was adopted regarding the wording associated with any interview contribution which might otherwise have been identifiable, for example, using terms like 'airport group' of whom there are two and 'smaller airport' of which there are three. The relatively high number of interviewees from each main stakeholder category helped to ensure the anonymity of individual participant contributions.

Interview and survey documentation was very clear about the nature of the study. The funding of some of the author's PhD educational costs by the Shannon (Airport) Group was highlighted, explicitly so in the Plain Language Statement sent to all potential airport and airport stakeholder interviewees. When communicating with other Irish airports, the following additional sentence was added to these communications, with one of the author's research supervisors copied on these emails:

'I wish to highlight also that I am in receipt of a stipend from Shannon Group, via the University, to support my DCU education. My PhD research activities themselves, including this study, are of course being undertaken on an independent basis, under the supervision of Dr Marina Efthymiou (Course Director for the MSc Aviation Leadership Programme, copied on this email) and Professor Edgar Morgenroth (Professor of Economics in the University).'

No third party had oversight of or involvement in survey preparatory activities, such as research design and development. Furthermore, through publication of the author's research, findings and potential contributions to practice are available to any airport or aviation organisation, including all of those participating in the semi-structured interview process.

Informed consent was obtained from interviewees at the beginning of each interview session, and prior to the commencement of the semi-structured interview itself, with similar details included at the beginning of the survey questionnaire. It was made clear that interviewees could withdraw at any stage of the process. When sharing high-level interview results with interviewees later in 2021, the author recorded and emailed a Zoom video, including a private URL link, to each interviewee. No viewer interaction with the video (e.g. 'like' or 'comment') was permitted, to preserve anonymity. Positive feedback regarding this approach was received from some participants.

Future considerations may provide a basis for further airport stakeholder research, such as the introduction of a longitudinal element to this study by conducting future semi-structured interviews with previous participants using a similar but updated question set.

2.9 Conclusion — Research methodology

The research methodology adopted in this study contributed to development of a robust and comprehensive understanding of stakeholder management in regional airports, including an assessment of these factors during times of crisis. By employing a constructionist philosophy supported by interpretivism, the study has been able to explore the nuanced relationships and interactions among various airport stakeholders. The combination of predominantly qualitative research methods, including semi-structured interviews and surveys, supports this philosophical approach and has ensured a thorough examination of stakeholder activities and their impact on airport performance.

The inductive research approach to stakeholder theory has also facilitated the development of strategic frameworks that can guide airport management in achieving resilience and enhancing stakeholder effectiveness during challenging times. The development of these strategic frameworks, including the integrated airport business model canvas (Flightpath), together with the EURAIR and VUCAIR frameworks, offer valuable tools for managing airport operations and addressing issues related to State aid and resilience in uncertain times.

This study underscores the importance of a structured and adaptable research methodology in addressing complex and dynamic relationships within the regional airport context. Its methodological approach informs a significant contribution to aviation and airport literature through a comprehensive exploration of stakeholder management activities and responses to crises. It also underpins the study's contributions to both theory and practice, adding to the existing literature on airport and aviation stakeholder management, and providing practical support for airport managers and policymakers to improve strategic management practices.

Finally, a reflection on the conduct of qualitative research during pandemic times may be found in Section 8.9 (Discussion).

3 Paper 1: Regional Airport Business Models: Shannon as a Case Study

Paper 1 — Regional Airport Business Models: Shannon as a case study (Hiney, N; Efthymiou, M; Morgenroth, E). Book Chapter: Air Transport and Regional Development Case Studies. Routledge. Edited By Anne Graham, Nicole Adler, Hans-Martin Niemeier, Ofelia Betancor, António Pais Antunes, Volodymyr Bilotkach, Enrique J. Calderón, Gianmaria Martini. Published December 2020. ISBN 9780367533137.

This paper considers airport characteristics, including the role and local impact of regional airports, their economic contribution and key stakeholder relationships, and factors affecting airport ownership and structure. A case study of Shannon Airport in the Republic of Ireland is used to amplify some of the features of and challenges facing regional airports and help airport operators and their stakeholders identify common aspects of such airports' role in regional development.

The research activities discussed in this paper (primarily a desktop and case study-based approach) are contextualised and elaborated upon in Chapter 2 (Research Methodology), which provides comprehensive insights into the overarching research philosophy and the specific methodologies deployed throughout this thesis.

Contribution Themes covered: Regional airports: Scene setting; Strategic positioning; typical challenges; performance factors; business models; stakeholder relationships

Regional airport business models

Shannon Group as a case study

Noel Hiney, Marina Efthymiou, and Edgar Morgenroth

Published December 2020

3.1 Introduction

European lawmakers regard regional aviation as a key contributor to citizens' mobility, providing better access to regions and contributing to the development of business, tourism, and related services, thereby improving the spread of economic prosperity across Europe (European Commission, 2014). Various definitions of what constitutes regional airports have been put forward. Airports Council International — Europe (ACI Europe), a key representative body for Europe's airports, considers an airport as regional if it: (1) primarily serves short- and medium- range routes; and (2) primarily serves point-to-point destinations (ACI- Europe, 2017). An alternative, and the definition more frequently considered in this chapter, is a European Commission definition of 'regional airport', meaning an airport processing up to three million passengers per annum (European Commission, 2014).

Many regional airports in Europe feed significant passenger numbers into larger European airports, providing high levels of connectivity. In fact, such airports comprise 90 per cent of all European airports, with 209 air carriers, 14,600 routes, and 724 destinations served in 2017 (ACI- Europe, 2017). Such positioning has ensured that regional airports play a critical role as important regional economic contributors, which have a multiplier effect into local communities. This impact is achieved mostly through the provision of connectivity that provides essential links to trade and tourism activity, both within the regional catchment area and across the country. Efthymiou et al. (2016) argue that large airports provide the highest connectivity levels, but that smaller airports deliver the greatest connectivity growth. From a commercial perspective, local air access helps to stimulate direct inward investment, generating new business and triggering job creation, which in turn leads to further increases in trade. Regional airports have also become pivotal in supporting social and commercial objectives in regions and areas outside EU capitals and other large cities. As larger European airports increasingly experience capacity constraints, the increased airline use of regional airports, combined with their growth ambitions, have helped them gain additional passenger traffic.

A number of scholars (e.g. Dobruszkes et al., 2017; Graham, 2014; Adler et al., 2013; Baker and Donnet, 2012) have researched regional airports and their performance. Regional airports face increasingly robust competition from hub and other regional airports. Competition and the relatively high fixed costs associated with airport infrastructure have given rise to increasingly challenging

trading conditions for the sector, with up to 76 per cent of regional airports estimated to be unprofitable (ACI- Europe, 2019). Moreover, regional airports, in particular, are more challenged than larger airports, given that adverse external shocks and volatilities can have a much higher impact on their financial performance, due to smaller economies of scale.

While regional airports are recognised as essential to the economic well-being and development of the regions they operate in, government involvement with regional airports is complicated by the ‘dual dilemma’ of such airports being socially and commercially beneficial to a local hinterland on the one hand, but often uneconomical to operate on the other hand. The status of a few such airports has changed due to this performance pressure. Some small regional airports have terminated operations due to low activity and profitability (e.g. Galway airport in Ireland). A small number of airports (e.g. Plymouth City airport in the UK) have terminated their operations due to low commercial traffic, but the local community has actively tried to make such airports operational again (FlyPlymouth, 2019). This indicates the strong connection of small regional airports to the local community, but also to ownership models.

This chapter outlines the case of Shannon Airport, a regional airport in Ireland which reflects some of the issues regional airports are facing. A brief history of Shannon Airport is provided and its innovative ownership structure (i.e. airport group incorporating tourism and property entities) is considered. This case study can help other airport operators identify commonalities in aspects of the contribution of airports to regional development.

3.2 Airport Ownership and Structures

The connection of airport ownership and structure to performance has been considered by several scholars (Pagliari and Graham, 2019; Adler and Liebert, 2014; Gillen, 2011; Ison et al., 2011). The diversification of airport ownership structures was identified by Graham (2014) as one of three key current airport trends, the others being privatisation and commercialisation. Almost 60 per cent of European airports were publicly owned in 2016, down from 78 per cent in 2010 (ACI- Europe, 2016). Nevertheless, corporatisation of state- owned airports does not necessarily improve performance. Cahill et al. (2017) suggest that despite a continuous process of commercialisation in Ireland’s Dublin Airport Authority (DAA), total factor productivity performance declined during the 1994–2014 period mainly due to considerable long- term investment in airport infrastructure that could not be expected to generate short- term returns during the period under measurement.

Other airport ownership models include a combination of public and private shareholdings and hybrid structures, where private interests manage the activities of municipally controlled airports on a concession basis. This model is more common in the United States than in Europe. Private sector involvement is more prevalent in larger airports, where analysis shows that around 40 per cent of all airports have some private sector activity, with these airports accounting for 75 per cent of annual

passenger numbers (ACI- Europe, 2016). Some publicly owned airports across Europe have many different municipal shareholders (e.g. local authorities), while another ownership model involves private or state organisations owning and managing multiple- airport organisations, such as Manchester Airports Group (UK) and Finavia (Finland).

European airport operators, managed either on a standalone basis or as part of an airport focused group, focus on core commercial activities that mostly generate aeronautical and non- aeronautical revenue. Changing airport ownership is associated with commercialisation (e.g. terminal concessions, car parking, and real estate developments outside the airport perimeter), different pricing strategies, and the provision of incentives to carriers to operate to these airports (Efthymiou et al., 2016; Graham, 2014). Airports are in favour of dual- till regulation, arguing that concessions and real estate developments do not generally possess natural monopoly characteristics (Frontier Economics, 2014), although they do from a consumer perspective, at least on airside. Airlines, on the other hand, favour the single- till approach which can be more likely to contribute to a reduction in the fees charged for aeronautical services (Efthymiou et al., 2016).

Airport operators and financial investors are increasingly joining forces to deliver airport developments through operational and financial structuring instruments, such as public- private partnerships or the concession management contract arrangements previously described. Privately owned and independent airports are perceived as more market- oriented (Halpern and Pagliari, 2007), not least because senior management is likely to be locally based and more scrutinised by local stakeholders, possibly leading to a stronger bias for action.

Regional airports have a multitude of different stakeholders whose presence and activities extend deeply into local communities. This interaction between airport and region is acknowledged as fundamentally important, with airport activity essential to local economic performance — the *multiplier effect*, being the assessment and calculation of indirect and induced airport impact on economic activity, results in increased levels of trade, tourism, and travel, thereby supporting and helping to attract inward investment. In addition, airport- airline cooperation can be mutually beneficial, especially for airports with high seasonality (extreme peaks during high season and extreme lows outside these periods), notwithstanding the need for such arrangements to comply with State aid guidelines if they involve state- owned airports (Efthymiou and Papatheodorou, 2018). This multiplier effect. indirect and induced metrics from input/output economic measures, might also be expected to be more significant for regional airports with a business structure that incorporates a tourism entity.

3.3 The Aviation Industry in Ireland

Ireland has a well- established aviation industry from both a business and regulatory perspective, making a significant gross domestic product (GDP) contribution of €4.1 billion per annum, which

supports 42,000 direct jobs (Department of Transport, Tourism and Sport, 2017). The aviation sector is core to Irish economic development, given the country's status as a small island nation. Ireland has three state- owned passenger airports: Dublin, Cork, and Shannon, together with a small number of mostly privately owned ones, including Ireland West (Knock), Kerry, and Donegal (Figure 3-1). However, 85.6 per cent of all Irish air travel is to and from Dublin Airport (Table 3.1).

Figure 3-1 Key Airports Operating on the Island of Ireland



[Source: Department of Transport, Tourism and Sport (2019a)]

Table 3.1 Total Passenger Numbers Handled by Key Irish Airports in 2014–2018

Airport	2014	2015	2016	2017	2018	% change 2017-2018	% change 2014-2018
Dublin	21,694,893	24,962,518	27,778,888	29,454,474	31,319,419	+6.3	44%
Cork	2,138,057	2,065,678	2,226,233	2,301,450	2,387,806	+3.8	12%
Shannon	1,555,225	1,642,888	1,674,567	1,599,390	1,677,661	+4.9	8%
Knock	703,670	684,671	735,869	748,505	775,063	+3.5	10%
Kerry	294,955	303,039	325,670	335,480	365,339	+8.9	24%
Donegal	35,415	36,552	44,156	46,514	46,537	+0.0	31%
Waterford ¹	33,189	34,249	13,511	0	0	-	-100%
Total	26,455,404	29,729,595	32,798,894	34,485,813	36,571,825		

[Source: Central Statistics Office (2019). No commercial flights since June 2016 from Waterford airport.]

This high concentration of traffic represents a significant challenge for Ireland's regional airports, given the small geographical size of the Irish Republic and the increased ease of access to Dublin through the relatively recent completion of a motorway network providing significantly enhanced connectivity to Dublin Airport. Over 86 per cent of motorway kilometres existing in Ireland have been completed since 2002 (McCoy et al., 2018). Table 3.2 shows access times of less than 2 hours 30 minutes from most cities to the airport, with the time taken from Cork 2 hours 45 minutes.

Table 3.2 Fastest Travel Time (Private Motor Car) from Main Irish Cities to Five Largest Airports

<i>Airport → City ↓</i>	<i>Dublin</i>	<i>Cork</i>	<i>Shannon</i>	<i>Ireland West</i>	<i>Kerry</i>	<i>Waterford★</i>
Dublin	21 min	2 hr 53 min	2 hr 30 min	2 hr 36 min	3 hr 27 min	2 hr 9 min
Cork	2 hr 45 min	15 min	1 hr 41 min	3 hr 10 min	1 hr 31 min	1 hr 51 min
Limerick	2 hr 11 min	1 hr 40 min	26 min	1 hr 54 min	1 hr 23 min	2 hr 15 min
Galway	2 hr 17 min	2 hr 48 min	1 hr 7 min	1 hr 16 min	2 hr 32 min	3 hr 22 min
Waterford	1 hr 55 min	1 hr 50 min	2 hr 25 min	3 hr 50 min	3 hr 0 min	9 mins
Sligo	2 hr 36 min	3 hr 49 min	2 hr 12 min	38 min	3 hr 33 min	4 hr 6 min
Athlone	1 hr 20 min	2 hr 49 min	1 hr 27 min	1 hr 22 min	2 hr 49 min	2 hr 36 min
Belfast	1 hr 42 min	4 hr 23 min	4 hr 4 min	3 hr 23 min	5 hr 0 min	3 hr 39 min
Derry	3 hr 3 min	5 hr 44 min	4 hr 23 min	2 hr 48 min	5 hr 48 min	4 hr 59 min

[Source: Devised by authors using Google Mapping Data, 23 September 2019 (Google Maps, 2019) * No current passenger traffic.]

3.4 Shannon Airport: An Introduction

Shannon Airport forms a significant part of Shannon Group, a 100 per cent state-owned Irish

organisation whose other companies manage significant interests in tourism and commercial property, mainly within the airport's broad hinterland. Shannon Group has also been responsible for the establishment of Ireland's largest aviation cluster, with 3,000 employees working in over 48 companies there (Shannon IASC, 2019).

3.4.1 Airport History

One of Europe's most westerly airports, Shannon was established in 1945 and the bilateral Ireland/US Air Services Agreement signed that year stipulated that flights to and from Ireland would route only through Shannon, resulting in its designation as Ireland's transatlantic airport. Shannon's geographical position also meant that until the mid- 1950s, many European and North American airlines, who operated aircraft with limited range on transatlantic routes, used the airport as a refuelling gateway between Europe and North America. Shannon established the world's first duty-free airport shop and industrial zone during this time (Shannon Airport, 2017). The airport developed a partnership with Aeroflot during the 1980s, involving fuel bartering and aircraft painting. This relationship led to the opening of the Soviet Union's first duty- free shop, on a joint- venture basis, in 1988. Shannon Airport established an advisory retail business (Aer Rianta International, ARI) that year which, as part of Dublin Airport Authority (DAA), is now a major airport retailing and retail consultancy organisation (Shannon Airport, 2017a). Following an easing of restrictions in the 1990s, the requirement for traffic on air routes between Ireland and the USA to stop at Shannon in both directions was fully eliminated following the introduction of the EU- US Open Skies Agreement in 2007 (Barrett, 2009).

During 2009, the first US Customs and Border Protection (CBP) pre- clearance site outside North America and the Caribbean opened in Shannon. Due to its Atlantic location, the airport has a high proportion of transatlantic travel relative to other airports of its size, with Aer Lingus, American, Delta, and United operating routes out of Shannon using narrow- body aircraft. Norwegian and Air Canada operated routes from Shannon to the United States and Canada, respectively, using Boeing 737 Max aircraft, until the grounding of this type in March 2019. The Norwegian routes were subsequently cancelled. 2018 passenger numbers, including transit traffic, totalled 1.86 million per annum. The UK was the largest market served by Shannon, with 47 per cent of total origin and destination traffic carried. The US and European markets accounted for 26 per cent and 27 per cent of such traffic (Shannon Group, 2019).

3.4.2 Shannon Airport Ownership

Always a state-owned entity, Shannon Airport was attached to the Irish Department of Transport before becoming part of Aer Rianta, the Irish State Airport Authority, in 1969. In 2004, the DAA replaced Aer Rianta, retaining responsibility for Cork, Dublin, and Shannon Airports, in addition to ancillary companies including ARI.

Future ownership options for Shannon were considered by the Irish government in 2012, setting in motion events, which led to the formation of Shannon Group in 2014. The then Minister for Transport commissioned a review of ownership options for Cork and Shannon airports, in advance of any decisions regarding separation of state airports (Department of Transport, Tourism and Sport, 2012). An international strategic consultancy organisation under-took this assessment, and its final report expressed concerns about prospects for Shannon, highlighting a significant drop in air traffic and passenger numbers. It suggested that demand levels were not sustainable, that niche investments might not generate required returns, and that the airport therefore faced a potential threat to its viability (Booz and Company, 2012). The alternative to Shannon remaining part of DAA was the airport's separation from this authority, addressing issues such as the impact of Shannon- identified DAA debt on future viability. The new corporate entity to be established would incorporate other companies such as Shannon Development, which changed its name to Shannon Commercial Enterprises (trading as Shannon Commercial Properties), a state- owned owner of significant commercial property interests. Shannon Development (originally SFADCO, or Shannon Free Airport Development Company) had been established by the Irish Government in 1959, to promote the interests of Shannon Airport by driving regional economic development in the wider Shannon area in partnership with government, private companies, public bodies and the people of the region (Shannon Development, 2007).

During the stakeholder engagement process following the publication of these options, it appears that local parties were quite enthusiastic in their support for separation, with Regan (2017) highlighting the positive local reaction to the establishment of Shannon Group, his paper positioning the change in the context of previous challenges such as the arrival of the jet age and industry cycles, and emphasising Shannon's innovation DNA, as exemplified by the leadership of Dr. Brendan O'Regan over many years, for example through introduction of the world's first airport duty- free shop in 1947 and development of a free- trade zone in 1959 (O'Connell and O'Carroll, 2018).

The decision to grant Shannon Airport full independence from DAA (now daa plc) was taken in principle in May 2012, to take effect on 31 December 2012 (Department of Transport, Tourism and Sport, 2012). Shannon Group, the current corporate structure, was formally established in September 2014 and included the airport, property interests, and the Shannon Heritage tourism business (a subsidiary of Shannon Commercial Enterprises). An International Aviation Services Centre cluster, Shannon IASC, was also established. ARI, the airport retail and duty- free consultancy that started life in Shannon, was by then an integral part of daa. It has been reported that the DAA retained a debt of about €110 million associated with Shannon Airport activities. This would mean that the airport started its new independent life on a debt-free basis (O'Halloran, 2018).

Ireland's Minister for Transport at that time optimistically emphasised the benefits of separation to Shannon Airport and the Shannon region, in particular: (1) a fresh approach to airport development;

and (2) creation of the aviation services centre to build on a hub of aviation- related business activity. An Aviation Business Development Task Force established at this time suggested that Shannon could, within five years, be a self- sustaining, cost- efficient international airport with 2.5 million passengers per year, providing convenient short- and long- haul travel options for local businesses and travellers. It also envisaged the airport as a transit hub for passenger and cargo airlines (using its geographic position and US Customs pre- clearance advantages) and the Inter-national Aviation Services Centre (IASC) as a vibrant cluster of diverse and aviation- related businesses, providing training, education, and employment and opportunities. It contended that IASC could create and sustain 3,000–3,500 new direct jobs (Department of Transport, Tourism and Sport, 2014).

3.4.3 Shannon Group Structure: Overview

The wholly state- owned Shannon Group is ‘a commercial semi-state group focused on delivering economic benefits for the West of Ireland and the wider national economy’ (Shannon Group, 2017). Shannon Airport Group’s mission and vision statements focus on the successful development of aviation, tourism and property assets, customer excellence, business growth and playing a pivotal role in the region it serves.

Shannon Group comprises four distinct units:

1. Shannon Airport, a regional airport with routes to the UK, Europe, and North America.
2. Shannon Commercial Properties, a company that owns and manages significant property assets, mostly in the Shannon region.
3. Shannon Heritage, a tourism company that owns and manages tourism assets across the Republic of Ireland.
4. Shannon International Aviation Services Centre (IASC), which focuses on the creation of an aerospace and aviation cluster in Shannon.

Shannon Group’s structure is underpinned by a not- yet- proven hypothesis that synergies are possible for companies within the Group, through the provision of shared leadership and support for airport, tourist, and property businesses and activities within the Shannon region. In his Shannon- focused review of airport industry clusters, Zhang (2014) contends that this is a new development model supporting regional economic activity, with local enterprises and external forces as other key factors. This approach positions Shannon Airport as a key driver and enabler of regional economic development. The other companies within the Group such as Shannon Heritage, Shannon Commercial Properties, and IASC can contribute significantly by playing essential roles in attracting foreign investment and economic and tourism activity to the Shannon region and contributing to increased airport traffic. These objectives are not dissimilar to Shannon Development’s original vision, as previously described.

As state-owned organisations, however, individual Shannon Group companies must operate independently and comply with State aid regulations and requirements. Any asymmetric national regulation or state funding favouring Shannon or another airport might be likely to fall foul of such rules. However, the impact on airport competition arising out of Ireland's privately owned regional airports receiving EU-sanctioned State aid, in the shape of operating or capital expenditure grants for safety and security matters which Shannon and other state airports cannot avail of due to a government policy not to provide such aid, should also be noted. Such anomalous arrangements have potentially disadvantaged Shannon and Cork airport performance and prospects. For example, Shannon Airport had to borrow funds to finance a recent runway overlay, while the state provided 75 per cent of financing for a similar overlay for the mostly privately owned Ireland West regional airport (O'Brien, 2019).

3.5 Analysis of Shannon Airport's Strategic Position

A number of academic tools have been used to describe and analyse Shannon Airport's strategic position. This activity was informed by consideration of key airport characteristics, industry trends, opportunities, challenges, and competitive threats. A broad strategic assessment of Shannon Airport was first under-taken by the authors to help assess and interpret its positioning. The following strategic models were deployed:

- 1 Business Model Canvas
- 2 Strengths, Weaknesses, Opportunities, and Threats analysis
- 3 Porter's Five Competitive Forces

3.5.1 Business Model Canvas

Osterwalder and Pigneur's Business Model Canvas (2010) outlines key components of the value model driving a company's business. This model describes how value is generated, transferred, and delivered to key stakeholders, with value deduced through three entities listed as customers and partners, core business propositions, and financial performance. A Business Model Canvas can make connections more explicit (Joyce and Paquin, 2016) and can identify opportunities for value creation (Johnson et al., 2008). Shannon Airport's Business Model Canvas reflects the airport's two distinct customer sets: passengers (business to consumer, B2C) and airlines (business to business, B2B). It suggests a focused business model for Shannon Airport, concentrating on increasing volumes of passenger and, to a lesser extent, cargo services. Strong route development activity and high levels of engagement with various companies under the umbrella of the Shannon Group, together with private and public stakeholders with interests in the Shannon region, all underpin this approach.

The airport's value proposition highlights an excellent and efficient passenger experience, enabled by ease of access, a reasonable number of destinations, speedy processing, CBP US Customs and

Border pre-clearance, and a positive retail experience. Airlines receive competitive terms to operate to and from this important tourism gateway in uncongested airspace with significant terminal capacity and the longest runway in Ireland, and a potential catchment area of one million people living within 90 minutes of the airport (Anna Aero, 2019a).

Shannon customer segmentation identifies business and leisure passengers (B2C), and network and low-cost carrier airlines (B2B), operating mainly point-to-point routes to and from the UK, Europe, and the United States. Other customers include maintenance, repair, and overhaul (MRO) companies which rent hangar space at the airport. Key activities supporting Shannon's proposition include a mandate to increase aeronautical and non- aeronautical revenue and stakeholder engagement, which is concentrated on stimulating economic and tourist activity in the Shannon region. Shannon's main resources include its significant airport infrastructure, in particular a terminal with passenger capacity comfortably exceeding current traffic levels. Other Shannon Group company resources — i.e. tourism, commercial property, and aviation services — help increase economic growth and prosperity in the region. The airport continues to explore new routes and introduce innovations such as a recently opened an autism-friendly sensory room in the airport departures area (Flynn, 2017).

Figure 3-2 Business Model Canvas, Shannon Airport, August 2018



<http://www.businessmodelgeneration.com> * Cost and Revenue Comments Based on Group Financials

[Source: Osterwalder and Pigneur's Business Model Canvas (2010), interpreted and applied to Shannon Airport]

Shannon's Business Model Canvas (Figure 3-2) shows that major partners — including airlines, Shannon Group companies, concessionaires, and external stakeholders such as regulators and local representative bodies — are essential to the airport's business model. Municipal bodies can, through policy decisions, play a key supporting role in airport development, promoting 'win- win' policies which support advancement of the airport and the region. Papatheodorou et al. (2019) highlight this

triple-win benefit of an effective stakeholder relationship triangle of airport, airline, and tourist authority partners. The relationship with principal customers, especially airlines, is fundamental to a regional airport's success. The impact of any change to an airline's network footprint will be immediately felt by the airport.

Turning to financial performance, Shannon Group's 2018 Annual Report highlights operating profit for the year of €15.7 million, an increase of almost €7 million over the previous year, with much of this the difference accounted for by the combined impact of investment revaluations and a provision for staff termination payments. This outcome presents a return on equity of just over 10 per cent. Total operating costs came to €77.6 million, this increase of 12.3 per cent from the previous year primarily accounted for by the provision for employment termination payments. Separate airport figures were not disclosed. Total revenue increased by 7.7 per cent to €77.8 million (Shannon Group, 2019).

Airport income streams were not broken down between aeronautical and non- aeronautical revenue prior to the 2018 report. That year's revenue disclosure provides a partial breakdown for 2018 and 2017, which shows specifically declared aviation revenue (Shannon Group, 2018a). Aeronautical revenue was almost identical between the two years, reflecting the challenges associated with new route development (the Boeing 737 Max grounding, then used by two airlines serving Shannon, occurred following year-end, and did not affect these numbers). It should be noted that a portion of Shannon Group retail and commercial revenue may be airport related, given the fact that total airport revenue as reported was higher in previous years, but such a breakdown is not now available, and a like- for- like comparison with previous years is not therefore possible (Table 3.3).

The absence of any material long-term debt has undoubtedly been of benefit to Shannon Group finances, the modest 2018 non- current ratio reflecting a long- term loan associated with a recent runway overlay investment. Table 3.4 shows some key financial ratios for the Group. These measures highlight a high but improving cost to income ratio of 83.2 per cent for 2018 and annual staff costs of €58,395 per employee. Both numbers appear high relative to the nature of the Group's businesses. They also provide context for the airport's staff voluntary redundancy programme and airfield re-categorisation from Category 9 (the most comprehensive fire service possible) to the lesser Category 9 flexible classification, as the number of wide-body aircraft using the airport has fallen considerably, which ultimately reduces the permanent need for the highest category of fire service. The revised categorisation seemed adequate and acceptable, given Shannon's traffic volumes and aircraft types (Sheridan, 2017).

Table 3.3 Shannon Group Revenue Analysis

	2017 (€1,000)	2018 (€1,000)
Aeronautical and related income	18,285	18,289
Retail revenue	16,120	17,741
Tourism revenue	10,172	12,036
Commercial property revenue	10,038	10,888
Airport concession and rental revenue	9,517	9,991
Other commercial revenue	8,107	8,892
Total revenue	72,239	77,937

[Source: Shannon Group (2019)]

Table 3.4 Key Financial Ratios for Shannon Group

	2013	2014	2015	2016	2017	2018
Cost/income	99.62%	96.38%	89.87%	89.94%	88.60%	83.17%
Return on assets (ROA)	0.30%	0.42%	5.13%	4.24%	5.37%	7.22%
Return on equity (ROE)	0.44%	0.53%	6.30%	5.08%	6.92%	10.08%
Current assets/current liabilities	131.03%	178.84%	192.62%	174.74%	140.14%	101.28%
Quick assets/current liabilities	94.54%	134.02%	144.44%	135.72%	91.99%	44.81%
Gearing (non-current debt/equity %)	No non-current debt				10.10%	12.2%
Staff cost per employee in € (excl. termination payments)	No data		58,268	56,313	58,395	58,629

[Sources: Calculations based on Shannon Group Annual Report and Accounts (Profit and Loss, Balance Sheet and Cash Flow Financial Statements) 2014, 2015, 2016, 2017, 2018 (Shannon Group, 2015, 2016, 2017b, 2018a, 2019)]

The Business Model Canvas highlights how a change in one variable might affect others. For example, the financial impact (cost and revenue) of the provision of (say) free customer parking using available underutilised land, or subsidised public transport services, could be offset by an improved customer value proposition, higher passenger numbers, and increasing non-aeronautical revenue, achieving a local multiplier effect.

The Business Model Canvas does not, however, provide extensive insight into the macro and micro forces affecting Shannon Airport, as it is created primarily using an internal company standpoint, however, these forces identify Shannon's landscape and positioning while providing reference points to where future actions may be considered. The SWOT and Five Competitive Forces models have been used to consider these factors for Shannon Airport.

3.5.2 Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis

The SWOT analysis examines a company's Strengths, Weaknesses, Opportunities, and Threats. The application of the SWOT analysis to Shannon Airport has highlighted a small number of critical features influencing each quadrant. Main positive factors include unrestricted, cost-effective capacity for expansion and the potential for recent government planning policy announcements to improve growth prospects for the airport, enabled by strong stakeholder engagement. Key challenges identified include low population density, significant domestic airport competition, modest demand for new services and, of course, Brexit. Table 3.5 identifies these features for Shannon Airport.

Table 3.5 Shannon Airport SWOT analysis

<i>Strengths</i>	<i>Weaknesses</i>
<ul style="list-style-type: none"> • Comprehensive airport infrastructure; 24/7 availability • No delays/congestion – unrestricted capacity airside and landside • Strong passenger experience, especially westwards – ease of access, CBP pre-clearance and smooth transit to gate • Positioned between third and fourth largest Irish cities • A key part of region-based Shannon Group, focused on delivering economic benefits to its hinterland • Unique aviation brand – heritage rooted in innovation and entrepreneurship • Ideal west coast base for inbound tourism (a fundamental proposition) – Wild Atlantic Way gateway status 	<ul style="list-style-type: none"> • Challenging route economics. Low (population)-density hinterland – impact on outbound passenger demand (expensive for carriers to operate) • Peripheral location, especially for eastbound traffic • Not ideally located for freight business • Modest route network (lack of European hub routes) and low, light frequencies • Cost base, given the scale of infrastructure, e.g. staff costs • Poor public transport connectivity (no rail, few bus services) • Group funding restrictions (airport must be self-financing; no State Aid permitted)
<i>Opportunities</i>	<i>Threats</i>
<ul style="list-style-type: none"> • Favourable public policy approach to balanced economic and tourism development (National Aviation Policy, Ireland 2040, Rural Action Plan for Jobs) • Strongly performing economy, improving business and tourism prospects • Galway now part of Shannon hinterland, following recent opening of new motorway. • Region-focused stakeholder group to pursue opportunities in a coordinated way • New funding models/partnerships – development of significant piece of local infrastructure, e.g. conference centre, aviation museum • Benefit to Shannon of holistic approach to approach to State Airport Capacity Review • New inbound markets (e.g. Asia) 	<ul style="list-style-type: none"> • The impact of Brexit on activity and business volumes – the UK a key market (42% of passengers) • No significant change in government policy favouring Dublin and east of Ireland development (notwithstanding recent initiatives to address this) • Strong competition from Dublin, Cork, and other European airports for new airline routes • Loss of major airline customers – two airlines account for a high proportion of total traffic • Route impact of extended Boeing 737 Max grounding • Boeing 757s, heavily used in Shannon, approaching the end of their commercial life • Risk that Shannon Group structure might deflect airport focus

[Source: *Devised by authors*]

3.6 Brexit: A Key Threat

While the enduring economic effects of Brexit will take some time to be felt, its potential impact on Irish aviation, including airports and airlines, is likely to be significant in any no- deal scenario. Irish airports are very exposed to the UK economy, which is solely responsible for 43 per cent of total

European passengers handled by Ireland's main airports in 2017 (Central Statistics Office, 2018). As Brexit is expected to have a negative impact on the UK economy at least in the short to medium term, resulting in higher unemployment and lower average income, passenger numbers are likely to be affected. From a transport and passenger transit perspective, any post- Brexit regulatory delays to aircraft and passengers departing from or arriving into Ireland would put a strain on the country's airport infrastructure.

According to a recent Irish Tourism Industry Confederation Report, receipts from visitors to Ireland from Great Britain have been declining since the fall in the value of UK currency sterling after the UK referendum vote to leave the European Union, with such visitors seeing a 12 per cent reduction in their purchasing power (ITIC, 2019). These developments are likely to affect Shannon Heritage (tourist business) performance. In response to this challenge, Tourism Ireland, a national tourist authority, is launching a promotional campaign to increase British tourist spending by 25 per cent over the next three years (Tourism Ireland, 2019). A sustained weakening of sterling relative to the Euro, however, could see a reduction of UK traffic into Shannon, though it may make the UK a more attractive destination for outgoing passengers.

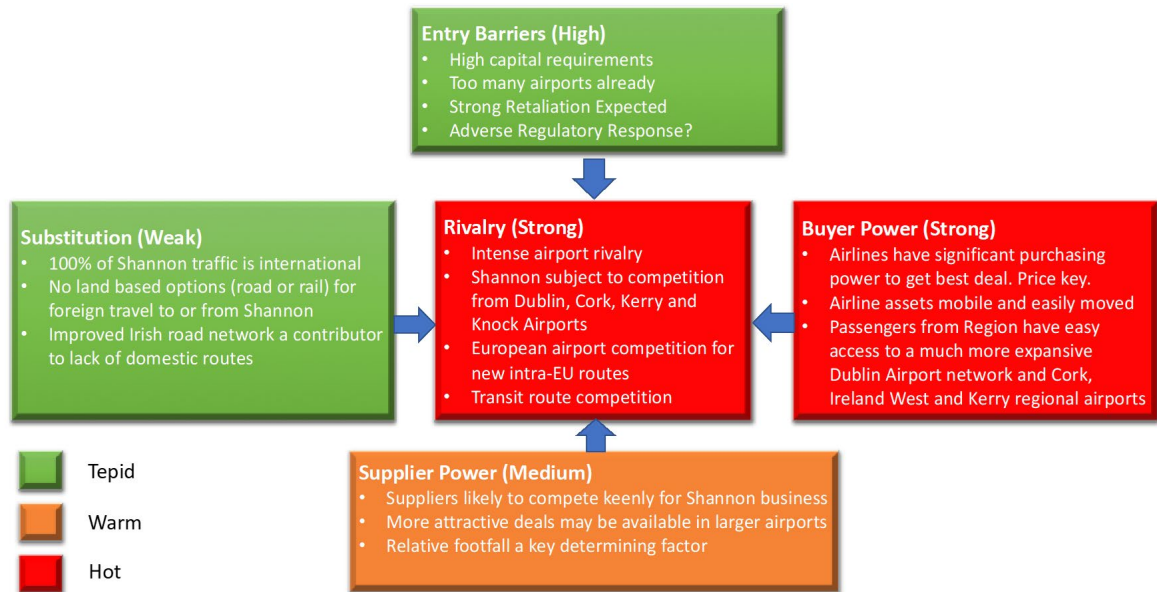
Brexit might also be likely to have an adverse impact on Shannon Commercial Properties and the International Aviation Services Centre if, for example, company decisions to invest in the region are cancelled or scaled back due to economic uncertainty. There is, however, also a possibility that Brexit might lead to some displacement of Foreign Direct Investment (FDI) away from the UK (Lawless and Morgenroth, 2016), which might benefit Shannon Commercial Properties.

The impact of Brexit on the broad activities of Shannon Airport and other Irish airports will ultimately be determined by the nature of the future relationship that will have to be negotiated. This arrangement will also define the future positioning of the UK's aviation system within EU Single European Aviation Area and Open Skies agreements.

3.7 Five Competitive Forces Analysis

Michael Porter's Five Forces model (1979) specifically considers and assesses competitive threats facing an organisation. Like the business model canvas, Porter's model is a static one, representing a snapshot of the business at a given time, but not necessarily conveying industry volatility and rate of change. The model considers a company's performance under complex microeconomic conditions, capitalising on five explanatory or causal variables, described as forces (Grundy, 2006). Understanding the nature of these forces is essential so that the airport can prepare its response and develop/implement specific strategies to effectively deal with the issues it faces. Figure 3-3 shows that two forces have a potential adverse impact on Shannon Airport's business prospects: first, the power of buyers, both airlines and passengers; and second, an exceptionally high level of competition from other airports, particularly Dublin.

Figure 3-3 Shannon Airport's Five Forces analysis



[Source: Devised by authors, based on Porter's 'Five Forces' Framework.]

Entry Barriers. Threat of new entrants (High — low threat to Shannon): There may already be too many airports in Ireland, evidenced by the closure of Galway airport to passenger traffic in 2013. Galway is about 1.5 hours by car from both Shannon and Knock, while Dublin is 2.5 hours away from the city. Significant capital costs would be experienced by any prospective airport entrant, given the vast infrastructure that would be required, with revenue not assured. A strong response could be expected from regulators and incumbents. Therefore, any new airport entrant is very unlikely.

Substitution Threat of substitutes (Weak — low threat): In the past, roads would have represented a significant substitute threat for domestic Shannon routes, and this is what happened some years ago. Today, 100 per cent of air traffic into and out of Shannon is international. There are no domestic or Northern Ireland air routes, perhaps because of the much-improved roads infrastructure. Other than Northern Ireland visitors, an air or sea journey is essential for international passengers travelling to and from the region. Therefore, other transport modes such as high-speed rail or roads present no substitution risk regarding such travel, although improving virtual video conference capabilities may do so for some business customers, over time.

Buyer Power. Bargaining power — buyers (Strong — high threat): Wilkinson (2013) defines bargaining power as leverage that can be exerted on a company by customers to get the best deal possible, e.g. better slots, superior service, lower price. Airlines have significant bargaining power when dealing with Shannon Airport. Their assets (aircraft) are mobile and can be based at whichever airport offers the most favourable deal, meaning that they can extract the best possible arrangement and still transfer their business elsewhere when the contract expires (Woulfe, 2010). The incessantly commercial focus influencing this approach applies to all airlines using Shannon. Passengers equally

have other airport options including Cork, Kerry, Ireland West (Knock), and Dublin airports, which have become more accessible by the much-improved motorway infrastructure. Even though airlines choose the airports to service, passengers chose the airline to fly with, and the airport to fly through. With price and convenience key differentiators, passengers have plenty of bargaining power.

Supplier Power. Bargaining power — suppliers (Medium — medium threat): Companies supplying service, plant, and equipment to Shannon strive to win such contracts through a variety of means including price, value-added services, and discounts. However, contractors would be expected to compete more aggressively for business with more extensive facilities such as Dublin or other international airports whose scale significantly outweighs Shannon. Such contractors would be more focused on supplying 100 new information display screens in Dublin, for example, than 10 in Shannon. Dublin would benefit from higher discounts and expanded agreements. Nonetheless, most suppliers will be interested in securing such contracts, regardless of airport size.

Rivalry. Industry rivalry (Strong — high threat): Competition amongst airports is intense, not just from Dublin and Cork, for routes and passengers, but also other European airports which are pitching to airlines for new routes. For example, Kerry airport has 14 weekly services to Dublin on Aer Lingus Regional (Kerry Airport, 2019), which allows passengers to connect onwards, posing a high threat to Shannon. Ireland West (Knock) offered 71 weekly flights during summer 2018, of which 59 flights were UK bound (Ireland West Airport, 2019). Many airports also bid for transit routes, which use airport facilities and services en-route to a final destination. Development of the Irish motorway network has significantly improved passenger access nationally to a much broader range of destinations in Dublin Airport at the expense of regional airports, including Shannon. This has led to a reduction in routes, such as the Cork and Shannon PSO services to Dublin, and connectivity at such regional airports (Vega and Reynolds-Feighan, 2016). Furthermore, intermodal passenger transport can contribute to the better airport accessibility and destination competitiveness (Efthymiou and Papatheodorou, 2015). Ireland's national bus service promotes seamless connectivity from all parts of Ireland to Dublin Airport (Bus Eireann, 2019), increasing competition from the country's dominant airport.

3.8 Peer Airport Comparison: Glasgow Prestwick Airport

Across Europe, there are several regional airports which previously enjoyed a busier and more prominent aviation role. Shannon is one of these, and another is Glasgow Prestwick Airport, hereafter called Prestwick, which until 1990 was a designated transatlantic airport for flights to and from Scotland, just as Shannon was for similar Irish flights until these stopovers were abolished (The Herald Scotland, 1990). Prestwick and Shannon share many characteristics, for example comprehensive infrastructure with significant capacity, airport supporting businesses, underused airspace, and 24/7 availability.

Table 3.6 compares key features of Shannon and Prestwick airports. Prestwick is currently Scotland's fifth busiest airport in terms of passenger traffic, Ryanair being the only airline operating scheduled services there. There are several dedicated charter services, while the airport operates a sizeable cargo business and supports military operations, with a number of air forces using the facility. Shannon has no military operations or base; however, the airport is regularly used for refuelling purposes by the US military, not without controversy (Lannon, 2019). Like Shannon, Prestwick has a significant commercial property portfolio of over 204,000 m² and an aviation cluster. The region boasts a heavy engineering presence and supports MRO operations.

Table 3.6 Shannon Group and Glasgow Prestwick: Key Characteristics

	<i>Shannon</i>	<i>Glasgow Prestwick</i>
Date opened	1945 (1)	1934 (2)
Ownership	Publicly owned, corporatised (part of Shannon Group)	Publicly owned, corporatised (previously in private ownership; currently for sale)
Operations	24/7; good weather record	24/7; good weather record
Business mix	Passenger (Europe and North Atlantic), cargo, private, diversion	Cargo, passenger (Europe), military, private, diversion
Public transport access	Bus	Rail, bus
Catchment area	1m people within 90 minutes (3)	2m people within 60 minutes (4)
Direct employment (airport) 2018	271 employees (5)	315 employees (6)
Number of passengers	1.7m (7)	0.7m (8)
Volume of cargo (2018)	13,592 tonnes (9)	11,800 tonnes (10)
Number of movements (2018)	25,556 (11)	24,904 (12)
Terminal capacity	4.5m (13)	2.5m (14)
Active runway(s)	One: 3,199m (15)	Two: 2,986m and 1,905m (16)
Commercial property footprint	2m square feet of building space, 200 buildings and > 1,500 acres of development land (17)	484,376 square feet of commercial accommodation and 800 acres of land (18)
Other facilities	CBP pre-clearance, hangar rental for MROs, airline flight training	Hangar rental for MROs, airline flight training. Vying for UK Spaceport and Heathrow Logistics 'airport of choice' status
Airport revenue	N/D	€18.2m (19)

- [Sources: 1,13. History of Shannon Airport (Shannon Airport 2017a)
2. Glasgow Prestwick Airport History (Glasgow Prestwick Airport 2019a)
3. Anna Aero Route Shop — Shannon (Anna Aero 2019b)
4. Anna Aero Route Shop — Glasgow Prestwick (Anna Aero 2019b)
5. Shannon Group Annual Report 2017 (Shannon Group 2018a)
6,8,10,19. Glasgow Prestwick Annual Report and Financial Statements (Glasgow Prestwick Airport 2019a)
7,9,15,17. Shannon Group Annual Report 2018 (Shannon Group 2019a)
11. Shannon Group Media Release 2018 Results (Shannon Group 2019b)
12. CAA Aircraft Movements by Airport (Civil Aviation Authority 2019)
14. Glasgow Prestwick Airport: About Us (Glasgow Prestwick Airport 2020a)

16. Glasgow Prestwick Airport: Technical Information (Glasgow Prestwick Airport 2020b)

18. Glasgow Prestwick Airport: Commercial and Property (Glasgow Prestwick Airport 2020c)

N/D. Not Disclosed. Note: Differing year-ends.]

The airport faces major competition from Glasgow and Edinburgh airports and the UK rail network, which will become a more prominent competitive presence when high-speed services from southern England to Scotland are put into service. Given the proximity of Glasgow City, two million residents live within 60 minutes of the airport, versus 620,000 in Shannon. Unlike Shannon, Prestwick also has a dedicated rail terminal (Anna Aero, 2019b).



Other likely key current challenges include attracting airport investment, securing agreements with additional airlines, and developing new opportunities, such as competing for UK Spaceport and Heathrow Logistics ‘airport of choice’ status.

Then Prestwick owner, British Airports Authority (BAA), was privatised in 1987. BAA sold Prestwick in 1992 and the airport underwent a series of further ownership changes before being re-nationalised by the Scottish government in 2013 (Anna Aero, 2013). The airport is currently for sale, with a process of finding a buyer including a stipulation that any purchaser must be capable of operating an airport and commit to maintaining and developing airport/aviation services (BBC News, 2019).

3.9 Strategic Summary and Current Performance

Shannon’s performance since 2014 has shown a modest increase in passenger numbers and profitability. Shannon has operational costs similar to those of bigger airports, given its comprehensive infrastructure. For example, current terminal capacity is 4.5 million passengers per annum (mppa) while passenger numbers are about 1.7 mppa. Increasing these numbers (and revenue) to match this scale is a challenge, however. It will certainly be difficult to increase numbers to a targeted 2.5 mppa by 2020, with strong competition from other airports who may offer non-stop flights to a wide range of destinations one key reason for this challenge. Positive factors (tailwinds) and challenges (headwinds) affecting Shannon airport are summarised in Table 3.7.

Table 3.7 Shannon Airport: Headwinds and Tailwinds

<i>Tailwinds</i> ✓	<i>Headwinds</i> ✗
 <ul style="list-style-type: none"> • Very strong airport infrastructure • Significant capacity for growth: passenger, MRO, Cargo • Positive, if modest, revenue trajectory • Strengthening regional engagement • Group structure brings opportunity (complementary activities) • Regional stakeholders broadly supportive of Group/Airport objectives 	 <ul style="list-style-type: none"> • Low population density of hinterland and relatively peripheral location • Demanding route economics for airlines • Irish economic activity concentrated around Greater Dublin area • State ownership limitations • Brexit implications • Impact of Boeing 737 Max grounding

[Source: Developed by authors]

For example, Dublin's 2018 summer schedule showed flights to 195 destinations (Dublin Airport, 2018), relative to 27 destinations served by Shannon (Shannon Airport, 2018). Airports in Cork (over 50 routes), Ireland West (23 routes), and Kerry (six routes) provide additional competition for Shannon. In recent annual report updates, Shannon Group's Chair, Rose Hynes, linked Group developments with the success of the region. She highlighted its €150-plus million investment plans to 2022 (with €85 million invested since 2014), the economic contribution of the Group to its hinterland and the key role that Shannon Group will play in enabling achievement of the government's National Planning Framework (NPF) 2040, in particular the move to a more balanced national economy and society (Shannon Group, 2018a). Cost challenges for the Group were also alluded to. Steps, as previously described, have recently been taken to reduce operational and staff costs to bring them closer to those of similarly sized airports.

The NPF 2040 policy was explicitly highlighted by the chair as important to Shannon Group, with stakeholder engagement being vital. The NPF is the government's regional development strategy and aims to grow the scale of second-tier cities like Limerick significantly (Government of Ireland, 2018). In this context, it is noteworthy that the Midwest region in which Shannon Airport is located has recorded relatively poor economic performance with above average unemployment and below average economic growth. In the 2017 report, the Group's then CEO, Mathew Thomas, highlighted 16 companies which cited Shannon Airport connectivity when announcing new or expanded operations. US connectivity — six airlines and eight destinations — was emphasised as a big plus, and transatlantic activity accounts for a more substantial proportion of total traffic than in most other airports (Shannon Group, 2018a). However, the recent grounding of the Boeing 737 Max aircraft has led to the initial suspension of three such transatlantic routes, and the subsequent cancelling of two Norwegian services (Hamilton, 2019).

The CEO also spoke of significant competition for new airline business and highlighted the airport's reliance on customer loyalty and advocacy in retaining routes, which airlines always keep under review. Other relevant areas covered included further development of the aviation cluster and the

importance of, and appreciation for, a strong relationship with local stakeholders. In their paper specifically on Shannon Networking (Andreosso-O’Callaghan and Lenihan, 2008), the authors support such an approach, suggesting that within such industrial areas or innovation hubs, a networking advantage can arise because proximity brings cost efficiency and knowledge-exchange benefits to organisations.

Shannon Group is now well established, and is positioning Shannon Airport, and its sister companies collectively, as a vital economic engine for the region. Nonetheless, recent growth has come off a moderate base, and the airport faces the constant dual challenge, all too familiar to regional airports, of increasing passenger numbers and reducing costs.

The strategic models applied to Shannon Airport have highlighted company strengths and opportunities and show the significant headwinds which the airport faces. Key recurring themes include a focus on growth and costs, opportunities arising out of national policy developments, intense competition and the challenge of operating in a peripheral, low population density location. There are no silver bullets, and local stakeholder engagement is critical.

Shannon’s airport and commercial property infrastructure assets are the Group’s biggest attractions. The relationship between Shannon Group and other key regional parties is also vitally important. While it may be argued that the airport’s current footprint is too large and costly to maintain, and that elements of it should be right- sized, there is a danger that any such action would reduce the infrastructure advantage Shannon currently highlights when seeking new business opportunities.

3.10 Shannon Airport: Broader Issues

3.10.1 Economic Impact Assessment: Shannon Airport/Group

A recently published company- commissioned report by W2 Consulting assessed the economic impact of Shannon Group (Shannon Group, 2018b). The economic impact report’s overall methodology included an analysis of each individual Shannon Group company. An input- output model was used to produce employment, remuneration, valued- added, and economic output multipliers. This information was analysed and used to quantify the economic impact of each Shannon Group company with respect to employment, tax revenue, and gross value added (GVA), a measure broadly equivalent to gross domestic product. Direct, indirect, induced, and catalytic economic impacts were also estimated.

A total of 119 companies associated with Shannon Airport and airport activities were identified by the independent consultants and invited to participate in the research stage of this study, which was conducted between December 2016 and September 2017. Data collected and information gathered, relating to the 2016 calendar year, included nature of business, employment levels, annual payroll,

expenditure on goods and services, and a profile of respondent company employment attributable to (Shannon) airport activity. Other information incorporated into the study included Shannon Group operations and planning information, data from the Central Statistics Office, tourism and employment development authorities, employer representative bodies, several regional (Midwest) bodies, and aviation sources providing detail on global trends and the outlook for air transport.

Of the 119 companies approached, a response rate of 60 per cent was achieved, implying a 95 per cent confidence level. Responses were representative of the main sectors and business types associated with Shannon Airport. Various alternative sources were consulted to establish data for companies which were identified but did not participate. Further such data were inferred by applying industry averages from those companies that took part in the research. Responses received accounted for 72 per cent of overall direct employment associated with airport activities. This analysis (Table 3.8) has calculated that the airport's economic impact is just under €1 billion GVA and is responsible for 13,695 jobs in the region (the airport employs 260 staff directly).

Table 3.8 Overall Economic Impact of Shannon Group

<i>Economic impact of Shannon group</i>			
46,516 jobs			
€3.6 billion gross value added (GVA)			
€1.15 billion tax			
<i>Shannon Airport</i>	<i>Catalytic impact of airport</i>	<i>Shannon Commercial Properties</i>	<i>Shannon Heritage</i>
13,695 jobs	31,900 jobs	81 jobs	840 jobs
€938 million GVA	€2.6 billion GVA	€12 million GVA	€28 million GVA
€318 million tax	€821 million tax	€3.8 million tax	€8.9 million tax

[Source: Shannon Group (2018b)]

Overall, the report contends that Shannon Group overall generates €3.6 billion in GVA in total each year, supporting over 46,500 jobs which contribute €1.15 billion in tax revenue to the Exchequer, with the Airport the most significant contributor, its direct and catalytic impact accounting for two-thirds of this total (Shannon Group, 2018b).

Table 3.9 provides a high- level comparison of the estimated economic impact of Ireland's main airports. Dublin Airport's economic impact is the highest in the list, as expected. Shannon Airport is a substantial supporter of its hinterland, providing employment and spillover effects to the region, whereas Kerry airport, the smallest airport reviewed, has a more modest but meaningful economic impact in its region. Of course, factors such as regional variability, the impact of national aviation policies, and overlapping catchment areas can affect assessment of the economic importance of

airports.

Table 3.9 Key Irish Airport Economic Impact Assessments in 2017

	<i>UK market (% of total passengers)</i>	<i>Economic impact/gross value added</i>	<i>Employment</i>	<i>Connectivity</i>	<i>Information source</i>
Shannon	UK 46%	€938 million	13,695	30 scheduled destinations served by eight airlines	Shannon Group Annual Report (2018) and Economic Impact Report (2017)
Dublin	UK 34%	€8.3 billion	117,300	176 scheduled destinations served by 41 airlines	DAA Annual Report 2017 DAA/InterVISTAS Report 2017
Cork	UK 57%	€727 million	10,710	39 scheduled destinations served by nine airlines	DAA Annual Report 2017 DAA/InterVISTAS Report 2017
Knock	UK 85%	€150 million	1,400	15 scheduled destinations served by three airlines	Ireland West Annual Review 2017 (total employment number estimated by Library & Research Service (L&R))
Kerry	UK 57%	€70 million	640	7 scheduled destinations served by two airlines	L&R, based on a similar methodology applied to similar sized airports
Total		€10.2 billion	143,745	267 scheduled routes (all airports)	

[Source: Oireachtas Library and Research Service (2018)]

3.10.2 Importance of Regional and National Planning Policies to Aviation

Ireland 2040 is a government-led strategic national planning and development framework for Ireland between now and 2040 (National Planning Framework, 2017). It seeks the development of sustained, long-term, and regionally balanced physical and social infrastructure. This regional focus is vital. The Greater Dublin Area accounts for 40 per cent of the national population and 49 per cent of economic output. All roads, literally, lead to Dublin. Ireland 2040 seeks to protect the role of Dublin. However, the framework also highlights how Ireland's regional cities such as Cork, Limerick, and Galway can benefit from economic activity and employment in their regions, and recommends development of adequate infrastructure including motorway, airport, and port connectivity.

A number of other current planning initiatives, for example the Action Plan for Rural Development,

aim to promote a more balanced regional build- up through promotion and development of an Atlantic Economic Corridor to generate jobs and investment along Ireland's western seaboard, along which Shannon Airport is located (Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, 2017).

Ireland's National Aviation Policy, launched in late 2015 (Department of Transport, Tourism and Sport, 2015), focused on three key areas:

1. Enhancing Ireland's connectivity and being responsive to the needs of business, tourism, and consumers.
2. Fostering the growth of aviation enterprise to support growth creation, further helping to position Ireland as a recognised global aviation leader.
3. Maximising the contribution of aviation to Ireland's economic growth and development.

Irish state-owned Airports, including Shannon, are perceived as delivering significant strategic transport infrastructure and essential services that positively contribute to supporting state economic and social activities. They operate commercially, but their government-directed mandate requires that decisions take account of the broader national interest. Ongoing viability depends on their ability to attract inward services and passengers.

Airports are regarded as key tourism and business gateways, and continued development to this end is supported. The policy document highlighted the extensive airport coverage (Cork, Donegal, Dublin, Ireland West, and Kerry) for a small island nation with a population of 4.9 million inhabitants. It acknowledged that this presented airport operator challenges regarding traffic and performance, given the cyclical vulnerability to economic/political shocks, as well as emission targets. An abundance of airports leads to duplication of unused or inefficiently used infrastructure (European Commission, 2014). Indeed, smaller Irish airports have experienced significant difficulty in attracting passenger routes in recent times, and some of them have ceased airline operations.

The National Aviation Policy also committed to a review of airport capacity, given recent passenger increases in Dublin. However, this work is focusing on capacity constraints in Dublin, rather than taking a national, holistic perspective (Department of Transport, Tourism and Sport, 2019b), which approach might have given rise to a more balanced approach to managing future Irish airports capacity.

The Irish government contends that state ownership of the three largest Irish airports enables fulfilment of its commercial mandate, facilitating trade, tourism, and inward investment with consideration of the broader national interest, in a manner not guaranteed if the airports were privately owned. Key National Aviation Policy commitments do, however, include a review of future

ownership options regarding the state- owned airports. While current policy is that Dublin, Cork, and Shannon airports will remain in public ownership, the government will formally review this approach in 2019, and every five years subsequently.

3.10.3 Policy Impacts: Shannon Airport

Recent Irish policy initiatives, such as Ireland 2040 (National Planning Framework), as previously described, have highlighted the potential benefit of regional economic policies to the Shannon region in general, and Shannon Group/Airport in particular, with the airport seen as having a pivotal role to play.

The nature of Irish regional policy and planning frameworks is fundamental to the development of Shannon and environs, and its tourism gateway status is a second essential factor. The potentially positive impact of Irish economic policies could facilitate development of a western business cluster in Ireland, along the lines of the tourism cluster that forms the Wild Atlantic Way. A planned new motorway linking Cork and Limerick, Ireland's second and third largest cities, should also benefit Shannon. Furthermore, two other major economic pillars for the region's development — Foynes Port and the University of Limerick — are located very close to Shannon Airport. These factors, combined with emerging capacity issues in the greater Dublin area, give rise to a potential increase in regional demand for local industrial space and activity, potentially benefiting the business of Shannon Airport and the other Group companies.

3.10.4 Shannon Airport Stakeholder Engagement

One of the most acclaimed authors on stakeholder theory, R. Edward Freeman, suggested the following stakeholder definition in 1984: 'Stakeholders are groups and individuals that have a valid interest in the activities and outcomes of a firm, and on whom the firm relies to achieve its objectives' (Freeman et al., 2004). Stakeholder engagement is described by Jeffery (2009) as a 'process whereby parties who can affect, or may be affected by, the activities of an organisation and the achievement of its goals, should have an opportunity to contribute to the development of activities and decisions that may affect them'.

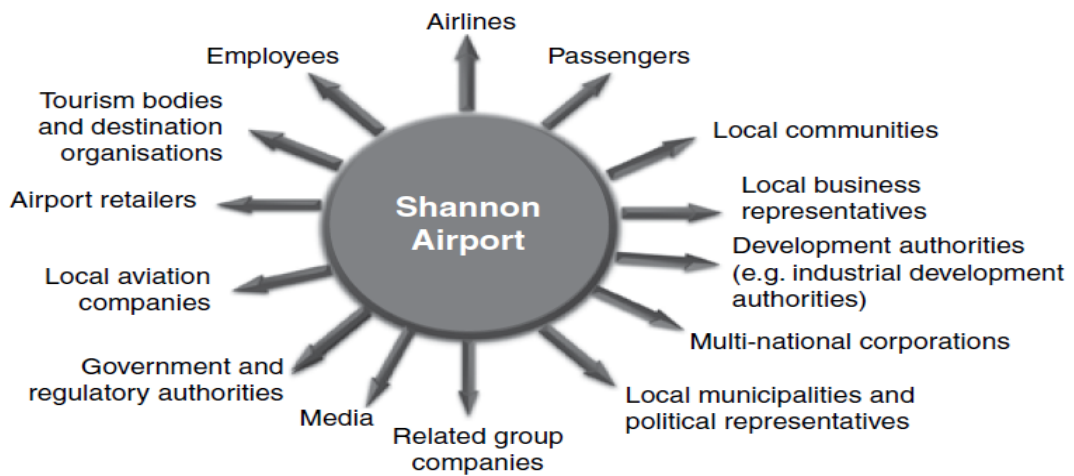
The positive, enabling role of stakeholder engagement in aviation is supported by Amaeshi and Crane (2006) and Murphy and Efthymiou (2017), who identify it as a complementary mechanism to market and regulatory activities associated with airport companies. Shannon Group stakeholder activity comprises engagement with local representative groups, including local authorities in Limerick and Clare, airlines, national development agencies, chambers of commerce in counties Limerick and Clare, tourism bodies, and the Department of Transport, Tourism and Sport. Such stakeholder engagement is essential. For example, Ireland's Industrial Development Agency (IDA) continually emphasises the importance of Shannon Airport and the Group's commercial property business when

marketing Shannon and Ireland's mid- west region to companies considering inward investment. These capabilities are important selling points when such investment opportunities are being pursued. Mobilisation around the Ireland 2040 National Planning Framework is another key stakeholder opportunity for the region. Figure 3-4 highlights a broad range of regional airport stakeholders, under-pinning the importance of an effective engagement approach in this area.

Figure 3-4 Key Regional Airport Stakeholders

The importance of stakeholder management

Key airport stakeholders



[Source: Devised by authors]

3.11 Shannon Airport: Current Focus

Shannon Airport's emphasis on passenger growth and route development is strongly focused on inbound tourism and business- friendly routes. Of course, airlines now seek to make money from day one on new routes. Regardless of specific introductory agreements, sustained customer demand is key. If a route fails, it is hard to win it back. This gives rise to a major challenge for peripheral airports such as Shannon, as airlines are much more likely to be interested in routes with significant population levels at both ends, something which is not one of the airport's selling points. Approximately 60 per cent of the Irish population lives within one hour of Dublin, while for Shannon the number is closer to 16 per cent. It is likely, given Ireland's much- improved motorway network, that a significant number of passengers travel from Shannon's hinterland to take a flight from Dublin Airport. It is now quite easy to do a day or overnight trip to the west of Ireland from Dublin, meaning that even if flying into Dublin, tourists can also travel to the west. In its report, *Tourism in The West: An Engine for Growth and Jobs* (Irish Tourist Industry Confederation, 2015), it was estimated that over 50 per cent of such tourists arrive into Ireland via Dublin and then travel to the west of Ireland. Even though the reverse is also true, this trend benefits the airport with the highest levels of connectivity. Indeed, Ireland's national bus company proudly advertises the fact that it provides 300

daily services to Dublin Airport from all parts of the country, including Limerick, Shannon's closest main city (Bus Eireann, 2019).

Shannon has good westward connectivity to North America, as evidenced by the number of transatlantic carriers using the airport for much of the year. This is likely to remain the case for as long as US travel operators perceive the west of Ireland as a separate tourist market. However, Shannon is not as strong an attraction for routes to the UK and, especially, Europe. Ireland is one hour behind most of Western Europe. The airport's location also means that Shannon is at least an hour away from mainland Europe in the air. Airline economics for such routes are especially challenging. Even free deals are not attractive to carriers if the seats cannot be filled. Competition for new routes will also come from the UK and mainland European airports which regularly compete to take up new airline capacity.

Given the challenging nature of airline economics for peripheral airports, as previously described, Shannon's future is more likely to involve a greater use of regional jets or turboprops (60–100 seats) on UK and European routes, which will primarily be point- to- point focused, and maximum range Boeing and Airbus narrow- bodies for transatlantic routes which is already the case, with all such connections currently operated by Boeing 757 and 737 types. It can be expected that Aer Lingus will use some of its A321neo LR aircraft, when delivered, to replace the Boeing 757s which currently operate the airline's Shannon routes on a contract basis. However, it appears that any new Aer Lingus transatlantic routes — whether launched, recently announced or contemplated — will fly out of Dublin, notwithstanding emerging capacity constraints there. This approach is consistent with the increasing use by Aer Lingus of Dublin Airport as a mini hub for North American air traffic, connecting European passengers with US destinations (and vice versa). Additionally, the use of Boeing 757s by US transatlantic operators on Shannon routes could represent a risk when these aircraft come to the end of their working life if these carriers do not have adequate alternative aircraft available for use on routes such as Shannon in the short term. Finally, the current grounding of Boeing 737 Max has had a disproportionate effect on Shannon, with the airport's interim CEO estimating an annualised loss of 120,000 passengers (about 7 per cent of total 2018 numbers) arising from the suspension of three transatlantic Shannon routes using this type (Ryan, 2019).

These competitive factors represent a significant challenge to passenger growth at Shannon. However, given its current capacity, runway length, and US Customs and Border Pre-clearance facility, Shannon has distinct advantages and has the potential to expand the number of transatlantic flights, particularly with low- cost long- haul carriers and US carriers. It could even develop itself into an attractive location for airlines targeting North American traffic opportunities (in the same manner that Ryanair is feeding traffic to Air Europa at Madrid, which connects passengers onwards to Latin America). Shannon has also launched a stand- alone website 'FlyShannon.ie', which enables visitors to book package holidays from Shannon, including the option to reserve a hotel room, hire a

car, and arrange airport parking. This focus on non- aeronautical activity has also highlighted an opportunity for Shannon's duty- free businesses to focus on superior heritage- related products and several premium retail and hospitality outlets have recently opened.

3.12 Conclusion

European regional airports will continue to experience challenging times in increasingly volatile industry and economic conditions, and competition will remain intense. Given the critical role such airports play on the one hand, and the business challenges they face on the other hand, their financial standing and the nature and extent of external and state support will continue to weigh heavily on performance and viability. Notwithstanding high current levels of public ownership of regional airports, it is likely that many airports and governments will become more open to risk sharing models, perhaps involving greater privatisation and various hybrid partnership arrangements.

Economic and aviation-related government policies have the potential to significantly influence regional airport development, particularly in lower population density regions where stimulation of activity, for example through investment and incentives, is seen politically as necessary or desirable. There is broad agreement that neither companies nor airlines will establish operations in a specific location due to region- friendly policy positions that have no commercial basis. Such approaches could fall foul of State aid rules and might not deliver sustainable benefits locally.

It is too early to assess the success of the Shannon Group business model. Passenger numbers have steadily increased since separation from the Dublin Airport Authority. From an airport point of view, however, Shannon faces the cost and growth challenges all such airports experience. The Group is peripherally located and faces intense competition, highlighted by the fact that about 85 per cent of Irish airport passenger growth into and out of the country from 2012–2017 was through Dublin Airport (Central Statistics Office, 2018). Furthermore, the impact of one- off events such as the Max grounding and the need to invest significantly in upgraded security screening equipment without state support, as provided to other Irish airports (Hamilton, 2018), will have a disproportionately adverse effect on airports such as Shannon.

Airport sustainability may be enhanced through group synergies, a key success factor when assessing the Shannon Group, where a cluster of vertically integrated airport assets can coalesce to improve the Group's financial performance. A similar corporate structure, i.e. one including an airport and commercial property component, is in place at Prestwick airport, suggesting that variations of the Shannon Group model are potentially applicable elsewhere in Europe, given the similarity of regional airport characteristics.

Local stakeholder engagement is also critical for European regional airports. These airports should be closely aligned with business groups, tourist bodies, local government agencies, and other

networks. Airlines are likely to react positively to the presence of such a united local front when considering the launch of new routes. Such a united coalition can also help parties maximise the potential from local business and tourism opportunities, benefiting airport passenger traffic. Strong local stakeholder relationships may result in, or happen as a result of, airport groups taking a more active role, including ownership, of related local infrastructure, as has happened in the case of Shannon Group. One risk to success is any potential dilution of focus from an airport's core business due to additional management requirements associated with a broader group company remit. It can be argued, however, that this broader focus is essential to support airport sustainability and growth.

As European aviation grows and hub airports reach capacity, there will be an opportunity for regional airports, particularly well-located ones with low costs and significant capacity. Shannon's strong transatlantic position, supported by the presence of CBP pre-clearance, provides a unique differentiator relative to other regional airports, while its location on the western edge of Europe is more likely to be able to sustain routes to the eastern corridor of North America using narrow-body aircraft types. Notwithstanding current issues, the launch into service of next generation Airbus and Boeing narrow-bodies points to new opportunities for Shannon, as the operating economics for such aircraft are substantially better than those of wide-body aircraft, making them suitable for a higher number of point-to-point routes.

It is difficult to envisage any short-term change in Shannon Airport's ownership status. The question as to whether Shannon would be best placed as a state airport or a private commercial entity remains an open one. However, any privatisation of Shannon would be likely to be politically difficult. During a 2016 address to a tourism conference in the airport's hinterland, Shannon Group Chief Executive Officer Mathew Thomas spoke about combining the best characteristics of public sector ownership, e.g. long-term vision and cautious risk profile, with private sector thinking, e.g. efficiency, creativity, and agility. These words suggest that at some future stage, the Group might consider hybrid investment models tied to specific initiatives targeting business growth (Thomas, 2016). Shannon as a group is likely to be more attractive to potential long-term investors than Shannon as an airport. Though it appears that the state has no current intention of selling down its shareholding, this position might possibly change if such a transaction was regarded as beneficial to the region as a whole. Such benefits could come through investments in a major new tourism asset or through further development of the aviation services cluster. Public-private partnership models could also be considered regarding the development of a specific piece of infrastructure; for example, a major conference centre on grounds owned by Shannon Group.

This chapter has sought to use the example of the Shannon Group to highlight the challenges and opportunities affecting regional airports, and to describe how such airports might become part of a locally based corporate entity. Shannon Group's vision and mission statements are focused on increasing airport passenger numbers by attracting more visitors and businesses to the area and

delivering economic benefits to the west of Ireland. Its structure represents a strong focus on innovation and entrepreneurship, combined with a broad and more integrated regional positioning for Shannon Airport.

Consideration of similar models for other European regional airports has potential attractions, including improved performance and alignment with national and EU regional economic and airport objectives. The authors hope that these early observations from the Shannon Group experience will help readers better understand this topic.

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4 **Paper 2: Aviation Governance in the United Kingdom and Republic of Ireland — A Study of Airport Arrangements in the Common Travel Area**

Paper 2 — Aviation Governance in The United Kingdom and Republic of Ireland — A study of airport arrangements in the common travel area (Hiney, N; Graham, A). Book Chapter. Research Handbook on Aviation Leadership and Governance (Publisher: E. Elgar. Editors: Gui Lohmann and Bojana Spasojevic). Publication Expected 2024.

This paper, to be published by the end of 2024, assesses the activities of UK and Irish airports from a governance/regulation, ownership and relationship perspective. Key airport stakeholders featured include safety and economic regulators and the government. Contemporary topics affecting these factors and relationships, such as Brexit and the close aviation relationship between the United Kingdom and the Republic of Ireland, are also considered. Professor Anne Graham (Professor Emeritus, University of Westminster, with many published airport-focused books and articles) is the Chapter's second author.

The research activities discussed in this paper (primarily a desktop-based approach informed by national and statistical publications) are contextualised and elaborated upon in Chapter 2 (Research Methodology), which provides comprehensive insights into the overarching research philosophy and the specific methodologies deployed throughout this thesis.

Contribution Themes covered: Airports overview, UK and Irish airports (many studies focus on these airports, especially Irish ones): Ownership, performance, regulatory and policy factors; large and small (regional) airports; airport management of key statutory stakeholder relationships in both jurisdictions.

Research Handbook on Aviation Leadership and Governance

Editors: Gui Lohmann and Bojana Spasojevic

CHAPTER 6 (of Research Handbook)

**AVIATION GOVERNANCE IN THE UNITED KINGDOM AND REPUBLIC OF
IRELAND — A STUDY OF AIRPORT ARRANGEMENTS IN THE COMMON TRAVEL
AREA**

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Bios

Noel Hiney holds an MSc in Management (Aviation Leadership) from Dublin City University and is currently a PhD Candidate whose research interest is the impact of stakeholder management on the economic relationship between regional airports and their hinterland. Noel previously held strategy and public affairs roles in the Bank of Ireland.

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Abstract

The United Kingdom (UK) accounts for almost 41% of Irish passenger travel between the Republic of Ireland (ROI) and Europe, and the continent's busiest international air route is between London Heathrow and Dublin Airport. While elements of the regulation of strong air transport links between these two countries has been affected by the UK's departure from the European Union, a Common Travel Area (CTA) exists between the UK and ROI, which gives Irish and UK citizens the right to live, travel, work and study within the CTA. Irish and UK citizens travelling by air between the two countries are not subject to routine passport controls. In this chapter, a critical review is undertaken of the elements of the governance and regulatory framework guiding key activities and operations of UK and Irish airports. Topics covered include structure, ownership, governance, regulation, competition, safety/security and overall strategic approach. Aviation, economic, noise, public service obligations and slot regulatory frameworks are reviewed and the impact of Brexit and the COVID-19 pandemic on these factors is assessed from an airport perspective throughout the chapter.

Keywords

United Kingdom; Republic of Ireland; Airport; Governance; Regulation; Common Travel Area

4.1 Introduction

The close and deep relationship between the United Kingdom (hereafter referred to as the UK) and the Republic of Ireland (hereafter referred to as ROI) is evidenced by their importance to each other as trading nations and the percentage of each country's nationals which lives in the other. ROI accounted for 6.6% of UK exports (4th largest market) and 3.1% of UK imports (10th largest market) in 2021 (UK Parliament, 2022). The UK was ROI's largest import market, and 4th largest export market, accounting for 23% and 9%, respectively, of total trading volumes in 2020 (Central Statistical Office, 2021). The UK's Office for National Statistics estimates that over the year to June 2021, an average of 412,000 Irish-born people were living in the UK (House of Commons, 2022), with many more than that claiming Irish heritage, given immigration levels during the second half of the twentieth century. It was estimated in 2019 that there were more than 300,000 British nationals living in ROI (approximately 6 % of the population).

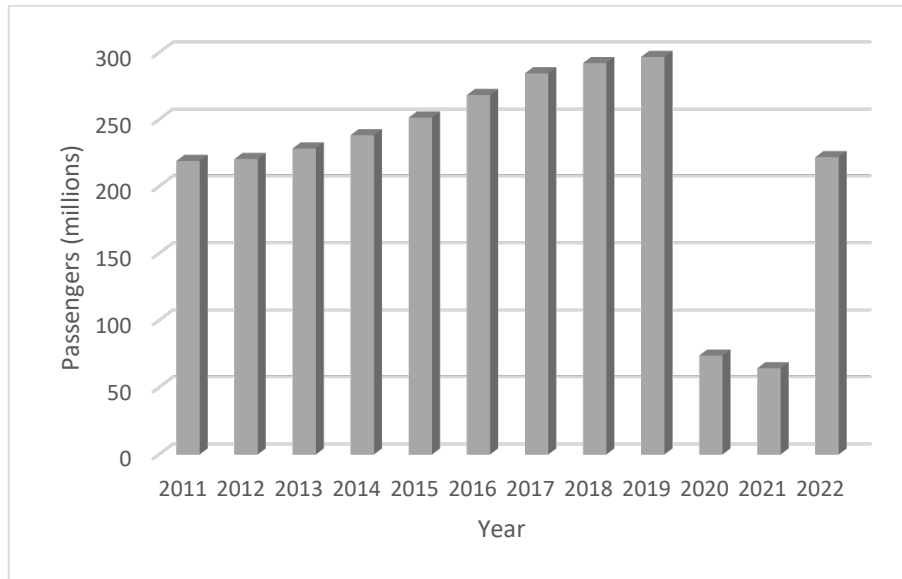
The impact of this close relationship is demonstrated by the proportion of air travel between ROI and the UK in 2019, with the latter accounting for 41% of Irish-European traffic and 35% of all Irish passenger traffic that year (CSO, 2020). Moreover, although Irish traffic only represented 7% of the total UK-European traffic (Civil Aviation Authority [CAA], 2020), the London Heathrow-Dublin route was the busiest international route in Europe in terms of seats offered (2.4 million) (OAG, 2020).

The 2016 decision of the UK to leave the European Union (EU) — Brexit — has had a notable impact on the nature and administration of its relationship with the ROI across several areas, including aviation. However, a Common Travel Area (CTA) exists between the UK and ROI, which gives Irish and UK citizens the right to live, travel, work and study within the CTA. Irish and UK citizens travelling by air between the two countries are not subject to routine passport controls.

It is against the above background that structures and strategic approaches for UK and Irish airports are considered. This chapter will review elements of the governance and regulatory framework guiding key activities and operations of UK and Irish airports. Topics covered will include structure, ownership, governance, regulation and strategic approach. Aviation, economic, noise and slot regulatory frameworks will be reviewed, and the impact of Brexit and the COVID-19 pandemic on these factors will be considered from an airport perspective throughout the chapter. Passenger numbers in 2019 are used as a base year to represent the most recent 'normal' 12-month period.

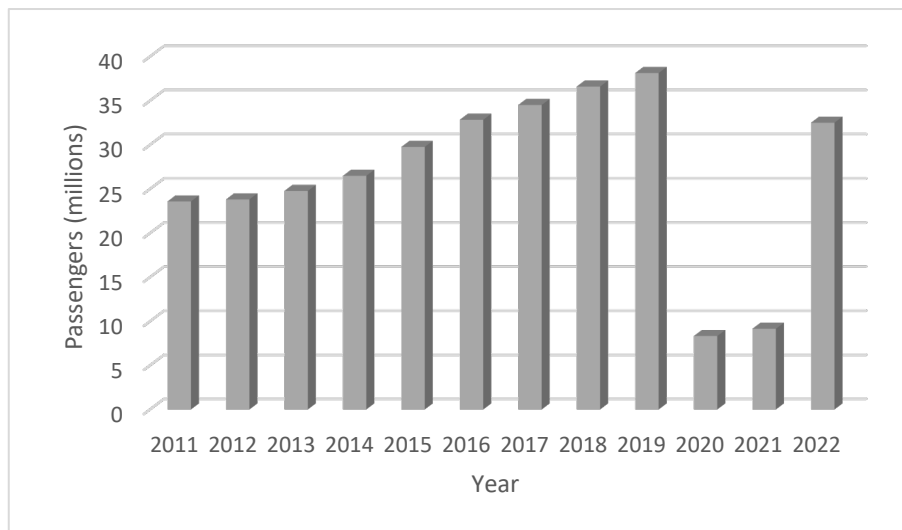
Figures 4-1 and 4-2 show airport passenger volumes in the UK and ROI at the time of writing. COVID-19 had a devastating effect on both countries, reducing passenger levels significantly. The two countries experienced a 62% fall in the number of flights in 2021 compared to 2019, the largest decrease experienced across all European countries (together with Finland) (EUROCONTROL, 2022).

Figure 4-1 Passenger Numbers at UK Airports, 2011–2022



[Data source: CAA (2022a; 2022c)]

Figure 4-2 Passenger Numbers at Irish Airports, 2011–2022



[Data source: CSO (2022; 2023)]

The remainder of this chapter is structured as follows. Firstly, the Common Travel Area between the UK and ROI is explained. This is followed by a detailed comparative assessment of airport ownership, planning and economic regulation, three key policy levers available to the governments of both countries. Regulation and governance concerning the specific areas of airport safety and competition are then discussed. Next, a few further selected policy and governance issues are highlighted. These are considered particularly interesting from a Brexit viewpoint since the length of this chapter prohibits a more exhaustive approach covering all areas. The conclusions that then follow bring together this discussion by making overall comparisons between the two countries and by reflecting on the implications.

From a broader governance perspective, UK and ROI airports and their directors and management

are of course subject to the requirements of company legislation in each jurisdiction, covering such activities as day-to-day management, business reporting and administration activity. In ROI, the State-owned airport groups must also adhere to the *Revised Code of Practice for the Governance of State Bodies*, designed to ensure that such organisations operate to the best corporate governance standards and practice.

4.2 The Common Travel Area Between the United Kingdom and the Republic of Ireland

The UK formally left the EU on 31 December 2020, with the UK's European Union (Withdrawal) Act 2018 causing all relevant EU legislation effective on 31 December 2020 to stay in force in the UK. This 'UK retained EU legislation' remains/remained until amended, repealed or replaced. This development, combined with the Trade and Cooperation Agreement between the European Union and the United Kingdom, signed on 24 December 2020 and applied on 1 January 2021, has significantly impacted the aviation relationship between the UK and the EU, including ROI.

However, the UK's departure from the EU (of which the ROI is a member) in 2020 has not affected freedom of movement between these States due to the existence of the Common Travel Area (CTA) agreement which predates Irish and UK membership of the EU (both nations joined in January 1973). The CTA involves the ROI, the UK, the Channel Islands, and the Isle of Man. Irish and British citizens can move freely to live, travel, work and study within the CTA (UK Government, 2021). From an aviation perspective, Irish and UK travellers travelling within the CTA are not subject to immigration or passport controls. However, airlines operating routes between these countries usually require a recognised form of identification. Unlike travel to other EU countries, UK air passengers arriving in the ROI will now usually join an EU/EEA/UK queue channel for expedited immigration procedures upon arrival.

Neither the UK nor the ROI are part of the European Schengen Area, an area within which there are no border checks between member countries. This arrangement significantly enhances the flow of within-Schengen air travel for member countries. Citizens of the UK and the ROI must show a passport or national identity card if travelling to and from Schengen countries. Even in a post-Brexit landscape, the ROI remains unlikely to join the Schengen area in the short term, as such a development could adversely affect the operation of the CTA unless the UK joined the bloc also, an unlikely development.

From an air travel perspective, Brexit has also affected customs arrangements between the UK and all EU countries, including the ROI (UK Government, 2022a). This means that UK passengers flying anywhere in the EU (and beyond), and Irish passengers flying to the UK and non-EU destinations, can avail of reduced airport duty-free prices on certain products (mainly alcohol and tobacco), sales of which are now actively being encouraged by some airports. When arriving at their EU destination, UK passengers must use the Green Customs Channel (or Red Channel should a declaration be

required), as are Irish passengers travelling to the UK. Irish passengers continue to use a Blue Customs Channel for intra-EU travel.

Concerning broader engagement between the ROI and UK as regards aviation, informal and formal processes periodically take place between the Irish Department of Transport and the UK Department for Transport. In recent times this has included engagement concerning the 2020 ‘New Decade, New Approach Deal’, tabled by the Irish and UK Governments to support the restoration of devolved government in Northern Ireland. This framework supports greater connectivity on the island of Ireland. It includes an Irish Government commitment to a review of the potential for support for air routes from Dublin to Derry and Cork to Belfast (UK Parliament, 2020). Other informal engagement covers factors affecting airports in a post-pandemic environment.

The next section of this chapter considers airport characteristics in the UK and ROI, with a focus on structures and ownership.

4.3 Airport Structure and Ownership

The ownership of airports varies considerably between the UK and the ROI. While almost two-thirds of European airports have some element of public ownership (ACI, 2016), most of the UK airport system is privately owned. In contrast, the State-owned airports in the ROI account for almost 97% of all air traffic.

United Kingdom

The first significant programme of airport privatisation in the UK commenced during the 1980s, reflecting the overall aim of the conservative Thatcher government of the time to privatise nationalised industries such as utilities and communications and to increase share ownership among the UK population (Graham, 2008). The Airports Act was introduced in 1986, and since then, there have been 60 transactions involving either total or partial changes in airport ownership (Budd and Ison, 2021). The first part of the Act provided full privatisation of the then government-owned British Airports Authority as BAA plc, which operated three English airports — London Heathrow, London Gatwick, London Stansted — and the four major Scottish airports of Aberdeen, Edinburgh, Glasgow and Prestwick.

The second part of the Airports Act required all airports with a turnover of more than £1 million in two of the previous three years to become companies. Before this Act, these airports had been run directly by their local government owners. Sixteen airports were covered by this part of the Act, ranging from Manchester airport, which at that time had a throughput of nine million passengers, to Southend airport, handling just over 100,000 passengers. This paved the way for further privatisation of regional airports, which have subsequently been quite varied.

So, the most significant impact of the Airports Act was the change in ownership patterns during the years following its introduction. Table 4.1 shows the 2022 ownership patterns of the 24 largest UK airports by passenger numbers in 2019 (the last ‘normal’ year). Most UK airports are now in either total or partial ownership, with some airport operators such as AGS Airports, Vinci Airports, Global Infrastructure Partners (GIP) and Manchester Airport Group (MAG) owning more than one airport. Through the years there have also been various secondary sales with some of these airports, including back to public ownership in a few cases (e.g. Cardiff, Prestwick and Teesside — the latter being too small to be included in Table 4.1). There is also state involvement with 11 small and remote airports in Scotland's Highlands and Islands area, which are operated by Highlands and Islands Airports Ltd, an entity owned by the Scottish Government. These airports provide essential socio-economic connections but low traffic levels, so the company receives an operating subsidy. A few other airports, namely Plymouth (under public ownership) and Manston and Sheffield City (under private ownership), have permanently closed, whilst loss-making airports Blackpool and Coventry have both experienced temporary closure and now only handle general aviation traffic (Graham, 2021).

Interestingly, some limited government support was made available during the COVID-19 pandemic, which contrasts with the long-term trend of declining public sector involvement in the main UK airports. MAG, still majority owned by the local government, was provided with a financial support package of £260 million for its three airports (Manchester, Stansted and East Midlands) by its local government owners in May 2020. Then in January 2021, the Airport and Ground Operations Support Scheme (AGOSS) was set up by the National Government to support commercial airports and ground handlers in recognition of the fixed costs and the impacts of COVID-19 on their revenue. Up to £8 million was made available for each airport if they could demonstrate a forecasted COVID-19 financial loss (Department for Transport 2021).

Table 4.1 Ownership Patterns of Main (*) UK Airports, 2023

Airport	Ownership	Private interest (%)	Privatisation date	Passenger numbers 2019 (000s)
Aberdeen	AGS Airports	100	1987	2,912
Belfast City	3i Group	100	n/a	2,455
Belfast Int	Vinci Airports	100	1994	6,278
Birmingham	Local government/Ontario Teachers' Pension Plan/Employee Share Trust	51	1997	12,464
Bournemouth	Rigby Group	100	1995	803
Bristol	Ontario Teachers' Pension Plan	100	1997	8,960
Cardiff	Welsh government	0	1995	1,655
Doncaster	Peel Group	100	n/a	1,408
East Midlands	MAG	35.5	1993	4,674
Edinburgh	GIP	100	1987	14,734
Exeter	Rigby Group	100	2007	1,022
Glasgow	AGS Airports	100	1987	8,843
Leeds Bradford	AMP Capital	100	2007	3,992
Liverpool	Ancala Partners/Peel Group	90	1990	5,044
London City	AIMCo/OMERS/ Ontario Teachers' Pension Plan/Wren House Infrastructure Management,	100	n/a	5,122
London Gatwick	Vinci Airports/GIP	100	1987	46,575
London Heathrow	Ferrovial/Qatar Investment Authority/Caisse de Dépôt et Placement du Québec/ GIC/Alinda Capital Partners/China Investment Corporation/Universities Superannuation Scheme	100	1987	80,887
London Luton	AENA/AMP Capital	100†	1998	18,214
London Southend	Esken/Carlyle Global Infrastructure Fund	100	1993	2,036
London Stansted	MAG	35.5	1987	28,124
Manchester	MAG	35.5	2013	29,367
Newcastle	Local government /AMP Capital	49	2001	5,199
Prestwick	Scottish government	0	1987	639
Southampton	AGS Airports	100	1961	1,781

Note: The table shows the most recent owner, not necessarily the first private sector owner.

n/a = not applicable. Largest 24 airports by annual passengers in 2019 (excluding Isle of Man; Scottish Highlands and Islands). †The private investors have a 30-year concession contract.

Ownership remains with the local authorities.

[Source: Adapted from Graham (2023)]

Republic of Ireland

ROI has three state-owned commercial airports — Dublin, Cork and Shannon — and a small number of primarily privately-owned ones, including Ireland West (Knock), Kerry and Donegal. A single State enterprise, previously known as Aer Rianta (whose name is derived from the translation of ‘Air Ways’ in the Irish language), became known as the Dublin Airport Authority plc (daa) following the passing of the State Airports Act in 2004 and its corporatisation of ROI’s three largest airports (Oireachtas, 2004). daa owned the three State airports until 2014 when Shannon Airport became part of the separate but still State-owned Shannon Group, now The Shannon Airport Group (Oireachtas, 2014).

It is interesting to note that in the years preceding the introduction of the ROI State Airports Act, a change of ownership of these organisations was being considered by the government. The country’s Tánaiste (Deputy Prime Minister) had called for the privatisation of ROI’s airports, claiming that such a move would lead to lower prices (Irish Examiner, 2002). The UK process highlighted earlier may have influenced such thinking. However, the first major Irish privatisation of the national telecommunications operator Telecom Eireann in 1999 ultimately proved disastrous, with many small investors incurring losses on their share investments (RTE, 2021). This made any subsequent Irish privatisations unlikely during following years, and there has been very little such activity since then.

The ROI government’s intention that the three State airports will remain in public ownership was emphasised in its 2015 National Aviation Policy. This positioning is undoubtedly influenced by ROI’s Island status and the strategic importance of aviation to economic activity. The Department of Transport, which manages the State’s airport interests, stated that it would ‘*review the ownership and operational structure of the State airports in 2019 (and subsequently at 5-year intervals)*’ (Department of Transport, 2015). The initial review in 2019 would assess the possibility of establishing Cork, currently part of daa plc, owner of Dublin Airport, as an independent State-owned airport. However, during a 2019 announcement of future investment, daa stated that it expected to retain control of Cork Airport (Percival, 2019), and the airport’s structure has not changed. There is no evidence of any subsequent change in the Irish Government’s policy to retain ownership of the State airports.

Concerning other ROI airports, the private company operating Ireland West Airport is a unique partnership between the Horan Airport Trust (82.5% shareholding) and seven local authorities in ROI’s north and northwest region (combined 17.5% shareholding). The airport’s regional commitment is highlighted by the focus of the Trust on ensuring that ‘*any profits generated by the airport are reinvested in the airport with a focus on providing support to the surrounding region*’ (Ireland West Airport, 2022a). Turning to Kerry Airport, a major shareholder as of July 2022 is the Saudi Arabian bin Mahfouz family. At the airport’s 2022 Annual General Meeting, it was reported

that a solicitor representing this shareholder stated that *'his client's interest continued to be philanthropic, and he was not expecting to make money'* (Lucey, 2022). Donegal Airport is also majority privately owned, although it has been reported that the largest single shareholder was the State-owned Údarás na Gaeltachta, a regional development authority (Mulligan, 2021).

Smaller Irish airports, none of which currently operate commercial flights, are mostly privately owned. Sligo Airport is owned jointly by Northwest Airport Ltd and the Local Authority (Municipality). Galway Airport, which has now closed, was privately owned by the local Chamber of Commerce. It was reported (Looby, 2022) that two investors had agreed to purchase a majority stake in Waterford Airport, which last saw a commercial flight in 2016. An investment of €20m was mentioned (this sum would also fund an investment programme at the airport).

Table 4.2 shows the ownership patterns of main airports in 2023. Almost 97% of all Irish air travel in 2019 took place to and from State-owned airports, with Dublin Airport accounting for a significant majority of this traffic (over 85% of all Irish air travel).

Table 4.2 Ownership of Main Irish Airports, 2023

Airport	Ownership	Passenger numbers 2019 (000s)	
		Total (000s)	Proportion of total (%)
Dublin	100% State Owned, Corporatised (Dublin Airport Authority — daa)	32,676	85.8
Cork	100% State Owned, Corporatised (Dublin Airport Authority — daa)	2,585	6.8
Shannon	100% State Owned, Corporatised (The Shannon Airport Group)	1,616	4.2
ROI West (Knock)	82.5% Airport Trust; 17.5% owned by seven Municipalities (through Connaught Airport Development Company)	0.805	2.1
Kerry	Majority Private ownership (Kerry Airport plc)	0.370	1.0
Donegal	Majority Private ownership (Aerphort Idirnáisiúnta Dhún na nGall Teo). State agency Údarás na Gaeltachta controls 40% stake	0.049	0.1
Total		38,102	100

[Source: Compiled by authors from various sources, including CSO and Company Publications]

As described above, no substantial change is expected in the ownership structure of airports in ROI

and the UK, except perhaps when Prestwick ultimately returns to the private sector (Glover, 2022). There was also some discussion in 2022 of public sector involvement with Doncaster airport to prevent it from closing and to support the regional economy, but nothing materialised (BBC, 2022).

4.4 Airport Policy

Ownership is just one significant aspect of government airport policy. Two further key policy levers are planning and economic regulation, together with numerous other policies that directly or indirectly affect airports. In comparing the UK and ROI, a significant difference now exists as to whether regulations are set at an EU level (e.g., often in ROI) or at a national basis (i.e. the case with the UK since Brexit). Nevertheless, there is a similar situation where the primary responsibility for aviation policy lies, namely with the Department for Transport in the UK and the Department of Transport (DoT) in ROI.

United Kingdom

The latest UK aviation policy is detailed in a 10-year strategic framework called ‘Flightpath for the Future’ published in May 2022 (Department for Transport, 2022a). Previously in 2018, the Department for Transport issued a detailed consultation on its long-term ambitions for aviation entitled ‘Aviation 2050’ (Department for Transport, 2018). However, because of COVID-19, it was decided that the formal responses would not be published about most parts of the consultation, with the Flightpath framework building more generally on the responses to shape aviation policy over the next ten years.

The framework has a ten-point plan for the future of UK aviation, focusing on four key themes:

- Enhancing global impact for a sustainable recovery (1. Recover, learn lessons from the pandemic and sustainably grow the sector, 2. Enhance the UK’s global aviation impact and leadership, 3. Support growth in airport capacity where it is justified, ensuring that capacity is used in a way that delivers for the UK).
- Embracing innovation for a sustainable future (4. Put the sector on course to achieve Net Zero by 2050, 5. Capture the potential of new technology and its uses).
- Realising benefits for the UK (6. Unlock local benefits and level up, 7. Unleash the potential of the next generation of aviation professionals, 8. Make the UK the best place in the world for General Aviation); and
- Delivering for users (9. Improve the consumer experience, 10. Retain our world-leading record on security and safety with a world-leading regulator).

In terms of governance and the relationship with other stakeholders, this framework includes the launching of a new Aviation Council, which will involve collaboration with the Government, industry, regulators and other key partners, to monitor the progress of the ten-point plan and to help

inform the policy making.

Since the UK has a predominately private airport industry, it is the planning and regulatory systems where the government can exert the most influence. Regarding planning, expanding airport capacity requires consent from either local planning authorities or the national government, depending on the site and scale of the proposed expansion projects. Smaller projects are given local government consideration, primarily with reference to general local planning frameworks and legislation. However, when large-scale developments are considered to be ‘National Significant Infrastructure Projects (NSIP)’, as defined by the Planning Act 2008, a ‘Development Consent Order (DCO)’ is needed. This latter process was introduced to be quicker than applying for separate planning consents, which in the past had often proved very lengthy (for airports and other major infrastructure projects). The Secretary of State in the relevant government department (e.g. transport for airports) grants a DCO. The threshold for airport projects to be considered NSIPs is that they will increase the airport’s passenger capacity by at least 10 million per year or increase the airport’s capacity for air transport movements of cargo aircraft by at least 10,000 per year.

The first and only Airport National Policy Statement (NPS) to date was published in June 2018 (Department for Transport, 2018). It accepted the need for additional airport capacity in the south-east of England and explained why the Government believed a northwest runway at Heathrow Airport best met this need. This decision was reached after a considerable time, taking advice from the Independent Airport Commission set up by the Government in 2012 to examine the scale and timing of any requirement for additional airport capacity. The Commission reported its findings in 2015. The NPS also detailed the specific requirements for the runway to gain development consent. The next stage is for Heathrow to produce detailed proposals for planning consent for submission to the Planning Inspectorate. As part of this process, Heathrow must consult with local communities on the finer details of its proposed development and the associated compensation and mitigation packages.

This Airport NPS proved very controversial (as have all decisions regarding additional airport capacity in London over the years). In March 2020, the UK Court of Appeal ruled that the decision to designate the Airports NPS was unlawful since it did not consider the Government’s commitment to the provisions of the Paris Agreement on climate change. The Supreme Court overruled this decision in December 2020. Hence the Airports NPS has now been reinstated, although as of late 2022, expansion at Heathrow remained uncertain because of the impacts of COVID-19 and other recent challenges. The Flightpath strategy states that it remains supportive of this Airport NPS.

Republic of Ireland

Aviation is core to Irish economic development, given the country's island nation status. The Department of Transport's objective for the industry is to '*ensure that the organisational arrangements and structures for economic and safety regulation of the Irish aviation sector are effective and appropriate*'. (DoT, 2015).

The latest aviation policy in ROI was launched in 2015, with a progress report produced in 2019 (DoT, 2015; 2019). The overall aviation policy objectives are as follows:

- To enhance ROI's connectivity by ensuring safe, secure and competitive access responsive to the needs of business, tourism and consumers.
- To foster the growth of aviation enterprise in ROI to support job creation and position ROI as a recognised global leader in aviation; and
- To maximise the contribution of the aviation sector to ROI's economic growth and development.

ROI's National Aviation Policy is vital in managing and funding all Irish airports. A dedicated portion of this policy focuses on optimising the airport network with support for increased air connectivity and value delivery for passengers and airlines, strengthening the contribution of airports to their local catchment area. This activity includes DoT monitoring and support for airport business development initiatives.

This policy distinguishes the three State airports and smaller private ones. The three State-owned Airports (Dublin, Cork and Shannon) are considered '*essential strategic infrastructure*' supporting the economic and social objectives of the State from a tourism and business perspective. Until the COVID-19 pandemic, Government policy was that State-owned Airports were expected to operate on a fully commercial basis and would not receive Exchequer funding.

Recognising the role that smaller and mostly privately-owned airports play in their hinterland, however, the national aviation policy has provided for the Irish Government's implementation of EU-approved support frameworks for regional airports, the Regional Airports Programme 2021–2025 (Irish Government, 2021). Governance arrangements and engagement with airports supported in this way cover the provision of Exchequer (Government) funding under State aid arrangements for operational, safety, and security-related capital expenditure, with airport sustainability objectives, also supported.

The relationship between the DoT and the owners of Irish State Airports (daa plc for Dublin and Cork; The Shannon Airport Group for Shannon) is guided by a Statutory Governance Framework, including the State Airports Act and Code of Governance for State Bodies (Irish Government, 2022). The Annual Report and Accounts for these organisations are also laid before the Irish Houses of

Parliament (Oireachtas). daa plc and The Shannon Airport Group are required to prepare a Draft Five Year strategic plan and present it to the Department of Transport. The State Airport Group Boards must consider any ministerial views expressed in these drafts. These Five-year plans are expected to be updated regularly and submitted to Government within six months of year-end.

Quarterly Governance meetings take place between the Department with each State Airport organisation. The DoT engages informally with these organisations on a more regular basis. State Airport representatives may be asked to appear before Parliamentary Transport and related Committees. Representatives from State Airports (and indeed private airports) appeared in front of such a committee in 2020 and 2021 to discuss the pandemic, its effect on the sector and the airports' responses to these challenges (Oireachtas, 2020). Newly designated Chairpersons of these Groups also appear before these Committees as part of the Appointment process. State Airports can also be subject to formal Questions raised by political representatives (Parliamentary Questions) affecting their activities.

Due to the impact of the COVID-19 pandemic, the Government extended its Exchequer support for regional airports to the two smaller State airports in 2021 (Department of Transport, 2021) under a special COVID-19 Regional State Airports Programme for that year and 2022, consistent with an EU State aid framework due to expire in 2024 or 2027 which permits such aid for airports processing up to three million passengers per annum (European Commission, 2022). Unlike most EU countries, ROI provided more assistance to airports than airlines, with €104m in specific vertical aid supplied during 2021. Most of this support was delivered through grants rather than loans (Burnanje et al., 2021).

4.5 Airport Regulators

Both the UK and ROI have independent specialist aviation regulators which are government-owned corporations, although their mandates have varied, in particular prior to May 2023.

United Kingdom

The Civil Aviation Authority (CAA) regulates all UK airports to ensure that they comply with relevant international and UK security and safety standards (although the UK Government/Department for Transport leads on international security matters and, since Brexit, UK airport security policy, including the setting of security standards). The CAA is also the enforcement body of consumer law related to aviation. Other additional roles include space regulation, advising and assisting the Department for Transport on civil aviation matters and licencing airlines, pilots and air travel organisers. The CAA receives no state funding but is financed from the charges it levies on the industry stakeholders it regulates. From a governance viewpoint, it is worth noting that there is a Consumer Panel which is a non-statutory body to act as a 'critical friend' in consumer protection. More recently, an Environmental Sustainability Panel has also been set up to support and challenge

the CAA on the delivery of its environmental sustainability strategy in relation to the CAA's regulatory and advisory functions.

Another major role of the CAA is the economic regulation of airports with significant market power (SMP) (and the regulation of air traffic management services, although this is beyond the scope of the discussion here). The CAA is empowered, by the Civil Aviation Act of 2012, to carry out a market power test to determine whether an airport operator should or should not be subject to economic regulation and establish the type of regulation. Should the airport be found to possess SMP, it needs an airport economic licence from the CAA, which includes conditions on price controls and specifies the quality of the services the airport operator must deliver and how much it can charge. Currently, two airports, namely Heathrow and Gatwick, are considered to possess SMP. Heathrow airport is regulated through a 'heavy-handed' price-cap system with the airport charges. In contrast, since 2014, Gatwick airport has been subject to a more 'light-handed' price monitoring approach, partly due to the airport agreeing on a series of commitments with its major airlines on price, service conditions and investment.

In 2020, Heathrow requested the CAA to adjust its price cap to address the shortfall in the revenue it expected to generate in 2020 and 2021 due to the impact of COVID-19. The CAA agreed to some adjustments (although smaller than requested) in 2022. Still, consequently, the price cap from January 2023 is -5.74%, which means that in 2022 price terms, the average maximum price per passenger has to be reduced from £30.19 in 2022 down to £21.75 (or £26.31 in actual terms) in 2026. This reflects the expected increases in passenger numbers with the COVID-19 recovery and the higher adjusted level of the price cap introduced in 2022. Moreover, to help deal with the passenger forecast uncertainty because of COVID-19 and other factors, there is a new traffic risk-sharing mechanism that was never used before. If passenger numbers are lower than expected, Heathrow will have some protection against lower revenues. Still, if they are higher, the airlines and passengers will benefit through lower prices (CAA, 2022). By contrast, the light-handed mechanism at Gatwick airport remains the same as before.

On 30 August 2022, the UK Government announced a review of this regulator (to be completed in Spring 2023), which will focus on its efficiency and effectiveness in delivering its services; its role, form, function and delivery model; the corporate governance and assurance mechanisms; and the CAA's relationship with the Department for Transport. A vital issue to consider is how the CAA's priorities match up with the government's broader objectives, considering the CAA's role as an independent regulator (Department for Transport, 2022b).

Republic of Ireland

Prior to May 2023, there were two distinct aviation regulators in ROI, the Irish Aviation Authority (IAA), a commercial semi-state organisation and the Commission for Aviation Regulation (CAR), *an independent public body under the auspices of the Department of Transport* (CAR 2022a).

Legislative and administrative changes were progressed during 2022 to align Irish aviation regulation with the UK and most of Europe through the creation of a ‘new single independent regulator for the civil aviation sector in ROI, covering safety, security, economic, consumer and travel-trade regulation’ (IAA, 2021). The proposed restructure of the Irish Aviation Authority would result in the creation of a separate air traffic management organisation, and a merger of the remaining parts of IAA and the CAR, in line with best international practice. Air navigation services (‘for-profit’ activity) would transfer to a new stand-alone commercial semi-state organisation, AirNav Ireland. The IAA’s safety and security aviation functions would be combined with economic regulation and consumer protection roles (currently undertaken by the CAR). The Irish legislation required to effect this change (Air Navigation and Transport Bill, 2020) was progressing through the Irish Houses of Parliament at the end of 2022. The pace of its passage was affected at that time by other Government priorities and political concerns that the Government should seek independent advice on matters relating to inputs provided by the IAA itself concerning this legislation (O’Halloran, 2022).

On completion of these statutory processes, the revised arrangements for aviation regulation in ROI took effect from 1st May 2023. From this date, the safety and security functions of the IAA were formally combined with the economic and consumer protection functions of CAR, creating a single Irish aviation regulator which retained the IAA title. Air traffic management services moved to AirNav Ireland, a separate and newly established commercial semi-state body (AirNav Ireland, 2023). Implementation of this change was commencing at the time of writing, therefore the activities and responsibilities described hereunder reflect organisational arrangements in ROI prior to May 2023.

Up until May 2023, IAA was responsible for (IAA 2022):

- Safety regulation (including airworthiness, licensing and operating standards).
- Air traffic management (including air traffic control services at the three main State airports, North Atlantic communications and aeronautical information); and
- Security oversight (inspections and audits of major aviation organisations, including airlines, airports, and suppliers).

The organisation operated on a standalone basis, receiving no state funding. The organisation’s costs were met from revenue from air traffic management services and charges applied to entities to whom the IAA provides a service.

From the perspective of airports, IAA's Aerodromes Division forms part of the Authority's Safety Regulation Department. It is responsible for aerodrome safety oversight, including ensuring ROI's compliance with international aviation safety obligations and agreements. This is achieved through the development of standards and certification/supervision of aerodromes.

Unlike in the UK, economic regulation affecting airports was the responsibility of a separate regulator, the Commission for Aviation Regulation (CAR), prior to May 2023. The principle of airport economic regulation was outlined in the National Aviation Policy referred to earlier, with Policy Area Five stating that the system of airport charging for ROI should '*.... allow that market to develop in line with the objectives of the Aviation Policy*' (DoT, 2015). The CAR was established in 2001 under the Aviation Regulation Act, 2001 (as amended by the State Airports Act, 2004 and the Aviation Act, 2006). The CAR operates under the aegis of ROI's Department of Transport and is accountable to the Irish Parliament (Houses of the Oireachtas).

The CAR's principal function is responsibility for setting and monitoring the collection of airport charges at Dublin Airport and ensuring compliance with the European Airport Charges Directive (2009/12/EC), which sets out minimum standards concerning consultation and non-discrimination in an airport's charging strategy. Dublin Airport, the only Irish airport with regulated charges, is a 'single till' business (as is London Heathrow and Gatwick) from an economic regulation perspective. This means that revenue from the airport's commercial activity (e.g., car parking and retail concessions) is used to subsidise aeronautical charges. Consideration of consumer rights for Dublin Airport is provided for through CAR's Passenger Advisory Group, which considers airport investment and service quality from a passenger perspective (CAR, 2022b).

The Commission is also responsible for monitoring other vital activities affecting airports. CAR reviews and approves any new fees or changes to the current fees charged by the airport authorities at Cork, Dublin and Shannon airports for access to installations needed to provide ground handling services. Airports are also subject to regulatory guidelines concerning PRM (People with Restricted Mobility) and HBS (Hold Baggage Screening).

In its draft decision on Dublin Airport passenger charges for 2023–2026, CAR proposed an average price cap per passenger of €8.52, compared to a 2022 cap of €8.24. This was significantly below the increases sought by the airport's operator, daa, which sought a higher range of €13.04 to €14.77 due to increased costs. CAR suggested the possibility of a higher cap (€9.81) if Dublin Airport 'invests as planned for the future' (Irish Times, 2022). Representations made by interested parties inevitably reflected their specific standpoint, with airlines criticising the proposed price increases as unjustified (Murray, 2022) and the airport calling for higher charges, especially in light of the financial damage caused by the pandemic (Mulligan, 2022).

4.6 Safety Regulation

As already mentioned, the CAA and IAA enforce safety regulations in the two countries. However, there is also the European Union Aviation Safety Agency (EASA), an agency of the European Commission charged with developing aviation law and promoting aviation safety. EASA provides a single aviation regulatory and certification framework for all EU and European Free Trade Association (EFTA) Member States in support of the internal single European market for aviation. It also provides an oversight role of the National Competent Authorities in each Member State concerning ensuring the harmonisation of the implementation of European Regulation as adopted by the Member States. This applies across all aviation domains, including EU Regulation 139/2014, laying down requirements and administrative procedures related to aerodromes. The United Kingdom was a member of EASA until Brexit. EASA also liaises with Member State aviation regulators, international organisations such as ICAO, and international regulators such as the US Federal Aviation Administration (FAA). Expressly, EASA undertakes the following essential duties (EASA, 2022):

- To draft implementing rules in all fields pertinent to the EASA mission.
- To certify and approve products and organisations in areas where EASA has exclusive competence (e.g., airworthiness).
- To provide oversight and support to Member States in fields where EASA has shared competence (e.g., air operations, air traffic management).
- To promote the use of European and worldwide standards; and
- To cooperate with international actors to achieve the highest safety level for EU citizens globally (e.g. EU safety list, Third Country Operators authorisations). [EASA, 2022]

Within ROI, the IAA is the National Competent Authority appointed by the Irish State and has the primary role in the safety regulation of certificated (EU Regulation) and licensed (National Regulation) Irish Aerodromes. The Authority's Safety Regulation Department visits airports to assess airport operations' adherence to guidelines and regulations. This approach delivers to IAA a detailed insight into airport management systems, with a Central EASA Repository containing information provided by national authorities from the above governance. The IAA's risk-based oversight programme, involving regular visits and inspections, reviews every aspect of an airport's certification basis to ensure compliance with relevant regulations and requirements.

The United Kingdom was a member of EASA until it departed from the European Union, which necessitated the development of alternative arrangements following the conclusion of the transition period on 31st December 2020. Only two aspects of aviation safety cooperation are addressed in the Trade and Cooperation Agreement, namely certain simplifications on the approvals covering the design and manufacture of aeronautical products. Several ongoing 'working arrangements' have

since been established between EASA and the CAA. One such arrangement covers the EU Ramp Inspection Programme (EU 956/2012), an essential procedure to enforce international aviation safety standards for aircraft using airports in the Member States. Under the working arrangement agreed upon in March 2021, the CAA has been granted the status of a fully participating member in the EU Ramp Inspection Programme (EASA, 2021).

From January 2021, the UK assumed responsibility for developing aviation safety legislation and guidance, although the current UK legislation remains closely aligned with the EU/EASA. The Department for Transport has overall responsibility for the setting of national safety aviation policy and working with the CAA, whilst the CAA's role is to ensure that the safety standards are reached (e.g. through licensing and oversight of organisations) as well as effectively managing safety risks through the collection and analysis of safety data.

4.7 Airport Competition

Airport competition is a controversial issue in both countries. In the UK, a critical development was the privatisation of BAA as a seven-airport group in 1987 rather than as individual private airports, with some arguing that the latter would encourage a more competitive situation. In 2006, the UK airports market was investigated by the Office of Fair Trading (OFT), a government body which used to be responsible for protecting consumer interests. At this time, BAA had just acquired new private owners and was coming under increasing criticism. The OFT concluded that the BAA group should be referred to the Competition Commission (the former UK competition authority) for a more detailed investigation, as the OFT identified joint airport ownership as a factor that could prevent, restrict, or distort competition. The Competition Commission reached its decision in 2009 (Competition Commission, 2009). Its main conclusion was that common ownership of airports in south-east England and lowland Scotland did give rise to adverse effects on competition in connection with the supply of airport services by BAA. It concluded that Gatwick and Stansted airports should be sold to different airport operators as well as Edinburgh or Glasgow. In 2009, BAA completed the sale of Gatwick airport, which had begun before the outcome of the Competition Commission's inquiry was known. Edinburgh airport was then sold in 2012, and the sale of the Stansted airport was completed in 2013. Evidence suggests that splitting up BAA common ownership has created a more competitive environment with improved traffic growth, efficiency and service quality (Competition and Markets Authority, 2016; Pagliari and Graham, 2019).

Within the UK, the CAA has concurrent powers with the Competition and Markets Authority (CMA — the successor to the Competition Commission) to enforce the conditions in the Competition Act and Enterprise Act as they relate to airport operation services and the supply of air traffic services. As regards airports, areas that the CAA has recently investigated include car parking at East Midlands airport and, more generally, the market conditions for surface access at UK airports. It can also

investigate complaints about airports' conduct under airport charges regulations and airport ground handling regulations (introduced initially when the UK was a member of the EU).

In investigating the existence of SMP, the CAA explores the degree of airport competition. Its current thinking is that it is only at Heathrow and Gatwick airports where there is SMP, with competition law not providing sufficient protection. It believes that the benefits of regulating the airports are likely to outweigh the adverse effects. However, in January 2020, the CAA announced that it had received a request from the airline group IAG to undertake a market power determination about Manchester Airport. Previously Manchester Airport was identified as possessing SMP until 2008, when it was decided that this was no longer the case because of a more perceived competitive situation. If the CAA determines that the market power test is met, then Manchester could again be subject to economic regulation. However, due to Covid -19, the CAA's consideration of this has been postponed until 2022.

In ROI, a critical competitive factor is Dublin Airport's dominance of the Irish market, with a market share of over 85% in 2019. The airport's recent growth has occurred alongside strong economic growth in Dublin and its surrounding area. Furthermore, the development of ROI's motorway network during the 2000s resulted in much-reduced journey lengths between Dublin and most vital regional cities, improving access to Dublin Airport from all parts of the country and increasing competitive intensity for other Irish airports (Hiney et al., 2020). Indeed, Vega and Reynolds-Feighan (2016) highlight the impact of the motorway network on connectivity at smaller Irish airports. Unlike the situation in the UK, there have been no ROI airport-focused market studies in recent years. The National Aviation Policy had called for the optimisation of current capacity at State Airports to expand air services and deliver increased economic benefits. An independent capacity review in 2018 identified capacity projections on an airport-by-airport basis (Department of Transport, 2018). Special attention was given to how future capacity constraints in the largest airport (Dublin) might be addressed, including the potential need for a third terminal there. The idea of managing capacity by moving air routes from Dublin to the smaller airports was raised during the summer of 2022 (English, 2022). At this time, Dublin Airport was experiencing operational and capacity challenges, while smaller airports had (and have) significant capacity for expansion. However, such a development would be most unlikely, as the specific issues would likely be resolved in short to medium term. Furthermore, airline economics suggest that if an airline cannot continue using a busy airport, it will seek to maximise the return on its aircraft assets, which might mean moving-a current route pair to a different jurisdiction rather than another airport in the same country.

Airport competition can be affected by passenger taxes and so-called development charges. The UK Air Passenger Duty (APD) was one of the first such passenger taxes, introduced in 1994 as an excise duty on passengers departing UK airports. The amount payable depends on flight distance and seat class and is considered one of the world's most expensive taxes. The most recent changes to APD

were announced as part of the UK's 2021 autumn budget plan. These included a 50% cut in APD in 2023 (from £13 to £6.50 for flights between UK airports), but an increase from £82 to £84 for long haul economy seats (> 2,000 miles) and a new rate of £91 for ultra-long-haul economy seats (>5,500 miles). The stated rationale was that this encourages domestic connectivity (and hence supports the UK's Government's 'levelling up' policy, i.e., reducing geographic inequalities) and penalises long-haul flights the most that, arguably, are the most damaging in environmental terms. However, there was a considerable adverse reaction to this change (Allegretti, 2021) from many who thought that the UK should be encouraging a shift away from the air for short-haul travel to other less harmful transport modes such as rail, for example, as in France and Austria.

Meanwhile, during 2008 when ROI's national finances were under considerable strain due to the effects of the financial crisis, a new excise duty — the Air Travel Tax — was introduced in the 2009 budget. This per-passenger tax was applied to all flights departing from Irish airports with more than 50,000 passengers during the previous calendar year. While two tax rates were used initially, with a higher rate for longer routes, the rate was set at €3 per passenger from 2011. This tax was heavily criticised by the tourism and travel industry, and the rate was cut to zero effective from March 2014, with the country's finance minister setting expectations that airlines would respond by growing traffic volumes (O'Halloran, 2013).

In a further development, the Northern Ireland Parliament (The Assembly) voted to reduce the APD on long-haul flights to zero from January 2013 (BBC, 2012). It was expected that this move would help to reduce the number of Northern Ireland residents travelling across the border to ROI to use Dublin Airport, where no such travel tax now applies. However, Dublin's comprehensive long-haul network is likely to continue to be attractive to residents of Northern Ireland, in particular its North American connections and US Customs and Border Pre-Clearance facility (CBP).

In addition to airport charges (economically regulated at Heathrow, Gatwick and Dublin, but not controlled elsewhere), a few regional airports have, or have had so-called airport development charges. Ireland West (Knock) Airport directly charges all departing passengers a Development Fee of €10 to cover 'the use of its facilities and as a contribution towards infrastructure developments' (Ireland West Airport, 2022). It asks airport stakeholders (e.g. airlines and tour operators) to advise intending passengers of this charge. No other Irish airport applies such a direct charge, though, of course, costs like those covered by this fee are likely to be included in commercial terms between airports and their users, particularly airlines. Direct airport charges can strengthen loyalty through the human link between the airport and the passenger. However, this approach may not be as successful during economically challenging times, where passengers may see it as an additional cost that other nearby airports do not apply.

Such charges are also used at Norwich airport (£10) in the UK. However, they attract significant

adverse user reactions, and can be considered to inhibit airport competition — so much so that Newquay airport scrapped its fee in 2015 after much opposition from its users. Likewise, although Teesside airport justified such fees with the message ‘Secure our future’ directed at the residents, it also axed the fee in 2021 (Nolan, 2021).

4.8 Brexit and Other Recent Developments (Autumn 2022)

Brexit has resulted in a deviation in regulation and governance of several other airport-related areas between the UK and ROI. For instance, concerning airport security, the Flightpath strategy stated, ‘*We are also refreshing the UK Aviation Security Strategy. Leaving the EU also offers the Government an opportunity to consider whether there are new and better ways of structuring and updating our security regulations*’ (Department for Transport, 2022, p.11).

Environmental regulation, which is becoming an increasingly important area, is another notable area. For example, the UK left the EU Emissions Trading Scheme and established the UK Emissions Trading Scheme, although this is very similar. Moreover, both the EU (including ROI) and the UK have plans to introduce a sustainable aviation fuel (SAF) blending mandate, but the time scales are likely to differ. Other environmental policies remain country specific. For example, in the UK, the Department for Transport has imposed night-time flying noise quotas for many years at Heathrow, Gatwick and Stansted. It is also possible to restrict the operating hours of an airport through the planning process. The most notable case is London City Airport which cannot have flights at night and from midday Saturday to Sunday to reduce the noise impact on residents.

Night-time aircraft activity at Dublin Airport is assessed by the Aircraft Noise Competent Authority (ANCA), which seeks to ensure that ‘*the Balanced Approach of the International Civil Aviation Organization is applied where a noise problem at the airport is identified*’. (Fingal, 2022). A condition was attached to planning permission granted in 2007 for the construction of Dublin’s now open second (North) runway, which curtailed flights between 23:00 and 07:00. daa, the airport operator, sought an amendment to this permission that would allow the use of the North Runway between 06:00 and 00:00, with a noise quota system, deployed to determine the number of night-time flights at the airport. Following a consultation process during which ANCA received almost 1,400 submissions — overwhelmingly opposed to any change in conditions (though airline users generally supported them) — the Authority recommended the granting of these amendments in July 2022 while making provisions for residential noise insulation measures to be funded by daa (Deegan, 2022). The recommendation was appealed to ROI’s national independent planning body, An Bord Pleanála, with a decision expected by the end of 2022.

Slot allocation regulation is another relevant area to consider. The Secretary of State for Transport designates slot-coordinated airports in the UK. The main London airports (Heathrow, City, Gatwick, Stansted, Luton), Manchester and Birmingham, are coordinated, with Bristol being coordinated from

23:00 to 07:00 in the summer season (although in 2022, it applied to become fully co-ordinated). CAR is responsible, under EU legislation Regulation (EEC) No 95/93 on common rules for the allocation of slots at EU airports (Slot Regulation), for the designation of ROI airports, particularly in terms of so-called ‘level 3’ or ‘slot-coordinated’ airports which are the most congested and hence in need of a formal coordination allocation process. Dublin Airport is ROI’s only slot-coordinated airport, with the allocation service currently (2022) provided by Airport Coordination Limited (ACL).

Whilst the slot allocation mechanism in the UK and ROI principally remains similar since Brexit, the reaction to COVID-19 illustrated a somewhat different approach. The dramatic fall in traffic due to COVID-19 led to waivers worldwide of the 80% use-it-or-lose-it-rules to maintain the airlines’ entitlement to historic slots once traffic had recovered. In the summer and winter 2020 seasons, there was a complete waiver of the 80% use-or-lose-it-rules in the UK and EU (including ROI). As traffic started to return in the summer and winter 2021 seasons, a threshold of 50% utilisation was established. Then for the summer 2022 season, the threshold for the UK and EU deviated for the first time, being 70% in the UK but only 64% in the EU. Moreover, in the future, more long-term changes in the UK may occur, as stated by the Flightpath strategy (Department for Transport, 2022a, p. 6):

‘Following our exit from the EU, we have the opportunity to consider whether we could improve the way in which our airport slots framework operates. We will review the existing slot allocation system in the UK to consider whether it could be updated to better support our policy objectives.’

Like many airports across Europe, some larger UK and Irish airports experienced significant capacity challenges at specific points during 2022 due to the combined impact of a more rapid than expected ‘return to the air’ after Covid -19 on the one hand and significant staff reductions on the other. These reductions were introduced in light of the very fragile nature of finances along the aviation value chain during the pandemic. Summer airport challenges were exacerbated in 2022 by the loss of much-qualified security staff over a relatively short period and the subsequent non-return to the sector of many furloughed or made redundant.

The contribution of Brexit to UK air travel delays experienced during the summer of 2022 has been much debated. Some airline stakeholders contend that inflexibility in the UK Labour market due to Brexit has made it more difficult for aviation organisations to recruit European workers post-pandemic (Forrest, 2022), including for certain types of airport roles such as baggage handling and security (which also requires certification and screening). Many such workers, who returned home at the outset of the pandemic, did not return. However, such travel delays were experienced across Europe at certain times during the summer of 2022, with many larger airports, airlines, ground handlers and airport retailers experiencing significant staffing challenges. Interestingly, with the UK now having responsibility over their own slot rules, there was a slot amnesty in the summer of 2022

to allow airlines to temporarily return slots that they could not operate when staff shortages meant that many airlines had to cancel some of their flights. Heathrow airport imposed a 100,000 cap on daily passenger numbers (UK Government, 2022b).

A further issue relates to the regulation of Public Service Obligation (PSO) rules which are (ROI) and were (UK) subject to EU regulations (Articles 16–18 of the Air Services Regulation 1008/2008). In the UK, there are three PSOs, from Dundee and Newquay to London since 2014 and from Derry to London since 2017, 18 in Scotland and one in Wales. In 2021, a ‘Union Connectivity Review’ was undertaken. It recommended that the existing (previous EU) subsidy rules for domestic aviation should be revised to allow PSOs to operate between UK regions (rather than just to and from London) and to introduce Open PSOs, which would support specific qualifying routes by removing Air Passenger Duty (APD) and allowing multiple airlines to operate where a journey is too long to be reasonably taken by road or rail. The Flightpath strategy states that this will align with specific UK Government objectives for levelling up and the environment (e.g. the possibility of PSO routes requiring Sustainable Aviation Fuel (SAF) or zero emissions technologies). In ROI, there have been just two PSO contracts recently for the Donegal/Dublin and Kerry/Dublin air services. As of the autumn of 2022, the latter route is currently being operated on a commercial basis (RTE, 2022), eliminating the possibility for route support and leaving just one current Irish PSO service, i.e., Donegal/Dublin.

4.9 Conclusions

Overall, given their island status and west of Europe location, aviation plays a significant economic and social role in the UK and ROI. Their historical relationship and proximity have given rise to substantial volumes of travel and trade between the two countries, most of the former by air. The Common Travel Area Agreement means that residents of each country can continue to travel freely to the other after Brexit, although customs requirements have been reintroduced. Table 4.3 presents a summary of the key issues discussed in this chapter, where some significant comparisons can be drawn between the two countries with similarities and differences.

Table 4.3 UK and ROI Airports: Summary Profile

	<i>United Kingdom</i>	<i>Republic of Ireland</i>
Total estimated country population (2019, millions)	66.797*	4.921 ⁺
Total passenger numbers (2019, millions)	296.7	38.1
COVID-19 impact: Number of flights % change 2021 versus 2019	-62%	-62%
Airport ownership	Most main airports privately owned. A few	Three largest airports part of state-owned commercial

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	publicly owned airports previously in private hands.	groups. Airports with private ownership accounted for 3% of 2019 passenger totals.
Industry structure (2019)	Partially concentrated. Six London Airports hold 61% of market, though largest (Heathrow) accounts for just 27% of total.	Heavily concentrated. Top 3 airports hold c. 97% of market, largest (Dublin) accounts for almost 86% of total.
Aviation policy	Flightpath for the Future, May 2022.	National Aviation Policy, 2015 (updated 2019).
Key airport regulators	One: Civil Aviation Authority (Safety Regulation, Economic Regulation and Consumer Protection).	Two (Until May 2023): Irish Aviation Authority (Safety and Security Regulation) and Commission for Aviation Regulation (Economic Regulation and Consumer Protection). Single regulator structure now in place.
Economically regulated airports (single till arrangement)	London Heathrow, London Gatwick.	Dublin.
Competition	Evidence of increasing competition with the break-up of BAA. Strong competition between regional airports.	Dublin Airport dominance limits competitiveness of overall market. Strong competition between regional airports.
Passenger taxation and development charges (2022)	The existence of the APD with development charges at one airport.	No passenger taxes, with development charges at one airport.
Public Service Obligations routes (2022)	Three routes from London, 18 in Scotland and 1 in Wales.	One route.
Brexit impact on passenger movement	UK passenger flights to and from EU countries (except ROI) now subject to immigration and passport controls. No change to current arrangements covering passenger movement to and from ROI. Customs and Duty-Free provisions now apply to flights to and from ROI and the European Union.	No change to current arrangements covering passenger movement to and from UK/Europe from an immigration standpoint. Customs and Duty-Free provisions now apply to ROI flights to and from UK.
Slot allocation	Department for Transport responsibility. Eight slot-controlled airports.	Commission for Aviation Regulation (now IAA)

		responsibility. One slot-controlled airport.
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[Source: Developed by authors. *Office for National Statistics (2020), +Central Statistics Office (2019)]

The UK has led the way in the privatisation of airports, and today's system reflects an almost entirely private airport sector with diversified ownership. On the other hand, the ROI Government continues to play a vital role in airports, owning those that account for over 95% of air traffic to and from the country. It also provides essential funding for the smaller and primarily privately-owned airports. These standpoints give rise to a higher level of day-to-day Government engagement with airports in ROI than in the UK.

The Civil Aviation Authority is the UK's main airport regulator, responsible for safety, economic regulation of airports, slot allocation and consumer protection. The Department for Transport takes overall care of security, with the CAA ensuring that the security regulations are enforced. In ROI, these activities are currently (autumn 2022) split between two regulators, the Irish Aviation Authority, responsible for safety and security, and the Commission for Aviation Regulation, responsible for economic regulation, consumer protection and slot allocation. Plans are underway to merge key functions of ROI's two regulators, aligning arrangements with UK and European norms. The post-Brexit relationship between the CAA and the European Aviation Safety Agency (EASA), and its impact on airport regulation, remains unclear. Moreover, the UK government has stated that it has plans to significantly change some of the previous EU legislation, which was effectively retained at the time of the UK departure from the EU. Still, the details of these changes have yet to be decided upon or made known.

The importance of aviation to both countries is reflected in the development of ambitious, growth focused national policies, of which airports are key components. This positioning will help to ensure that well-regulated and governed airports can continue in the years ahead to make a substantial contribution to the growth of aviation, and its contribution to economic growth, in the United Kingdom and Republic of Ireland.

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5 Paper 3: Impact of COVID-19 on Irish Airport Stakeholder Relationships

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This paper reviews the management of airport stakeholder relationships and activities from the perspective of airport managers and their stakeholders. These topics are covered more substantially in this paper than in the others. Sixty-four managers across eight categories (including airports themselves) were interviewed. The nature of engagement is assessed, including its frequency and the measurement of such relationships' effectiveness. The impact of the COVID-19 pandemic on airports, their stakeholders, collaboration, and other stakeholder activities is also examined. Airport performance is also assessed, and future prospects are considered.

The research activities discussed in this paper (primarily a semi-structured interview-based approach, supported by desktop review of literature and contemporary pandemic related publications) are contextualised and elaborated upon in Chapter 2 (Research Methodology), which provides comprehensive insights into the overarching research philosophy and the specific methodologies deployed throughout this thesis.

Contribution Themes Covered: Airport Stakeholder relationship identification, categorisation, management and assessment prior to, during and after the onset of the COVID-19 pandemic; Airport performance during these periods; Disruption and emergency management; Future prospects/expectations.

Impact of COVID-19 on Irish Airport Stakeholder Relationships

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Highlights

- Crisis can be an opportunity for strategic collaborations between airports and key stakeholders
- Strength of personal relationships key to effectiveness of airport stakeholder management
- High levels of airport stakeholder interaction observed during initial pandemic shutdown period
- Most stakeholders subsequently focused on cash preservation and survival
- A shared and coordinated approach to recovery agreed as essential

Keywords

Stakeholder Management, COVID-19, Airports, External Shocks, Relationships

Abstract

COVID-19 related travel restrictions led to a significant contraction of aviation activities, necessitating significant State support for the sector. This paper assesses the impact of the pandemic and Irish airport stakeholder relationships, exploring a widely expressed view that effective aviation collaboration is essential to recovery from COVID-19. Interviewees reported significant positive stakeholder interaction during the shutdown period, with airports supporting rapidly changing customer requirements, operationally and business-wise. However, each stakeholder organisation then focused on its own distinct challenges. Airport Stakeholder engagement during this COVID-19 period concentrated on short-term planning and objectives. Implications for airport managers are identified. This research makes a theoretical contribution regarding the impact on airports and stakeholders when 'shock' developments affect the industry.

5.1 Introduction

The operation of airports makes an important economic contribution (ACI, 2020; Kazda et al., 2017; Button et al., 2010) and there is a strong link between airports, airlines and tourism activity (Halpern and Graham, 2015; Efthymiou and Papatheodorou, 2015, Papatheodorou, 2021). Previous assessments considering the effect of shock events on travel have considered responses to terrorism (Corbet et al., 2019); communicable diseases (IATA, 2021a); SARS (Loh, 2006); and the fiscal crisis (Harvey and Turnbull, 2009). These events resulted in short-term reductions in traffic volumes, with

business travel especially affected. Airlines and airports encountered reduced revenue and increased costs (Voltes-Dorta and Pagliari, 2012). Previous infectious diseases and terrorism necessitated enhanced security and health screening requirements, further increasing airport costs, but these events did not impact on long-term aviation growth trends (Iacus et al., 2020).

After the outbreak of COVID-19, aviation-focused research covered the impact of the pandemic on aviation and travel demand (Gossling et al., 2020, Andreana et al., 2021), airport-specific financial impacts (Forsyth et al., 2020a), and policy and State aid factors (Macilree and Duval, 2020). Sun et al. (2020) noted the contribution of global aviation to the rapid spread of the disease, through the industry's global route network. At the same time, aviation supported the movement of valuable cargo such as Personal Protective Equipment (PPE) and vaccines, (IATA, 2021b) and as Suau-Sanchez et al. (2020) and Serrano and Kazda (2020) highlighted the pandemic had a less adverse impact on cargo operations.

The importance of stakeholder relationships in pandemic times has been highlighted by EUROCONTROL (2020a and 2020b) and Serrano and Kazda (2020). These authors suggest that stakeholders see effective collaboration as essential to the industry's recovery, highlighting the need for dialogue, coordination, greater collaboration and collective learning when dealing with the impact of and recovery from COVID-19. The need for improved air transport stakeholder management has also been identified by Papatheodorou (2021) with respect to destination management organisations, while Thams et al. (2020) and Paraschi et al (2019) highlight how an airport business excellence model approach provides insights and benefits to airport stakeholders. Stakeholder management is therefore the theoretical background underpinning this research paper. Stakeholder Theory highlights the potential for creation of organisational value through increased levels of engagement, commitment, trust, innovation, inclusivity and interconnectedness.

Pandemic-related stakeholder activities have not featured as extensively in COVID-19 literature as other aviation topics, while previous stakeholder studies featuring airports have covered matters such as route activity or environmental factors, with less focus on the impact of airport size or ownership type on stakeholder activity. This paper's aim is to analyse stakeholder management activity in Irish airports before, during and after COVID-19. Its key research question asks how Irish airport stakeholder management activity was affected by the COVID-19 pandemic, by assessing activity and relationships before and during this period.

The paper addresses the following research questions:

- Who are the key airport stakeholders and how important are they?
- How often and in what manner does engagement occur?
- How is the value of this activity assessed?

- How has the COVID-19 pandemic affected these stakeholder activities?
- What future changes are likely to take place?

This paper's findings help to better inform scholars and practitioners of airport stakeholder reaction to future events of a similar nature and/or scale. Moreover, the study makes a theoretical contribution to research regarding the instant impact on airports when sudden adverse developments affect the industry, and significantly adds to the body of academic knowledge regarding stakeholder management's potential impact on future regional airport activities and performance.

The paper is organised as follows. Sections 2a analyses pertinent Literature, data and reportage covering aviation and airport-focused COVID-19 activity, while section 2b assesses Stakeholder Theory generally and in aviation. Section 3 describes the paper's research methodology, including the semi-structured stakeholder interview approach. The analysis and discussion of findings regarding airport stakeholder activity prior to and since COVID-19 is featured in Section 4, followed by research conclusions in Section 5.

5.2 Pandemic Impact and Stakeholder Management in Aviation

5.2.1 COVID-19 and Aviation

Impact of pandemic on aviation activities and performance.

The arrival of the COVID-19 pandemic had a dramatic operating and financial impact on the aviation industry, including airports, resulting in dramatic declines in revenue and profitability (ACI, 2020). This effect was unprecedented in the history of aviation, with a reduction of 2.7bn in world passenger traffic (a decline of 60%) between 2019 and 2020, an estimated loss of US\$372bn in airline gross passenger revenues and a dramatic operating and financial impact on airports (ICAO, 2022; ACI, 2020). Serrano and Kazda (2021) highlight the massive financial cost and revenue impact of the pandemic, noting that operating costs remained high for some airports, which stayed open to provide pandemic related services, such as passenger repatriation, cargo and aircraft parking/storage.

Warnock-Smith et al. (2021) differentiate between the effect of COVID-19 and previous health crises such as SARS. Airport and airline employees were subject to salary reductions, furlough and, inevitably, layoffs (IATA, 2021c; OECD, 2020). Abu-Rayash and Dincer (2020) highlight unprecedented exceptional sector impacts, population nervousness and anxiety post-COVID- 19, Dube et al. (2021) consider future economic impacts on organisations affecting their feasibility, noting that if air carriers focus recovery activity at larger airports, this could add to financial challenges already faced by smaller airports.

Forsyth et al. (2020b) estimate that for every 5% fall in Gross Domestic Product (GDP), air transport demand can fall by between 5% and 10%. With airports receiving negligible levels of aviation

income during the pandemic, and fixed costs typically accounting for at least 50% of total costs for many airport types (ACI, 2020), the financial effect of COVID-19 adversely impacted the already challenged profitability of airports, especially smaller ones. The collapse in non-aeronautical revenue, identified by Ison et al. (2011) as an increasingly important source of airport revenue, exacerbated this challenge and a further economic stress factor is continued relentless pressure by airlines on airports to reduce costs and charges.

Smaller airports relying on tourism are exposed to shock/adverse economic events (Zhang et al., 2017), impairing their financial resilience (Nhamo et al., 2020; Gudmundsson et al., 2021). Investment requirements associated with upgraded facilities, digitalisation and health screening will challenge weaker airports disproportionately, as governments grapple with ongoing requirements for airport State aid.

COVID-19 Related State Aid

Forsyth et al. (2020a) highlight that provision by States of airport financial aid could be justified in exceptional circumstances, if the requirement were due to government action, e.g. no-travel restrictions and international visitor bans. COVID-19 gave rise to a need for significant horizontal and airport-specific vertical State support for the sector (European Commission, 2020). Horizontal State aid typically falls into categories such as support for employee retention, reduction in turnover compensation, and commercial rate waivers (Truxal, 2020). European Union Member States offered this support across all industries, subject to specific qualification criteria. This practice was supported by European Commission approval of State aid requests in a speedy manner, given exceptional COVID-19 circumstances (European Commission, 2020). With respect to airport-specific (vertical) State aid, Table 5.1 highlights examples of such support approved by the European Commission. The Commission's recognition of the pandemic as an 'exceptional occurrence' enabled it to speedily approve vertical State aid for airports in many instances.

Table 5.1 Examples of Airport-Specific State Aid Approved by European Commission

Scheme	Description
Germany: Covid-19 Airport Scheme (est. €1.36bn)	Compensation for revenue losses; Grants; Loan Guarantees; Subsidised interest rates; Deferrals of taxes and charges
Slovakia: Aid to Airport Operators (€29.8m)	Damage compensation scheme; ‘per airport’ aid scheme; Uncovered fixed costs aid scheme
Ireland: State Aid to Airports (€26m)	Business damage compensation; ‘per airport’ grant scheme; Fixed costs cash cover
Scotland: Aid Scheme to Scottish Airports (€20m)	Compensation for revenue losses, effected through airport relief from ‘non-domestic rates’ tax

[Source: European Commission, 2021]

The Irish Government’s Regional Airports Programme supports Irish airports processing less than one million passengers per annum. Prior to the pandemic, this State aid was provided to Kerry, Ireland West (Knock) and Donegal, private company airports with less than 1m passengers and accounting for 3.2% of 2019 Irish air passenger traffic. During the pandemic, Cork and Shannon Airports were included in the Regional Airports Programme as their passenger numbers fell below the 1m passenger threshold. Irish State aid for aviation included a €104.2m vertical aid/debt facility to its six main airports and €267m of horizontal supports across the aviation sector. Most vertical airport aid was provided by way of grant rather than loan and airports received more support than airlines (Department of Public Expenditure and Reform, 2021). In addition to the €26m State aid scheme highlighted in Table 4.1, further direct airport grants of €38.2m were provided, while the Irish State’s Infrastructure Fund, ISIF, participated in bond issues of the State-owned daa plc (operator of Dublin and Cork airports) in the amount of €40m.

Future state support is likely to be more conditional than before and may be more likely to be a last resort, to be considered after other commercial avenues, for example private sector investment, have been exhausted. In their early impact study, Gossling et al. (2020) identified pressure by climate campaigners on Governments to apply conditions covering sustainability/decarbonisation to the provision of pandemic State support for the aviation sector, a point also raised by European Lawmakers (Abnett, 2020). For example, aid for Air France was provided subject to the airline reducing its domestic footprint ‘for environmental reasons’ by ceasing certain domestic flights from Orly airport, adversely affecting regional airports at the other end of these routes.

Furthermore, State aid is normally intended for viable organisations perceived to have a reasonable and ongoing chance of survival (Beifert, 2015), without a continuing need for state support. How

this characteristic might apply to European airports in receipt of such aid is a key consideration. Financial pressures may be likely to lead to increased levels of future airport closure and consolidation, or a combination of both, albeit from a low current level. European Commission airport aid provisions are due to end in 2024, although prolongation of these arrangements was put under review in 2022, considering pandemic and subsequent events (European Commission, 2022). Airports Council International Europe called for a European aviation (State) relief plan (Butcher, 2020). This support would include measures to restore revenue generation capabilities and support for long-term strategic investments and decarbonisation efforts. However, much State aid for airports has focused on addressing liquidity challenges, and the long-term ability and willingness of States to sustain such support at 2020/21 levels must be considered.

5.2.2 Airport Stakeholder Management within Aviation Ecosystem

The interaction between an airport and the region it serves, though difficult to quantify, is fundamentally important. Airport activity is essential to regional economic performance, through facilitating increased levels of trade, tourism and investment (Brathen and Halpern, 2012). The Airport Cooperative Research Programme (ACRP) recommends that airports identify arrangements and partnerships that ‘enhance the airport’s functional capabilities, maintain or enhance aviation services, provide a platform for the airport to be an integral part of the broader community it serves, and/or yield positive economic growth and returns’. (Economic Development Research Group, 2015).

One of the most prominent Stakeholder Theory scholars, R. Edward Freeman, defines stakeholders as follows (1984): ‘Stakeholders are groups and individuals that have a valid interest in the activities and outcomes of a firm, and on whom the firm relies to achieve its objectives.’ Stakeholder Theory contends that by considering all stakeholders, organisations can help create value, not least of all through increased levels of commitment, trust, innovation, inclusivity and interconnectedness (Freeman et al., 2010; Freeman, Harrison and Zyglidopoulos, 2018). Freeman and McVea (2001) emphasise that a stakeholder approach to strategic management must manage/integrate the relationships and interests of shareholders, employees, customers, suppliers, communities and other groups in a manner that contributes to and helps secure an organisation’s long-term success.

The impact of stakeholder engagement on airport activities is under-reported, even though there is an appreciation of its increasing importance in aviation, as outlined by Schaar and Sherry (2010), Stephenson et al. (2018) and Paraschi et al. (2019). Figure 5-1 shows a broad range of airport stakeholders, whose relative importance is considered later in this paper.

Figure 5-1 Overview of Airport Stakeholders



[Source: Developed by authors]

The importance of two-way airport–airline relationships, especially concerning route planning activity, has been noted (Lohmann and Vianna, 2016). Liberalisation and increasing commercialisation of the airport sector, and the growth of low-cost carriers, has changed the airport–airline relationship (Graham, 2009; Bush and Starkie, 2014). Gillen (2011) argues that effective stakeholder engagement can help parties develop partnership agreements instead of the more adversarial 'if you win, I lose' approach. Cepolina and Profumo (2011) argue that the most critical strategic driver for regional airports is the creation of social benefits.

Triangular relationships among airports, airlines and destination organisations or regional municipal authorities have elements of interdependence (Papatheodorou et al., 2019; Levy, 2017). Amaeshi and Crane (2006) identify stakeholder engagement as a complementary mechanism in supporting 'sustainable airport development'. Royal Schiphol Group (2019) conducts a materiality analysis every three years, consulting airport stakeholders on themes considered most important to this major hub. However, Graham (2018) cautions that while regional authorities and municipalities will focus on achieving local economic benefits, national governments and, for example, the European Union, will consider effective competition and the environment from a wider societal perspective. These approaches have become more relevant as the industry deals with the after-effects of the pandemic, where no single stakeholder has been able to solely determine and control its future path, a scenario previously identified by Schaar and Sherry (2010). Some stakeholders have airport-related objectives which cannot be fully guaranteed or delivered by the airport, for example incoming tourist numbers. Airport stakeholder goals may also conflict with each other, e.g. community concerns regarding emissions and noise versus a commercial desire to maximise route activity for the benefit of the local

economy.

The extent of literature featuring aviation stakeholder activity is relatively constrained to route activity and environmental issues. There is less attention paid to stakeholder management practices themselves, including differences by airport size or ownership, and how COVID-19 affected airport stakeholder engagement. By assessing the impact of the pandemic on Irish airports system and their stakeholder relationships during this period, this paper addresses this research gap.

5.3 Research Methodology

5.3.1 Context: Ireland and Its Airports

Given its island nation status, aviation is a key contributor to Irish economic activity. Hiney et al. (2020) highlighted the impact of Irish aviation on the country's economy, contributing €4.1bn to Gross Domestic Product (GDP) and supporting 42,000 direct jobs in 2017. Ireland's aviation sector was severely affected by COVID-19 travel restrictions, with 282,000 flights lost from March 2020 to May 2021 (EUROCONTROL, 2021b). Table 5.2 shows 2020 passenger numbers down by more than 78% relative to 2019 levels (Central Statistics Office, 2021).

Dublin Airport (part of State-owned Group daa plc) is a large international airport and a European hub for North Atlantic traffic. Cork Airport (also owned by daa plc) is Ireland's second largest airport, with a strong UK and European route footprint. Shannon Airport (part of the State-owned Shannon Airport Group) is a transatlantic gateway for commercial and business air traffic, also providing UK/European routes and supporting dedicated Maintenance Repair and Overhaul (MRO) and cargo activity. Ireland West (Knock), Kerry and Donegal, smaller regional airports on the western side of the country primarily serving UK destinations together with some European activity and two domestic routes, are mostly privately owned. Table 5.2 shows the extent to which Dublin Airport dominates Irish air traffic (> 85% of all passengers). Cork, Shannon, Ireland West and Kerry airports compete with one another, and with other European airports, for new airline route business. Given Ireland's small size and strong intercity motorway system, Dublin Airport, with its comprehensive route network, is an attractive option for passengers from the catchment areas of the smaller Irish airports (Bus Éireann, 2020). Indeed, Dublin's strong market position has been the subject of much comment from local representatives, including in Cork, where its sister airport is located, and Limerick, the closest large city to Shannon (Caden, 2022).

Table 5.2 Airport Passenger Volumes 2016–2020

Total passenger numbers handled by all Irish Airports, 2016 - 2020						
Airport	2016	2017	2018¹	2019	2020	% Change 2019-2020
Dublin	27,778,888	29,454,474	31,319,419	32,676,251	7,267,240	-77.8
Cork	2,226,233	2,301,450	2,387,806	2,585,466	527,014	-79.6
Shannon	1,674,567	1,599,390	1,677,661	1,616,422	273,585	-83.1
Knock	735,869	748,505	770,908	805,443	142,532	-82.3
Kerry	325,670	335,480	365,339	369,836	82,959	-77.6
Donegal	44,156	46,514	46,537	48,542	18,067	-62.8
Connemara	21,345	16,437	15,322	15,382	8,890	-42.2
Inishmore	12,667	9,335	8,814	8,831	5,020	-43.2
Waterford ²	13,511	0	0	0	0	-
Total	32,832,906	34,511,585	36,591,806	38,126,173	8,325,307	-78.2
¹ Minor revisions to 2018 data						
² No commercial flights since June 2016 from Waterford airport						

[Source: Irish Central Statistics Office, 2021]

Irish airports reported significant financial losses over the first year of the pandemic. daa plc (operator of Dublin and Cork Airports) lost €280m in 2020, while Shannon Airport's parent group lost €28m during this period (daa plc, 2021; Shannon Group, 2021).

5.3.2 Research Approach

To provide context for the challenges facing Irish airports as explored during the interview process, data, reports and commentary from industry bodies such as EUROCONTROL, European Commission, Airports Council International, and the International Air Transport Association, together with country-level information from statistical agencies, were analysed (Appendix 1). Semi-structured interviews were conducted with sixty-four (64) Irish airports and airport stakeholders between October 2020 and February 2021 (see Table 5.3), to gather and assess airport stakeholder perspectives prior the pandemic, an understanding of actions taken during the COVID-19 period and 'looking forward' viewpoints.

Table 5.3 Research Interviewees by Type

<i>Stakeholder Type</i>	<i>Number of Interviewees</i>
Airlines	9
Representative Bodies	9
Tourist Sector	5
MRO, Cargo, Ground Handling, Airport Retail	9
Local and Central Government; State Agency	6
Aviation Regulators	5
Other (e.g. Sustainability, Business Aviation, Business User, Academic)	8
Airports	13
Total	64

Interviewees included airlines, ground operators, ancillary and retail organisations, government, business groups, and airports themselves. Participants typically held executive or senior-level roles in their organisations, for example Airport and Retail General Managers, Airline Country Heads and Operations Directors, Heads of Business Associations and senior Government and Regulatory Officials. Most interviews took place by video call (Zoom or MS Teams platforms), and their average length was just over 60 minutes. No face-to-face meetings were held, due to prevailing pandemic restrictions.

Airport and stakeholder interviews were designed and conducted using stakeholder management framework elements (Freeman, Harrison and Wickes, 2008 and 2010; Philips et al., 2003; Freeman et al., 2018), as adapted by the authors. This approach, outlined in Figure 5-2, featured stakeholder identification/classification, methods of engagement and measures of success. Interviews covered (a) the pre-pandemic period, (b) engagement during and following the initial shutdown period, and (c) future COVID-19 events, their effect on stakeholder activity/relationships, and future expectations (Figure 5-3).

Figure 5-2 Stakeholder Theory Framework Components

Theoretical Component	Description
Primary vs Secondary Stakeholders identification; Further categorisation, e.g. public vs private	<ul style="list-style-type: none"> Primary stakeholders – material involvement, contribution, impact Secondary stakeholders – do not contribute as directly or materially to a firm's creation of value
Core stakeholder management: concepts assessment	<ul style="list-style-type: none"> Focus and foundation Purpose and creation of value Reciprocity Convergence (over time) of stakeholder interests
Stakeholder engagement methodologies, e.g. 'Level of influence vs frequency of contact.	<ul style="list-style-type: none"> Level of engagement and frequency of contact a function of level of importance Different stakeholders will interact directly with each other
How to assess the value of stakeholder management, e.g. 'pay-off' matrices	<ul style="list-style-type: none"> Identification of stakeholder value and how to increase this value Management strategies 'Pay-off' matrix processes
Impact of COVID-19 on airport stakeholders and activities	<ul style="list-style-type: none"> Effect of pandemic on airport and stakeholders Current actions to mitigate same View on recovery timeframes

[Sources: Freeman, Harrison and Wickes (2007 and 2010); Philips (2003); Freeman, Harrison and Zyglidopoulos (2018). Adapted by Authors.]

Figure 5-3 Interview Structure and Alignment with Stakeholder Framework Above

Interview Framework Section	Interview Topic Areas
Stakeholder Activity in Normal Times: <i>Primary versus Secondary Identification</i> <i>Further Categorisation</i>	<ul style="list-style-type: none"> Airport Detail, Interviewee responsibility, Experience level Who are the main airport stakeholders? What is their level of importance?
Stakeholder Activity in Normal Times <i>Core Stakeholder Management</i> <i>Stakeholder Engagement Methodologies</i>	<ul style="list-style-type: none"> What type of engagement is undertaken? Nature and frequency of contact Key Engagement Objective — General / Stakeholder Specific Structured / Unstructured? Frequent / Irregular?
Stakeholder Activity in Normal Times <i>Assessing Value of Stakeholder Management</i>	<ul style="list-style-type: none"> How is success/effectiveness assessed/measured? Review of overall approach?
Stakeholder Engagement During COVID-19 Pandemic <i>Impact of COVID-19 on Airport Stakeholders and Activities</i>	<ul style="list-style-type: none"> Nature of impact Recovery Path since March 2020 Future Stakeholder Engagement Impact
Airport Stakeholders	<ul style="list-style-type: none"> The Future

Looking Forward Beyond Pandemic <i>Impact of COVID-19 on Airport Stakeholders and Activities</i>	<ul style="list-style-type: none"> ○ <i>Recovery Time frames</i> ○ <i>Key expected airport developments</i> ○ <i>Stakeholder Role — Recovery</i> ○ <i>Additional Comments</i>
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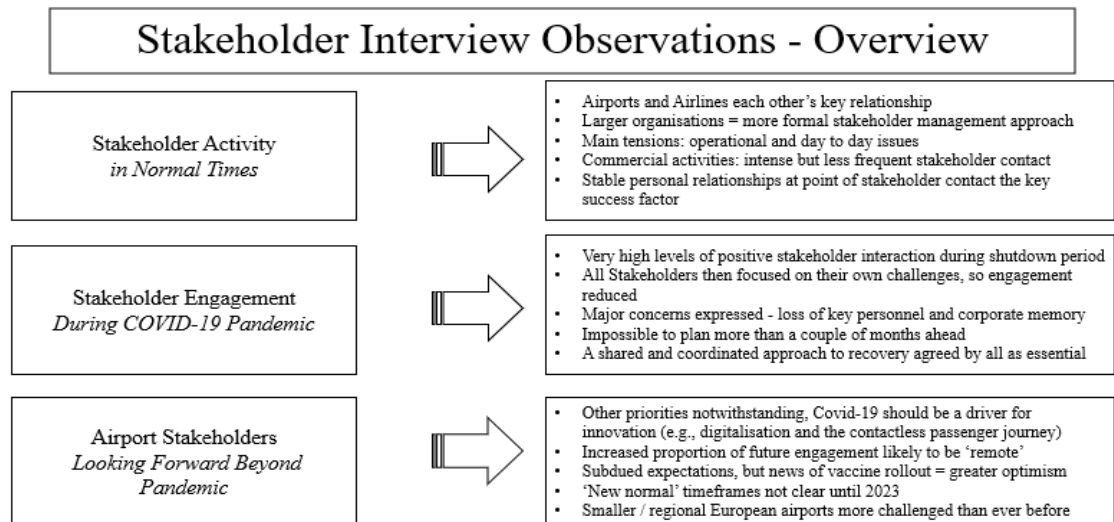
[Sources: (Freeman, Harrison and Wickes, 2008 and 2010; Philips et al., 2003; Freeman et al., 2018). Adapted by Authors]

5.4 Findings and Discussion

This section presents feedback from airport stakeholder interviewees covering the periods before the pandemic, during the outbreak, and expected future activity. The airport relationship is at the centre of these results, although some interviewees described their stakeholder activities from an overall organisation perspective. Figure 5-4 provides a summary of these observations, based on this assessment framework:

1. Airport stakeholder activity in normal times (before COVID-19 pandemic)
2. Stakeholder engagement during the initial COVID-19 pandemic period
3. Airport stakeholder activity: A future beyond the pandemic

Figure 5-4 Airport Stakeholder Interviewee Observations — Summary Overview



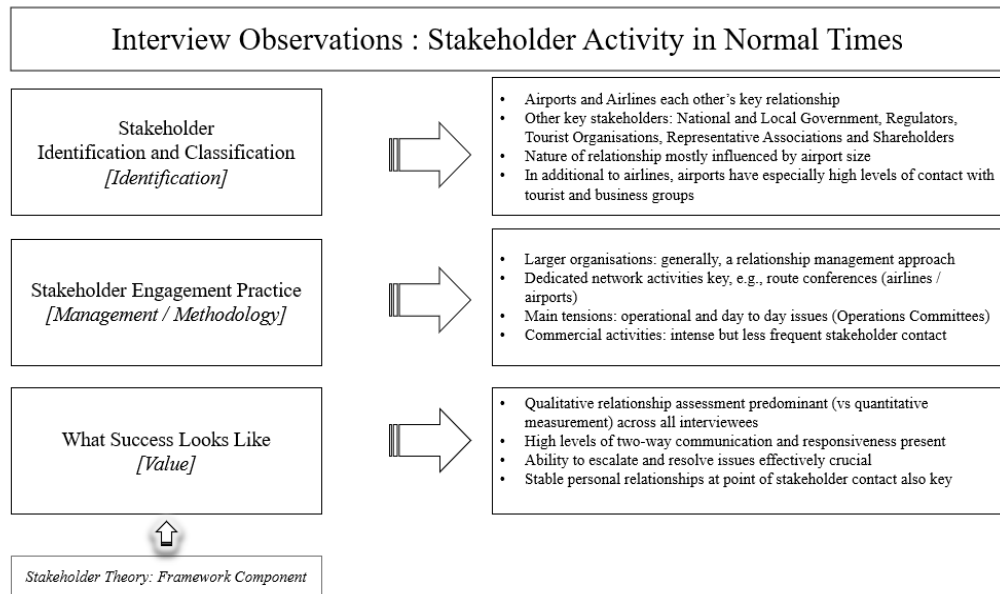
Section 1 (5.4.1 below) assesses airport stakeholder activity with reference to the theoretical framework described above. Section 5.4.2 focuses on stakeholder activity and industry observations during the COVID-19 pandemic, with section 5.4.3 covering future expectations and likely stakeholder impacts.

5.4.1 Airport Stakeholder Activity in Normal Times

This sub-section describes airport stakeholder identification and classification, stakeholder

engagement processes and how success was assessed in the pre-pandemic period (Figure 5-5).

Figure 5-5 Airport Stakeholder Activity in Normal Times



5.4.1.1 Stakeholder Identification and Classification

Airports, airlines, and other on-site stakeholders identified the primary significance of the airport–airline stakeholder relationship. From an airport and airline perspective, other key stakeholders identified included national and local government, regulators, tourist organisations, representative associations and airport owners/shareholders. Triangular stakeholder engagement was also observed, most usually involving municipal and destination management organisations alongside airports and airlines with a common purpose, i.e., route development influencing local economic/tourist activity. Some airport stakeholders discharge duties for other stakeholders, e.g. ground handlers for airlines, also necessitating triangular contact. Larger airport and business organisations, having a structured approach to engagement, had a more nuanced view of the value of each relationship. For airlines operating internationally and/or away from their home base, ground handling relationships in larger airports were as meaningful as those with the airport itself. Airports or airlines, and sometimes both, were prevalent in terms of importance for all stakeholders interviewed.

5.4.1.2 Stakeholder Engagement Processes

While no single approach concerning stakeholder activity was observed, most organisations had a specific contact person with responsibility for airport relationships. The most structured approach to regular airport stakeholder management, involving key account management and regular documented meetings, was observed in larger organisations, particularly airlines, business representative associations, policymakers, and the airports themselves. This finding was consistent, irrespective of industry sector or airport ownership type. These entities operated structured processes, having designated personnel for key relationships and formal methods of recording meeting minutes and subsequent follow-up actions. Less frequent high-level stakeholder engagement usually occurred on an ad-hoc basis, for example at a contract signing ceremony or route announcement. Smaller airports and airlines had prominent levels of contact with local tourist and business groups. Airline stakeholder interviewees suggested that the nature of their airport engagement was determined more by the size (scale) of the airport than its ownership type (the interview set comprised a mix of private and publicly owned airports).

The most formal Irish airport stakeholder forum mentioned, especially in larger airports, was an Airport Operators Committee. Such groups meet regularly (weekly) and consider essential matters affecting the smooth running of the airport, especially at peak times. Operational and day-to-day issues in a busy airport environment contribute to short term stakeholder challenges and tensions which a group like this seeks to address. Airport retailer and airline engagement regarding commercial matters is less frequent, with intense interaction experienced at contract and route negotiation or renegotiation time. Across all stakeholder groups, senior-level bilateral contact is usually ad-hoc (route launch or new retail franchisee) rather than scheduled (annual review

meeting/lunch).

Other dedicated stakeholder activities highlighted by interviewees include international route conferences, which are key forums for airports and airlines pursuing increased network connectivity, and which are sometimes also attended by business and tourist organisations. One Chamber of Commerce seeks to include a contrarian voice on stakeholder groups, finding that this approach helps improve the robustness of its outputs, including recommendations. It was also interesting to note from some interviewees the airport-focused engagement that non-airport stakeholders such as chambers and tourist bodies had with each other. Airline and other stakeholders with international airport operations noticed no discernible difference in engagement practices with Irish airports, relative to airports in other countries they are active in.

5.4.1.3 What Success Looks Like

Existing airport relationships were considered to be positive by each category of stakeholder interviewed, irrespective of size or ownership type. However, tensions inevitably arose around day-to-day challenges such as operational issues at peak traffic times, more notably in Dublin than at other airports.

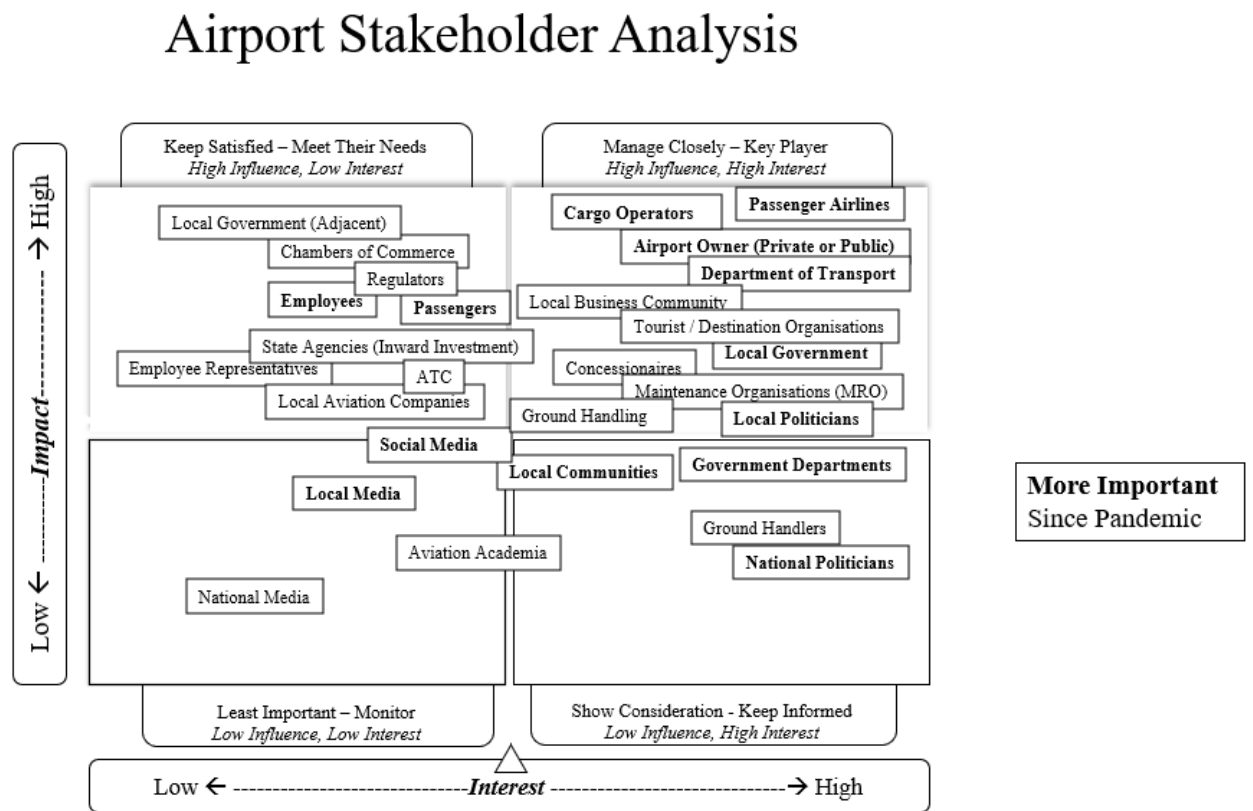
Qualitative evaluation is a key determinant of stakeholder effectiveness assessment for airport stakeholders and managers interviewed for this research. Airline and retail interviewees stated that while their assessment of the effectiveness of airport stakeholder relationships is not formally measured (by them), positive indicators include effective two-way communication and responsiveness, including the successful use of diplomacy and pragmatism when addressing relationship tensions. Interviewees also emphasised the importance of stable, robust and effective personal relationships between airports and their stakeholders. However, aeronautical and regulatory interviewees pointed out that in operational and highly regulated areas affecting airport operations, the (sometimes legal) requirement for parties to adhere to well-defined compliance requirements partly reduced the importance of healthy personal working relationships during such engagement.

The personal dimension to airport stakeholder relationships and the ability to escalate and resolve airport issues was nonetheless consistently highlighted as essential to effective day-to-day operations by airlines, ground handlers and retailers. State entities and local organisations emphasised the importance of the airport relationship to support inward investment activity, both domestic and foreign. Most interviewees, especially those more directly involved in airport operations, emphasised the positive effect of strong airport support during challenging circumstances. Smaller stakeholders, such as airlines operating single routes or individual retail outlets, acknowledge that airports will be more mindful of key and larger stakeholders and their requirements; however, a successful relationship means that these smaller entities do not feel disadvantaged by this reality.

The lack of measurement/assessment criteria for stakeholder engagement noted during interviews has also been observed by Malvey et al. (2002), who highlight the risk that stakeholder activity may appear unproductive or unsuccessful without such measures, even if this is not the case. Measurement of the effectiveness of stakeholder management processes is evolving, with a recent systematic literature review (Pedrini and Ferri, 2018) identifying a progressively prominent role for more structured stakeholder management in organisations, with increasing pressure to develop a capability to manage such stakeholders digitally. Ackerman and Eden (2011) highlighted the contribution of stakeholder management to the robustness of strategies developed by top management teams, presenting a power/interest grid comprising four stakeholder categories: subjects and players (high interest/stake) and crowds and context setters (who may play a vital future role but do not do so now). Other research (Friedman and Miles, 2002) suggests that stakeholder theory might be strengthened by differentiating between various stakeholders, identifying those with more significant levels of influence and understanding how this might change over time.

Figure 5-6 below reflects the authors' assessment of airport stakeholder importance during the period of their research into this topic, informed by this semi-structured interview process and an assessment of previous research in this area. While very few stakeholders are considered unimportant, and this is reflected in the matrix, those considered by the authors as having increased in importance since the onset of the pandemic are highlighted **thus**.

Figure 5-6 Airport Stakeholder Analysis

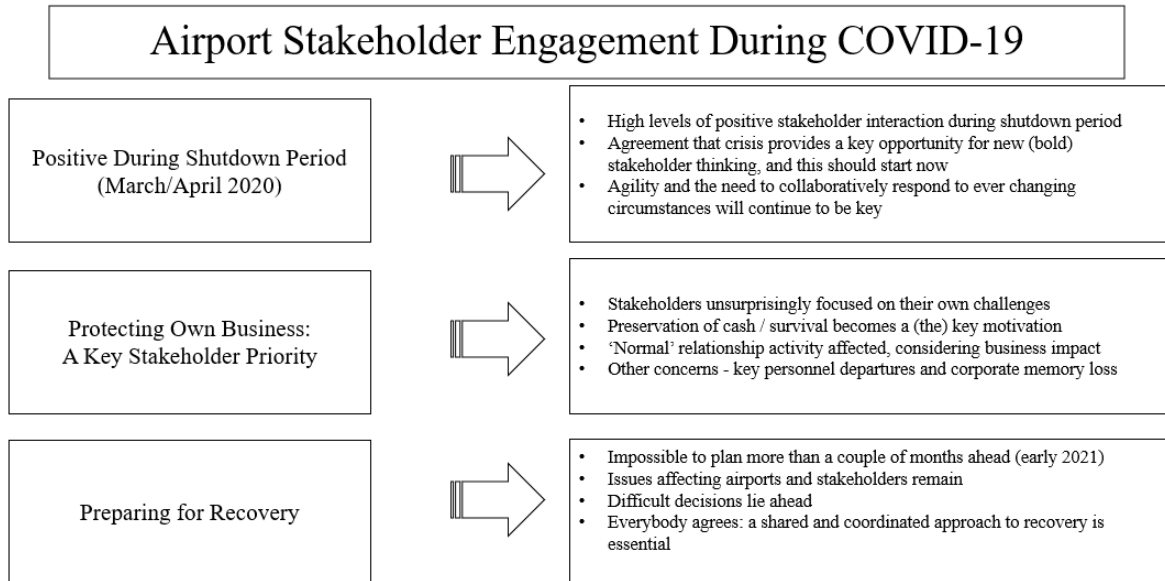


[Sources: Mendelow, 1991; Ackerman and Eden, 2011; Friedman and Miles, 2002; Adapted by Authors]

5.4.2 Stakeholder Engagement During COVID-19

This paper section describes activities and airport stakeholder interviewee perspectives during the initial COVID-19 outbreak (Figure 5-7) and the subsequent ‘living with the pandemic’ period.

Figure 5-7 Airport Stakeholder Engagement During COVID-19



5.4.2.1 COVID-19 Airport Shutdown Period

Airport stakeholders observed extremely high levels of collaboration throughout the pandemic shutdown period (March-April 2020). The strong levels of solidarity observed and experienced nationally were mirrored within airport relationships, ensuring that airport shutdown activities were completed speedily and safely. Agility and the need to respond quickly and collaboratively to circumstances were vital during the immediate post-lockdown period. Airports supported rapidly changing stakeholder requirements, particularly operational priorities associated with airline repatriation of passengers, staff safety and aircraft parking/storage. Issues that may have seemed intractable pre-Covid were easier to address, with a strong bias for action. Cargo activity was transformed, with new routes launched to ensure collection and delivery of Personal Protective Equipment (PPE), requiring significant and intense engagement between airports, airlines (cargo and passenger) and other aviation stakeholders such as regulators. Interviewees also observed greater collaboration with other airport stakeholders (e.g. business representative groups) during this time.

5.4.2.2 Stakeholders Protecting Their Own Business

Notwithstanding the high levels of engagement described above, protection of their own business was a key focus for almost all airport stakeholders, and the airports themselves, during the period following shutdown. This process was described by one airport executive as 'everybody manning their own lifeboat'. Airline and other stakeholders, driven by the need to deal with the business impact of the pandemic, focused their actions on specific challenges faced by their organisation during this time, in particular tough decisions necessary to protect their company, staff and customers as much as possible. Airports, airlines and other stakeholders responded in an analogous manner to these pandemic challenges, a point also noted by Albers and Rundshagen (2020). Preservation of

cash, employee engagement and maintenance of operational capability were identified as major organisational priorities. This factor, and the absence of personnel in airports, resulted in far less interaction following the shutdown. Stakeholder ‘check-ins’ did however continue, albeit infrequently, using video conferencing platforms in most instances, although one airport manager highlighted a stakeholder preference for written updates rather than video meetings. Only the most essential airport, airline and ground handling staff remained on site, often to facilitate operations focused on pandemic support, for example transport of medical supplies.

When discussing this period with interviewees, the phrases ‘Cash is King’ and ‘Survival is Key’ were used by many commercially focused stakeholders. Operations activity associated with retailers anticipating and managing commercial throughput and capacity had to be temporarily discarded (one concessionaire stated that ‘science went out the window’). The normal interplay and ‘give and take’ of stakeholder relationships was paused. One airport business stated that the sheer scale of what happened meant that it was difficult to maintain regular engagement practices. Business ‘just disappeared’ and ‘no amount of engaging with stakeholders or the airport will change that,’ according to a retail stakeholder. Non-aeronautical organisations with variable contracts, where much of the payment to an airport operator was determined by passenger throughput, were not as severely affected as they might have been if such contracts had a high fixed-price element. While the initial focus of airports and these stakeholders was on the short-term stabilisation of their organisations, many believed that difficult future decisions would need to be taken as the full effects of the pandemic emerge, operationally and fiscally. With respect to financial obligations, some stakeholders experienced creditor accommodation and forbearance, but not necessarily forgiveness, during this phase of the pandemic.

All interviewees observed differences in the management of regulatory versus other relationships as described, with the formality and robustness associated with regulated relationships maintained, albeit more virtually, in the face of crisis. In addition, stakeholder relationships involving representative associations and government/regulators were affected differently from the above commercial ones. Chambers of Commerce, for example, expended significant effort in becoming strong proponents for the return of air travel. Their assistance for local airports, both publicly and behind the scenes, became louder. This advocacy involved statements of support and participation in Government task forces focused on aviation and tourism recovery alongside aviation organisations and public representatives. One national business group positioned itself as a conduit of pandemic related information flow between Government and its members. This intense activity included engagement directly or as part of task force groupings to parliamentarians, policymakers and the media, to accelerate the ‘opening up’ of international travel to and from Ireland.

5.4.2.3 Living With COVID-19

Interviewees continued to hold elevated levels of concern about the future, with ongoing uncertainty

giving rise to difficulties and making it almost impossible to plan ahead, even for short-term activity (weeks and months). There was broad acceptance that ‘we have to learn to dance with the virus for now’. However, the expected emergence of COVID-19 vaccines improved interviewee sentiment towards the end of the research period.

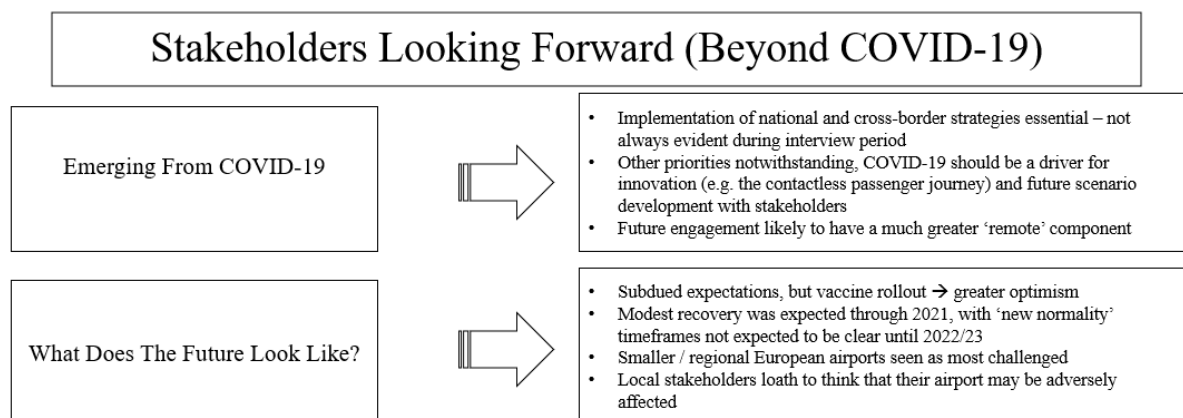
Some airport-based stakeholders expressed significant concerns regarding the loss of key personnel and corporate memory, especially in airports themselves, as organisations reduced headcount and lost staff with extensive experience, affecting tacit knowledge and organisational memory. Some interviewees noted that regulators sought evidence from regulated aviation entities regarding actions to address any potential adverse impact arising out of key staff departures.

When discussing future operational and commercial challenges, there was a strong but unsurprising interviewee consensus on the need for high levels of post-pandemic stakeholder collaboration and cooperation.

5.4.3 A Future Beyond the Pandemic: Interviewee Stakeholder Perspectives

This section describes sentiments expressed by interviewees with respect to COVID-19 and the future of the aviation sector (Figure 5-8). Overall sector sentiment ranged from sober pessimism to unbridled optimism. Commentary on expected activity levels in the short-term was more cautious than when interviewees considered longer time periods.

Figure 5-8 Airport Stakeholders Looking Beyond Pandemic



5.4.3.1 Emerging From COVID-19

All interviewees emphasised the importance of aviation and air travel to Ireland (95% of international visitors arrive this way) when considering emergence from the impact of the pandemic. Most non-governmental stakeholders commented on the absence of a coherent strategy — nationally and internationally — to deal with COVID-19. They were critical of sporadic, inconsistent, and

uncoordinated lockdown decisions and believed that a shared European approach, for example a unified method of airport health verification activity, was vital.

Interviewees directly involved in airport processes, such as airlines and ground handlers, believed that COVID-19 could be a driver for innovation and creative thinking. For example, some airline stakeholders believed that it was a suitable time for airports to explore future scenarios and innovation opportunities with them and on their behalf, including post-pandemic route planning, increased digital enablement, development of the contactless passenger airport journey and an accelerated increase in cargo and logistics activity. These stakeholders acknowledged that the need for financial prudence during crisis times might make this goal problematic in the short term; however they believed that this action was necessary, because ‘crisis brings opportunity’.

5.4.3.2 What Does the Future Look Like?

Most participants had a negative view of industry prospects when interviewed, due to the pandemic’s devastating impact, believing that sentiment would remain downbeat for some time. Despite these subdued expectations, however, interviewees believed that the then emerging vaccine rollout plans and health passport possibilities provided grounds for optimism. They expected modest recovery by the end of 2021, with ‘new normal’ time periods clearer in 2022/23. Airlines and airports believed that Visiting Friends and Relatives (VFR) traffic, essential business trips and short to medium-haul holiday travel were likely to recover before discretionary business travel and long-haul. Interviewees believed that intra-company business travel might not ever recover fully, due to videoconferences emerging as an alternative to such travel.

5.4.3.3 Future Airport Stakeholder Relationships

Airline and cargo interviewees expected airports to take a lead role in anticipating the potential for resumed and new route activity, and more efficient airport operations, as described above.

Many full-service and hybrid airlines were likely to focus recovery activity on hub and trunk routes using larger airports. A long-term decline of airline activity in smaller airports, caused for example by much-reduced route frequency, would adversely affect their operational efficiency, exacerbating cost pressures. These factors emphasised the need for an even greater airport focus on the primary airport–airline stakeholder relationship. Financially stressed airports will need to balance a financially attractive airline charging structure with the ability to attract increased route activity and increase per passenger non-aeronautical revenue.

Sustainability and environmental challenges were highlighted intermittently during interviews; however the topic was recognised as an increasingly crucial factor for aviation stakeholders, given the increasing global focus on decarbonisation and specific target-setting. Most airports now have a dedicated sustainability strategy and manager. State aid approvals for airlines included

environmental clauses, and Irish airport grants also highlighted support for sustainability investments. Such investment is particularly important at this time. As consideration of environmental impacts intensifies, policies covering airport congestion and emissions are more likely to be considered holistically through a structured stakeholder approach, as suggested by Efthymiou and Papatheodorou (2020).

Most airport stakeholder engagement activities across all sectors were conducted virtually/remotely during the research period, other than essential on-site matters. Interviewees did not expect a reversal of this trend in the short term.

5.4.3.4 A Challenging Future?

During 2021, when the pandemic was ever present, Irish air traffic levels were expected to return to 2019 levels by 2025 (EUROCONTROL, 2021). The rate of such recovery was likely to be most affected by factors such as future pandemic policies and the impact of remote working trends on international business travel. A twin-track recovery scenario was seen as likely, with Dublin Airport recovering more strongly than regional airports (Department of Public Expenditure, 2021).

In a post-pandemic environment, the financial challenges faced by Irish and European airports will need to be considered in circumstances where many industry sectors simultaneously sought State support. Larger airport stakeholders believed that difficult future decisions affecting airports and their structures might be unavoidable, given the potential enduring economic ‘hit’ associated with COVID-19. Most such stakeholders would prefer not to countenance the possibility of anything unfavourable happening to *their* airport, however. Airports facing these challenges are also likely to be strongly supported by business organisations, public representatives, and their communities. Such representations are likely to focus on the local economic contribution of such airports, including indirect and catalytic effects (Kazda et al., 2017).

Regional airports usually represent a significant economic unit within their geographic area and are inclined to be actively involved with business groups, especially Chambers of Commerce. Large employers in regional towns are also vocal in their support for their local airport. This advocacy also occurs in larger airports, however the level of engagement with smaller airports appears proportionally greater. One regional interviewee contended that ‘use the route or lose it’ messaging to local airport stakeholders, including potential passengers, was never more important when seeking support from local communities, politicians and businesses.

The importance of collaboration when dealing with post-pandemic recovery challenges, across the industry and externally, was unsurprisingly emphasised regularly by all stakeholders, who strongly argued that a shared, collaborative and coordinated approach to recovery activity was essential.

5.5 Conclusions

This paper has investigated how the COVID-19 pandemic initially affected airport stakeholder relationships and engagement, by studying Irish airports and stakeholder relationships before, during and in the aftermath of this period. The study considerably adds to current airport industry research by investigating and highlighting responses and actions taken by airports and stakeholders during the period following the arrival of the pandemic. This research also significantly contributes to the study of stakeholder management by informing the theory with activities and responses to rapidly changing events during emergency periods and their aftermath, including how relationships perform under pressure, both with respect to time and event materiality in aviation and generally. Stakeholder management is the theoretical background underpinning this research paper and this study has furthered this field by developing the theoretical analysis to allow for an assessment of the stakeholder management's potential impact on future regional airport activities and performance.

While the nature and management of airport stakeholder engagement varied from airport to airport, the perceived strength of personal relationships was key to assessing all such arrangements, which were regarded as generally positive, with central tensions focusing on day-to-day operations. Irish airports responded well to the critical requirements of their stakeholders during the key shutdown period, when restrictions were suddenly placed on air travel services. However, stakeholders focused on their own survival priorities following this initial period, with engagement significantly reduced in frequency and intensity, and becoming mostly remote in nature after shutdown. A shared and coordinated approach was seen as essential by many interviewees, though challenging to achieve.

Even before the arrival of COVID-19, Efthymiou and Papatheodorou (2019) argued the more complex business models of airports and airlines in recent years represented an opportunity for the nature of stakeholder relationships to move from transactional to transformational. This trend towards a more strategic relationship was seen as essential, especially by airline stakeholders, as these parties charted a business recovery roadmap following the impact of the pandemic. Previously, Verbeke and Tung (2013), reviewing evolutionary and transformational levels of stakeholder management phases (and the time between these phases), identified that a meaningful change in stakeholder pressures — such as those resulting from the pandemic — required a more transformational approach to stakeholder activity.

Post pandemic market trends, combined with an assessment of airline and airport interviewee feedback, suggest that airline power will further increase within the airport–airline stakeholder relationship during the coming years. For example, non-aeronautical revenues were affected by lower passenger numbers and reduced footfall in airport retail units. While the recovery and increase in passenger volumes is an agreed objective, and would assist growth in such revenues, the need to resolve airport and other stakeholder trade-offs (e.g. reduced charges and fees for increased business)

was acknowledged. A key distinction between airlines and other stakeholders is that airline activities create the demand for airport services, resulting in value not just for the airport itself but also for other stakeholders such as retailers. This is a key factor for those peripheral airports where government subsidised routes account for a significant portion of their business. Airports continue to face pressure from increasingly demanding airlines to keep charges low, even though European carriers received more State aid than airports. Suau-Sanchez et al. (2020) see regional and secondary airports as suffering most, given the initial recovery focus on larger markets and routes and, consequently, larger/hub airports. This trend would be likely to continue and further increase the long-term migration of air traffic from regional to main airports, as previously reported by Lian and Ronnevik (2011) and Dobruskes et al. (2017).

The reduction in airport and airline workforces disrupted many stakeholder relationships, with the loss of key staff and organisational knowledge a concern. Airport stakeholders expect future strategic collaboration in support of a changed post-pandemic environment, for example route development and passenger flow initiatives. Concerns were expressed regarding potential post-pandemic decisions affecting airport structures and viability. Stakeholders wanted greater industry, national and European coordination, believing that a shared and collaborative approach to recovery from the effects of the pandemic is essential. An often-expressed sentiment was the expectation of enduring change (a prescient observation), including greater levels of virtual engagement, greater collaboration and the unknown nature of the ‘new normal’. It was highly beneficial to have the opportunity to obtain these airport stakeholder research perspectives, with respect to COVID-19 impacts, in real-time.

Given Ireland’s status as an island nation and its reliance on air transport for 95% of all international passenger travel, airlines, airports and local political stakeholders became increasingly vocal in their calls for a return to the air during the research period (O’Halloran, 2021). They argued that national authorities lagged their European counterparts, citing the lack of response to an aviation recovery stakeholder group established by the Minister for Transport in mid-2020, with many recommendations not acted on for a considerable period. European Union leaders eventually determined that international travel could resume by 19th July 2021, even though some markets such as the USA remained closed to European travellers after this period.

The inevitable reduction in disposable income if a sustained recessionary environment follows on from the pandemic, combined with pro-environment policies and trends favouring decarbonisation and deglobalisation, could influence new consumer behaviours, which could slow the pace of any recovery in air travel. Such trends would further increase the financial challenges facing Irish and other airports. However, while the financial resilience of airports, particularly smaller ones, has been regarded as fragile for some time, very few European airport closures were reported over the five-year period preceding the pandemic. Despite the additional fiscal challenges described above, only a

modest reduction in the number of European airports over the next few years is expected, given the expected extent of resistance from key stakeholders, including public representatives.

This research shows that a greater proportion of future stakeholder management engagements are likely to take place remotely. Further airport stakeholder research will have the opportunity to identify the practical and theoretical impact of this and other changes to the nature of stakeholder management activity caused by COVID-19 which may prove enduring, and those that might be likely to revert to pre-Covid patterns as industry normality returns. The importance of collaboration amongst airport stakeholders, including activities not directly involving the airport itself, has also been highlighted. The relative importance of these airport stakeholders in a more subtle and nuanced manner, as highlighted by Kivits (2013), is likely to increase, for example the nature and extent of bilateral or triangular relationships amongst specific airport stakeholders such as airlines, destination management organisations and business representative groups.

This research has also contributed to stakeholder management research by highlighting the need for organisations to become more multi-directional, for example with respect to airports increasingly anticipating and responding to trends and developments affecting airlines, given increasing airline power arising out of the effects of the COVID-19 pandemic. The paper has outlined the desirability of collaboration and effective relationships, as Irish aviation stakeholders managed the effects and aftermath of the COVID-19 pandemic and planned the sector's recovery from the most significant crisis faced by the aviation industry.

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Appendix 1: Qualitative Research Process — Approach and Sources

<i>Approach</i>	<i>Sources</i>
<i>Information Gathering: [Formal Sources and Industry Reports]</i>	International Air Transport Association, Airports Council International, Official Airline Group, EUROCONTROL, International Civil Aviation Organisation, National Statistical Offices
<i>Information Gathering: Media and News</i>	Print and broadcast media, investor reports, wire services
<i>Public statements/Opinion</i>	Professional service providers, industry practitioners and sector webinars (Official Airline Group, Aviation Week, Centre for Aviation, EUROCONTROL, German Aviation Research Society)
<i>Literature</i>	A considerable amount of Covid-19 related literature has been published since 2020, both generally and aviation-specific, supplementing related literature covering aviation/airport and stakeholder factors
<i>Stakeholder Insights in Real-Time</i>	Semi-structured airport stakeholder (executive and manager) expert interviews

6 Paper 4: European Regional Airports: Emerging from the Storm or Facing a Gathering Storm?

Paper 4 — European Regional Airports: Emerging from the Storm or Facing a Gathering Storm? (Hiney, N; Efthymiou, M; Morgenroth, E). Special Issue Article. Transport Research Arena (TRA) Conference Proceedings. 2024 (date TBC).

This paper considers a critical influence on regional airport performance since 2019, a most volatile and uncertain period for aviation. It focuses on one of the most important factors affecting regional airport business models, performance, and viability, i.e., operating (financial) aid and other support provided to these airports by their respective states and approved by the European Union. The future direction of and conditionality associated with such aid is also considered.

The research activities discussed in this paper (primarily a desktop study approach, including airport manager survey and passenger analysis insights) are contextualised and elaborated upon in Chapter 2 (Research Methodology), which provides comprehensive insights into the overarching research philosophy and the specific methodologies deployed throughout this thesis.

Contribution Themes Covered: Airport performance during challenging times; Passenger recovery post-pandemic; Government response (State aid); future policy factor changes (likely to affect business performance)

European Regional Airports: Emerging from the Storm or Facing a Gathering Storm?

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Transport Research Arena (TRA)

6.1 Abstract

By the end of 2022, European air passenger numbers had recovered to 78% of 2019 levels. A full recovery to pre-pandemic passenger volumes was expected by the end of 2023, a performance not anticipated by most aviation stakeholders during the crisis. However, capacity issues and the outbreak of war in Ukraine, as economies were emerging from the effects of the pandemic, led to increased levels of uncertainty across aviation and airports. This volatility was further exacerbated by factors such as recruitment/retention challenges, capacity issues in larger airports and the increasing impact of extreme weather events. While smaller European airport volumes recovered more quickly than larger ones, these airports continued to face severe cost and revenue challenges, when they needed to focus on connectivity and repairing balance sheets. Already vital airline relationships and State aid became more critical to the future viability of smaller airports. Aeronautical revenue was increasingly impacted by route deals advantageous to airlines, necessitating a greater airport focus on non-aeronautical revenue. The increasing use of larger airports by low-cost carriers further affected the prospects for sustained regional airport recovery. This paper aims to highlight key influences on European regional airport passenger performance through the uncertain and challenging 2019–2022 period, the impact of increased competition, and future prospects for these airports.

Keywords: Regional Airports, Competition, Revenue Challenges, State Aid, Viability

6.2 Introduction

Regional airports are a fundamental part of the European transport landscape contributing significantly to air connectivity and regional development. (ACI, 2017; EC, 2014). The aviation sector's post-pandemic passenger performance has demonstrated its resilience. Despite facing a series of unprecedented challenges over the last two decades, including terrorism, the global financial crisis and, most recently, the COVID-19 pandemic coupled with geopolitical upheavals and their economic repercussions, the industry has demonstrated an ability to adapt and respond to emerging challenges. The airport sector has recovered from the effects of these crises in an agile manner, notwithstanding the continued financial fragility of some smaller airports.

In addition to its assessment of airport passenger performance during challenging times, this paper considers the nature of State aid, i.e., operating and other supports provided to these airports by their

respective States, in line with European Commission (EC) State aid guidelines and decisions. Such aid is a critical component of smaller airport business models. Between 2020 and 2022, this support increased significantly and included greater conditionality, especially concerning environmental matters, than was previously the case. Hiney et al. (2023) and Varsamos (2021) highlighted State aid provided to aviation and airports during the pandemic period, through the European Union Temporary State Aid Framework (EU, 2020), as a critical factor for the airports' survival.

Research methods followed in this paper comprise observations from a survey of airport managers conducted by the authors during mid-2022 (27 responses), supplemented by an assessment of airport passenger performance using Airports Council International (ACI) data and insights obtained through semi-structured interviews carried out during 2021. Secondary research included a literature review and assessment of contemporary industry and government publications.

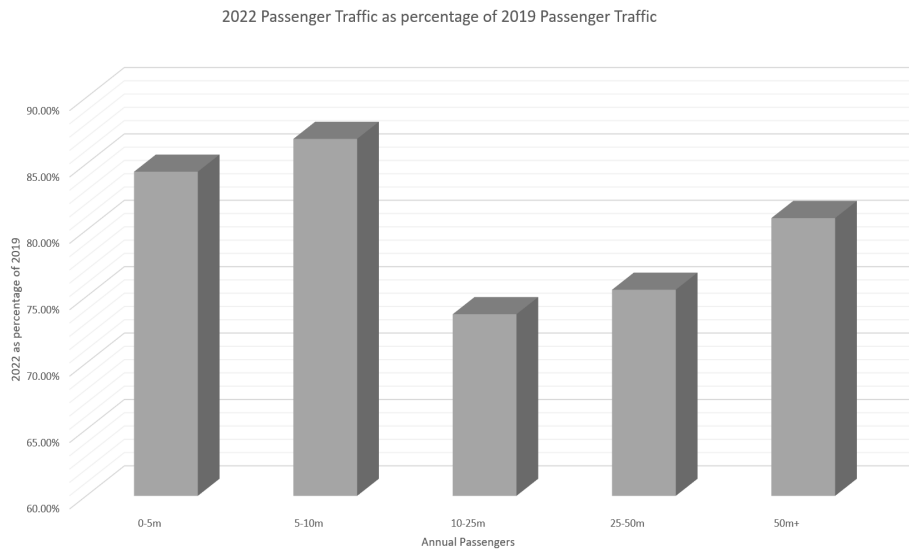
6.3 Recent Passenger Performance

The revival rate of air passenger traffic across Europe has not been consistent, notwithstanding a reasonably uniform post-pandemic removal of travel restrictions across the continent in 2022 and the provision of horizontal and vertical state support to airports during this period (Appendix 1). Many smaller airports in popular tourist locations such as Greece and Spain reached and sometimes exceeded pre-pandemic levels by the end of 2022 (ACI, 2023). Airports and regions with a higher proportion of flights to Asia and the United States, where restrictions remained for extended periods, were below 2019 levels, reaching an overall average of approximately 80% of these numbers by the end of 2022.

As well as location, airport size and route mix, 2022 passenger trends were also affected by geopolitical events, most notably Russia's invasion of Ukraine, which dramatically impacted passenger traffic primarily in eastern European nations. Ukraine's traffic collapsed due to the war. At the same time, Finland's recovery was affected by the closure of Russian airspace and the slower recovery in Asia, a key hub destination for flights from Helsinki airport. However, the impact of the war in Ukraine was partially offset by activity in Russia's domestic market at a time that its international routes were severely restricted.

European airports with less than 10 million passengers annually outperformed larger airports with respect to air traffic recovery, these airports achieving 83-86% of 2019 passenger levels during 2022 (Figure 6-1). In its 2023 report on regional airport connectivity, Airports Council International reported also that one third of these airports had fully recovered their 2019 connectivity levels (ACI, 2023).

Figure 6.1 European Airport Passenger Performance by Passenger Band (2022 versus 2019)



[Source: ACI World Intelligence Hub, Authors (2023)]

The low-cost carrier (LCC) share of seats at regional airports increased to 60% in 2022 from 52% in 2019. For many smaller airports, a single LCC's market share can exceed 80% of total traffic, significantly influencing the dependence of the airport on such business and confirming airlines as their most crucial stakeholder. Per-passenger airport costs were also reported to be higher (€15–€17 per passenger). Moreover, non-aeronautical revenue was lower for smaller airports at €4 per passenger for airports with less than 5m passengers per annum, versus €8–€12 for airports processing more than 25m passengers per annum (ACI 2023a).

One fundamental cost factor for smaller airports is the adverse impact on aeronautical revenue of a keenly priced airline contract, which inevitably reduces income from airport charges and requires the airport to adopt strategies which focus on increasing commercial revenue from its passengers, an income rebalancing approach highlighted by Shin and Roh (2021). The authors note also that smaller airports lack the economies of scale enjoyed by larger ones, given the significant capital costs associated with airport infrastructure.

6.4 State Aid for European Airports

State aid for regional airports is a critical government investment in each country's economic and social infrastructure, benefiting individual nations and the European Union. The impacts of the COVID-19 pandemic on aviation gave rise to the need for the provision of horizontal and aviation/airport-specific vertical State support for the sector, through the speedy provision of aid in response to 'exceptional circumstances' (EC, 2020). The EC approved vertical State aid requests for airports in almost 30 instances to provide for general airport support, including compensation for revenue losses, grants and loan guarantees, subsidised interest rates, and deferral of taxes and

charges, e.g., airport concession fees. This support was a vital financial lifeline for most airports receiving it.

The authors undertook a survey of 27 airport managers in mid-2022, studying airport stakeholder relationships and selected airport activities. This research found that a higher number of respondent airports were in receipt of, or benefiting, from State aid during the pandemic period than support levels ten years previously for this set of airports, including:

- Air Route Promotion (support provided to 42% of airports in 2022 versus 27% in 2012).
- Airport Improvements, e.g. safety and security (50% versus 29%), and
- Airline Support (62% versus 32%).

Such airport support was often provided as part of a national-level package of measures (EC, 2021). This increased level of airline-specific State aid during the pandemic resulted in a noticeable rise in legal challenges against such Aid. Ryanair took many of these cases, with Bagamery (2021) reporting that the airline was responsible for 16 lawsuits against the EC. These challenges, some of which were upheld, contended that individual States had propped up their 'national champions' at the expense of other carriers who experienced similar challenges (Deasy, 2021).

The existing EC guidelines for the provision of country-level State aid for regional airports (<3m passengers per annum) were due to expire in 2024 (EC, 2014). In July 2022, the EC opened a consultation process (EC, 2022) regarding a proposed extension of its Airport State Aid Framework, suggesting a transition period of three years. Most consultation responses favoured an extension, due mainly to the effects of the pandemic and ongoing financial challenges faced by airports, together with perennial operating aid arguments (essential connectivity, support for business and tourism activity, economic and social benefits). However, some views were expressed opposing the extension, for example, a contention that there were already too many small airports, and that Aid should not be given to unprofitable airports. Underutilisation of the European rail network and environmental factors were also highlighted. Ultimately, the Commission decided to grant a three-year prolongation of its existing Aid framework for European airports to July 2027 (EC, 2023).

The difficulties many smaller, unprofitable airports faced and continue to face during increasingly uncertain times have likely resulted in an enduring need for financial support. The future of airport State aid is likely to be determined by EC decisions regarding new post-2027 arrangements, if any, together with associated assessment criteria. In particular, the 'hurdle' for justifying such Aid could be expected to be heightened. Such factors may be more likely to threaten the existence of a more significant number of unviable airports. However, another possibility is that a new structure for airport support might be decided upon, maintaining some elements of current rules. This policy might be interpreted as 'kicking the (airport viability) can further down the road'.

Aid should enable and support fair airport competition. However, broader economic, social, and environmental dimensions will also likely be considered when developing aid policies. Airport resource optimisation at the national level could be a key goal for States. Nonetheless, persistent concerns regarding the provision of such State aid will be expected to be considered and addressed. State aid decisions assessed by the EC would not be expected to result in inadequate resource allocation or to support continued airport financial underperformance, i.e., provided to viable airport entities only, so there is no distortive market effect. If new post-2027 policies are not designed and implemented effectively, these market distortions will persist, and new ones may emerge.

6.5 Conclusions

Regional airports are likely to continue to face severe cost and revenue challenges, exacerbated by geopolitical uncertainty. Intense competition will weigh heavily on recovery prospects. Collaboration with airlines and other stakeholders has become more embedded, and the predominance of the airline role is increasing. The over-reliance of many smaller airports on a single carrier (usually LCCs) is a further risk to future stability. State aid is a key 'third revenue line' for regional airports receiving it.

With respect to their response to a more challenging environment and aid framework, steps that regional airports should take include diversification of revenue streams, such as increased non-aeronautical revenue, and expansion of commercial activities in and around the airport. An increased investment in sustainable infrastructure should help to reduce costs and enhance future aid eligibility. Stakeholder collaboration will also likely prove beneficial. For national policymakers, strong alignment of regional growth and aviation policies, insofar as they apply to smaller airports, is essential. In addition, airport peripherality and transport substitutability are key factors when considering allocation of aid and selection of Public Service Obligation (PSO) supported routes. Furthermore, some aspects of an airport's activity might be suitable for private investment, which could reduce the level of State aid required.

In recognition of the continuing importance of State support for regional airports and factors affecting the consideration of the same, the authors have developed a suggested assessment framework (EURAIR) which identifies a set of factors for airports and policymakers when considering, preparing, and assessing airport requests for government support. This framework (summarised in Table 6.1) can be considered alongside other assessment criteria, for example airport financial performance and future capital requirements. [A more detailed version of this framework is contained in Appendix A (Section 11.1).

Table 6.1 EURAIR. Support for regional airports: Selected State Aid Assessment Factors

Policy Areas	Points for Consideration (Practitioners and Policymakers)
<i>Connectivity and Accessibility</i>	+ Regional air routes provide essential connectivity in more peripheral and remote areas, also providing community access to essential services in larger national cities. - Inefficient / over allocation of airport support could create state of regional route oversupply and reduce individual airport route feasibility.
<i>Local/Regional Economic Development and Tourism Activity</i>	+ Substantial economic and tourism activity generated by regional airport route activity, benefiting businesses and citizens. - Economic benefits can be overstated; potentially leading to inefficient allocation of financial resources.
<i>Employment and Fiscal Support, and Balanced National Development</i>	+ Regional airports are significant taxpayers, and their stakeholders provide major local employment; their presence is a strong support for balanced economic development. - In the case of constraints on public funding, State Aid for regional airports needs to be rationalised and well supported.
<i>Environmental Sustainability and Innovation</i>	+ Green practices are more straightforward to implement in smaller airports; transformational technology (e.g., electric aircraft) is likely to benefit smaller airports first. - Increase in regional air transport (flight and passenger volumes) could threaten ecosystems located in these areas.
<i>A competitive and efficient aviation market</i>	+ Aid can improve airport performance through efficiency achievements and greater competitiveness. - Efficient airports not receiving Aid will find it more difficult to compete fairly with those (efficient or inefficient) receiving it.
<i>Strategic Infrastructure and Inter-modal transport enablement</i>	+ Airports are critical national strategic assets, with their resilience and responsiveness critical during uncertain times. - Other transport modes (e.g., rail, maritime) have similar strategic importance and face similar investment challenges.

[Source: Developed by authors]

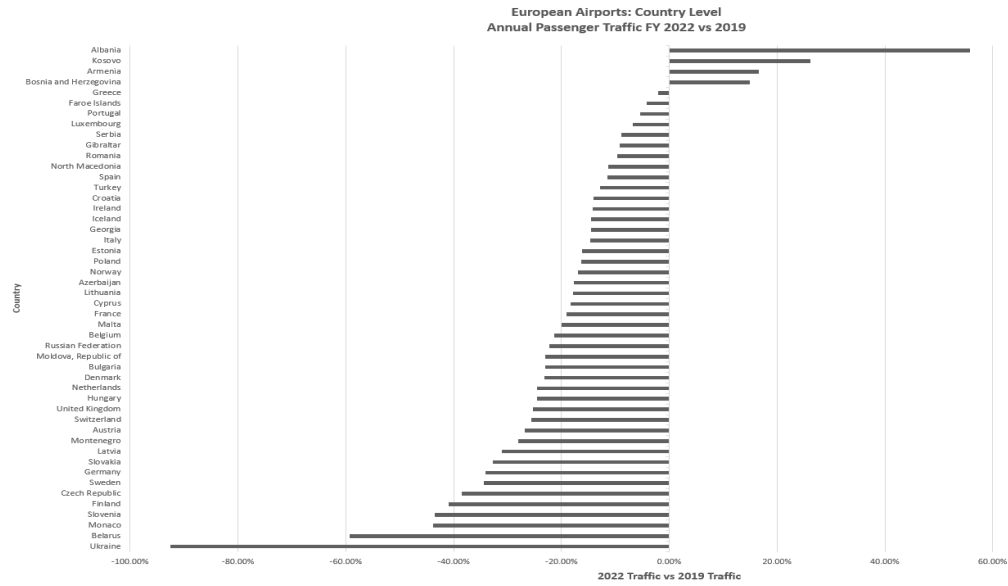
This paper contributes to airport research by exploring the performance and recovery prospects of smaller airports during periods of uncertainty and volatility. It adds an assessment framework to the body of knowledge, highlighting factors and recommendations for consideration concerning a key exogenous driver, the provision of State aid, when policymakers and practitioners are contemplating such support.

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Appendix 1



Appendix 1. European Airport Passenger Performance by Country (2022 versus 2019)

[Source: Authors based on ACI World Intelligence Hub data (2023).]

7 Paper 5: Airport Resilience in Challenging Times: Navigating Recovery and Uncertainty

Paper 5 — Airport Resilience in Challenging Times: Navigating Recovery and Uncertainty: (Hiney, N; Efthymiou, M; Morgenroth, E). Under Supervisor Review. Target Journal TBC.

Key research themes associated with this paper include consideration of factors contributing to the multitude of challenges faced by airports during volatile, uncertain, complex and ambiguous (VUCA) times. It considers how airports and stakeholders might best anticipate and respond to such an environment. In response to such challenges, this research considers what tools might help airports build greater resilience for VUCA times, for example through enhanced processes, efficiency, and more effective airport stakeholder relationships.

This paper proposes an action-oriented framework prototype (VUCAIR), designed to help airports anticipate and respond to the impact of this environment on operational and strategic airport activities.

The research activities discussed in this paper (insights obtained through airport manager survey and airport passenger analysis, combined with desktop study covering contemporary literature and pandemic related research) are contextualised and elaborated upon in Chapter 2 (Research Methodology), which provides comprehensive insights into the overarching research philosophy and the specific methodologies deployed throughout this thesis.

Contribution Themes Covered: Airport performance during challenging times; Factors affecting resilience; Airport planning for and responding to uncertain and volatile times.

Airport Resilience in Challenging Times:

Navigating Recovery and Uncertainty

Noel Hiney, Marina Efthymiou, Edgar Morgenroth

Journal Article — Air Transport / Tourism Journal

7.1 Abstract

Over the past 50 years, air travel and airport passenger numbers have consistently grown, despite setbacks from oil and financial crises, terrorism, and most recently the COVID-19 pandemic, which caused a significant but temporary decline during 2020 and 2021. Post-pandemic passenger trends demonstrated the resilience of aviation and airports when recovering from the effects of major crises, notwithstanding the increased future uncertainty caused by geopolitical events since then. These shock events have occurred more frequently over the past two decades, with industry cycles shortening in recent years. This paper assesses factors affecting airports during volatile, uncertain, complex and ambiguous (VUCA) periods. It considers post-pandemic passenger performance and current airport perspective, considering how airport and stakeholders might best anticipate and respond to such an environment. This research considers what tools might help airports build greater resilience for VUCA times, for example enhanced processes, efficiency, and more effective airport stakeholder relationships. We show that airports, especially smaller ones, will continue to face serious cost and revenue challenges at a time when they must also focus on maintaining connectivity and repairing balance sheets. Already-vital airline relationships will become even more important to the future viability of smaller airports. Aeronautical revenue will increasingly be impacted by airport competition, and the resulting reduction in airline charges because of financially advantageous route deals to airlines. Airports will need to manage their increased dependence on non-aeronautical revenue and will continue to depend on State aid, which is likely to be more difficult to obtain in the future, with qualifying conditions such as decarbonisation and digitalisation activity increasingly attached. Smaller airports will need to demonstrate an agile and adaptive mindset if they are to emerge more strongly from such crises in the ever-changing landscape of global aviation. An airport assessment framework, VUCAIR, is proposed. This model, to be considered in conjunction with other strategic planning processes, is designed to support airports' anticipation of, and their effective response to, the volatile, uncertain, complex and ambiguous (VUCA) conditions likely to become an enduring component of the airport and aviation environment.

Keywords: Airports, Recovery, Resilience, VUCA, Uncertainty, Performance, State Aid

7.2 Introduction

This paper's main objective is to assess factors affecting airport performance and resilience in the immediate aftermath of the COVID-19 pandemic period, which represented an increasingly volatile and uncertain operating environment, given economic and geopolitical uncertainties and fragilities. Through a combination of passenger analysis, an expert airport manager survey and an assessment of events and trends during this period, as reported in the literature and contemporarily through news and information channels, this paper highlights key business and operating challenges faced by airports during volatile times. The paper also proposes a framework (VUCAIR) which is designed to help airports anticipate and respond to the impact of these challenges on their activities from both an operational and strategic standpoint.

While aviation has successfully weathered unprecedented challenges over the past two decades (e.g. 9/11, SARS, Global Financial Crisis) and emerged stronger in recent years, the time interval between major adverse events such as the pandemic, Russia's invasion of Ukraine and flare-ups in an increasingly volatile Middle East, is getting shorter. The key connectivity role of airports, enabling trade, tourism, and family travel, was a key component in the recovery of world economies after the pandemic (ACI, 2023a). However, the impact on airport business performance of geopolitical and economic events, if they persist and increase in frequency, is likely to be adverse, at a time when airports are emerging from the financial effects of the pandemic and managing an increasingly demanding sustainability agenda. Airport resilience is being challenged in a manner never previously experienced and these organisations' agility and adaptability will therefore be increasingly necessary during volatile times. The suggested connection between air transport demand and GDP activity (Forsyth et al., 2020) may also be influenced by an increasingly cyclical environment. Moreover, State aid will continue to be an important component of the regional airport market.

It is likely to be three to five years before the full business and structural effect of contemporary industry developments will be felt by regional and other types of airports, which are of course key local economic and social drivers and a fundamentally important part of Europe's transport infrastructure. The VUCAIR framework proposed in this paper provides a basis for airports to build resilience and strength, through initiatives such as revenue diversification, digitalisation of airport processes, enhancing safety protocols and embracing sustainable practices. VUCAIR can also help to address some of the challenges of linear planning in a significantly more volatile and uncertain environment.

This paper is organised as follows: Section 7.3 describes the research methodology associated with this paper. Section 7.4 analyses key post-pandemic trends affecting airports, informed by the literature and by reportage in the industry and elsewhere during the period. Sections 7.5 and 7.6 include an assessment of 2019–2022 European airport passenger performance and reports findings

arising out of an airport manager stakeholder survey. Section 7.7 suggests a framework for airports (VUCAIR) to consider these challenges, followed by research conclusions in Section 7.8.

[Note: ‘Airport resilience’ is assessed as the ability of airports to respond and adapt effectively to significant unplanned disruptions or events, thus protecting airport operations and business activities].

7.3 Research Methodology

Three key sources (two primary; one secondary) have contributed to this research. Primary sources comprise (1) observations from an expert survey of 27 airport managers undertaken during mid-2022, covering stakeholder and other airport activity, and (2) an assessment of airport passenger performance using Airports Council International (ACI) data and insights. Secondary research included the assessment of post-pandemic literature, statistics, professional/industry reports and media reportage.

Airport Database: Passenger data provided by the Intelligence Hub (iHub) of Airports Council International (ACI), the premier global airport representative organisation, is considered. The ACI iHub includes a dataset of airport traffic, passenger and cargo data, covering over 2,600 airports in more than 180 countries and territories on three thematic areas: passengers (international and domestic), air cargo (freight and mail), and aircraft movements (air transport movements and general aviation) (ACI, 2024).

Survey: During summer 2022, an online survey, targeting airport managers, was launched, with an airport stakeholder questionnaire containing 20 questions, with four of these being open-ended in nature. The estimated time to complete the questionnaire was twenty minutes. This survey sought opinions from these managers regarding their assessment of the importance of airport stakeholders such as airlines, passengers, regulators, and employees. Following some data cleaning, 27 full responses were considered, primarily from airport managers operating in Ireland and the UK. The respondents, with an average of almost 20 years aviation experience, covered key airport management areas including operations, finance, and regulation.

Desktop Studies focused on an exploration and understanding of the post-pandemic aviation landscape and its likely impact on airport activities, through an assessment of aviation and airport information as published by EUROCONTROL, Airports Council International, National Authorities, the World Health Organisation (WHO) database, respected news organisations, airports themselves and scholarly outputs. This research has received ethics approval from Dublin City University (DCU).

7.4 Airports and a Volatile Post-Pandemic Period

7.4.1 Airport Post-Pandemic Performance

Policymakers and practitioners agree that regional airports comprise a core component of Europe's transport network, providing affordable connectivity and social cohesion (European Commission, 2023) and processing almost half of air passenger travel within Europe. They were core to post-pandemic economic recovery across the continent, especially during the time when long-haul markets remained closed (ACI, 2023a). However, these airports have always been exposed to a multitude of operational and financial challenges. The relationship between airport size and operational costs is not straightforward, largely due to the variation in levels of revenue generated by airports with differing passenger numbers but comparable airport infrastructure expenses. 62% of smaller airports handle 10 or fewer flights daily, and this limited number of flights results in lower passenger traffic. This influences the cost structure at these airports, resulting in an approximate cost of €13 to €17 per passenger (ACI, 2023b). Seasonality (sun/snow) has also played a greater role for these airports; Another challenge for regional airports (in addition to keenly negotiated airline contracts) is the lower level of non-aeronautical revenue achieved, e.g. €4 per passenger (1-5 million passengers per annum), €5 per passenger (5-15 million passengers per annum) and €6 per passenger (<1 million passengers per annum) *versus*. €8 per passenger (25-40 million passengers per annum) and €12 per passenger (> 40 million passengers per annum).

Furthermore, since the pandemic, smaller airports have a higher dependency on low-cost carriers, as those carriers expanded more rapidly than other airline types in this period. Low-cost carriers accounted for 51% of seats at regional airports in 2022, versus 43% in 2019 (ACI, 2023b). These factors combined are likely to require smaller airports to further intensify their focus on non-aeronautical revenue, as highlighted above, and continued State aid.

While the role of aviation in spreading the COVID-19 virus was noted (Dube et al., 2021; Liu et al., 2021), the positive impact of aviation related travel restrictions in controlling the spread of the pandemic in Europe was also highlighted, with Liu et al. (2021) suggesting that the cancellation of 800,000 flights prevented six million cases from occurring, with up to 100,000 deaths prevented as a result. In China, the typical relationship between GDP, air fares and capacity was disrupted by the implementation in March 2020 of China's 'Five One pandemic' policy, which immediately reduced air capacity and limited international travel to and from the country (Graham et al., 2023). Forsyth et al. (2020) highlighted the pandemic-induced collapse in passenger demand and impact on airport charges. Airport Council International (ACI) initially estimated that up to 193 airports were at risk of closure (out of approximately 740 across Europe) due to the pandemic effect (Posaner and Nostlinger, 2020), although it was not expected that any would be permanently closed during the pandemic period itself. A recent study of airport entry and exit in Europe nonetheless suggested a very modest change to airport estate across Europe, with 30 entries and 40 exits over the past 25

years, out of approximately 800 European airports studied (Niemeier et al., 2022). New airports were generally opened in markets already having existing supply, for example Memmingen Airport in southern Germany, with Munich, Zurich, Stuttgart and Innsbruck all accessible from the market catchment area. A review of Vietnamese airport development suggested that a new airport with a capacity of one million passengers per annum would have a payback period of 40–50 years, a length not likely to be attractive to investors or national/local government (Duy, 2022).

Many airports experienced significant financial challenges in the post-pandemic period, retaining significant fixed costs (including capital costs) at a time when revenue almost collapsed. Notwithstanding horizontal and vertical state support (EC, 2020), significant financial challenges remained, and steps taken to address these included job losses. Serrano and Kazda (2020) highlighted a number of post pandemic airport / air transport industry options based on revenue generation, cost control and implementation of innovations with respect to variable capacity demand, considered likely to be a recurring future feature. Bolton (2020) recognised and highlighted the importance of focusing on development of high performing airport organisation teams and collaboration. Even as aviation began to emerge from the effects of the pandemic, however, new challenges arose during 2022, with capacity cuts and staff shortages amongst flight crew, ground handlers, security agents and other workers creating new difficulties (Sobieralski and Hubbard, 2023; Tang et al., 2023). Factors influencing development of airport infrastructure were also affected considerably by changing circumstances, with a focus on decisions previously taken in light of uncertainties and the ‘slow’ period for passenger traffic seen as helpful in delivering facilities (Alkheder et al., 2021; Bolton, 2020). It was also noted that a trend towards higher ticket prices, due to high demand and fewer aircraft, would benefit airlines but not airports. Calls were made by airport representatives for scrutiny of this trend, with the ‘one sided’ (economic) regulatory role with respect to airport versus airline pricing also highlighted (Georgiadis, 2023). Lemonnier (2021) highlighted the effects of different types of aviation sector concentrations on the negotiating power of airlines versus airports; identifying regulatory shortcomings of the Airport Charges Directive (2009/12/EC) which might benefit airlines.

Airports generally sought to improve resilience by developing a more flexible cost base and diversifying and expanding non-aeronautical revenue streams, including property portfolios, while delivering a safe passenger experience (Colak et al., 2023; Lennon, 2022). Changing attitudes towards the pandemic and the effectiveness of mitigation measures led to better expectations of air travel recovery during 2022 (Rangaswamy et al., 2022). While small and peripheral US airports were considered the most likely to be closed, Bauranov et al. (2021) found, however, that socio-economic and epidemiological factors in an airport’s region were not good predictors of such airport closure. Also in the United States, airports showing the quickest and most substantial recoveries were in areas with populations of under 100,000 people within 48.2 kilometres of an airport (Findley et al., 2022), while airports elsewhere experienced sharper declines in flight volumes and longer recovery periods.

Airport competition remained intense during 2022 and 2023, with Airports Council International contending that almost 800 European airports were competing for the business of around a dozen agile and ‘footloose’ airlines / airline groups (ACI, 2023b). Eccles and Hernandez-Morales (2021) highlighted a ‘coronavirus-induced nosedive’ for many of Europe’s regional airports, emphasising that the pandemic was making a bad situation worse. As the industry moved into a further uncertain period following the Russian invasion of Ukraine, some airports were already reviewing their business models (Colak et al., 2023) to increase their resilience to future systemic shocks, through a focus on cost-effectiveness and minimisation; diversification of revenue streams and intensified commercial activities; enhanced digitalisation and operational efficiency, and sustainability. The pandemic changed the way many organisations operate, with a greater use of digital channels giving rise to new and increased e-commerce and cargo related activity. These developments considerably brightened prospects for smaller airports with a relatively higher proportion of cargo-related business (Florido-Benitez, 2023).

7.4.2 Reviewing Airport Business Contingency Planning and Resilience

Airport coordination of business continuity and airport system resilience was reviewed, highlighting the necessity to update contingency plans and frameworks. This update is essential to address the operational and economic challenges in maintaining aviation safety and functionality during future threats and unprecedented situations, thereby reducing socioeconomic repercussions and ensuring the economic viability of the airport system in such critical times (Romig, 2021; Arora et al., 2021). It should be noted that prior to the emergence of an effective COVID-19 vaccine, the physical layout of airports was a focus of much discussion, in particular how to manage social distancing requirements when passengers arrived at the airport for their flight. This factor influenced a view that airport strategic focus would need to focus on safety and hygiene factors over commercial ones, though this increased dwell time might increase passenger propensity to purchase. (Stimac et al., 2020, Choi, 2021). Five airport ‘megatrends’ likely to be of interest to airport managers and planners navigating challenging times were identified by Oliver Wyman (2023). They are: achieving net zero, technological innovation, intermodal connectivity, changing workforce and passenger experience revolution. Yet, this categorisation does not fully reflect the important connectivity, economic contribution and social impact roles fulfilled by many of Europe’s regional airports.

The need for cooperation and collaboration between airports and stakeholders to minimise the adverse impacts of events such as the pandemic was highlighted (Lennon, 2022; Madak and Genel, 2022; Bloch et al., 2021), with a desired strategic and governance approach being one that promotes efforts focused on achieving appropriate stakeholder consensus. The dynamism of effective stakeholder management in aviation was previously identified by Kivits and Sawang (2021) as applicable to other infrastructure influenced sectors. Rangaswamy et al. (2022) and Hiney et al. (2023) contended that a global recovery of international travel was dependent upon multiple

countries' collaboration and coordination, a point also highlighted repeatedly by EUROCONTROL (2022). Environmental reforms in aviation, for example, the Emissions Trading Scheme and Single European Sky initiatives, were also identified as having high levels of interdependence (Efthymiou and Papatheodorou, 2019), while Robinson (2020) highlighted the benefits of collaboration amongst the technology and air transport sectors in driving desirable innovation and transformational changes in response to challenging times.

Options for traffic growth at smaller European airports under the European Commission's guidelines on State aid and development of policies for the financial support of airline and airport operators' have been reported (Budd and Ison, 2022; Grimme et al., 2018). The increased level of vertical (industry-specific) State aid resulted in a noticeable rise in the number of legal challenges against such aid. Increased State aid in the aviation sector has led to more legal challenges, exemplified by successful Ryanair appeals against such aid, arguing that it unfairly benefits national carriers (Deasy, 2021; Storm, 2021). Following a stakeholder consultation process, the European Commission approved a three-year extension of its European Airport State Aid framework from July 2024 to until July 2027 (European Commission, 2023). It is unclear whether unviable airports might be more likely to face closure or if further temporary solutions will be found.

Environmental sustainability emerged as a major priority for airports in the years prior to and since the pandemic. Initiatives underway to support the transition of European aviation to 'net zero' by 2050 include sourcing low-emission electricity, improving energy efficiency and electrifying ground transportation / gate equipment (Greer et al., 2020). Regional airports served by commuter aircraft will likely be the first to accommodate electric/hybrid aircraft variants. Yet, regional airports will need support to deliver necessary modifications to infrastructure to facilitate this change (ACI, 2023). Future initiatives are expected to emphasise the need for greater linkage of environmental initiatives with operational outcomes (Greer et al., 2020). According to ACI (2023), smaller airports in island nations and peripheral locations will need to find an effective balance between the socioeconomic dimension and the environmental dimension of sustainability.

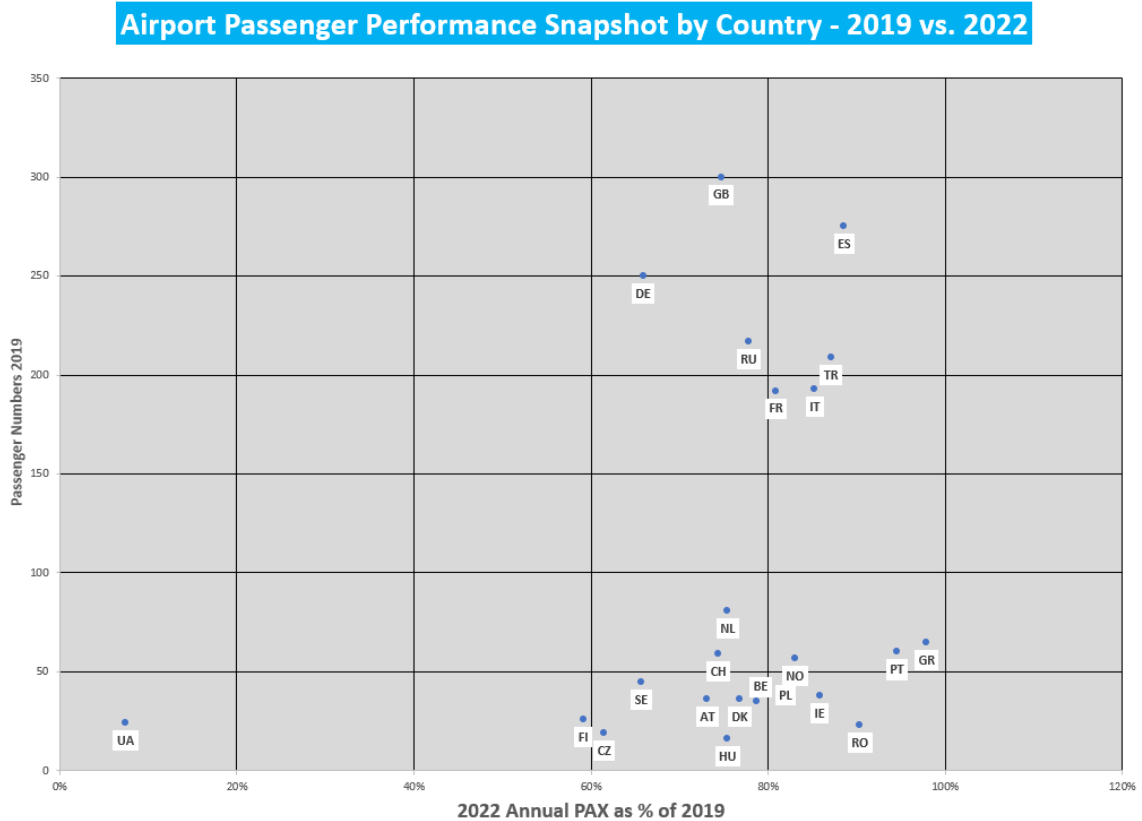
The impact of globalisation, the digital economy, post-pandemic developments and innovation activities was expected to result in disruption of the air travel sector (Amoah et al., 2021; Robinson, 2020). Modern technologies might help airports to innovate, but also disrupt aviation operations and service offerings. Lennon (2022) highlighted pressure on stakeholders to achieve digital transformation, focusing on a post-pandemic future by moving from physical methods to contactless and other digital engagement methods while delivering a personalised and more holistic airport user experience (Bolton, 2020; Tuchen et al., 2020).

7.5 Assessment of European airport passenger volumes and trends 2019–2022

This section assesses a number of emerging post pandemic passenger trends, using the Airport

Council International's (ACI) Intelligence Hub (iHub) database. The objective of this analysis is to assess post-pandemic airport passenger recovery trends, including performance by airport passenger band. This section primarily assesses airport passenger activity from the beginning of the last full year before the pandemic (2019) to the end of 2022, presenting an analysis of annual passenger data movements at 910 European airports during this period. The research further considers passenger performance by airport geography, size and ownership type during this period. The ACI iHub is considered by the authors to be a reliable database for airport passenger information, details being provided to ACI by the airports themselves, both monthly and annually. Airport cyclicalities could only be calculated with respect to airports who provided monthly data to ACI. Such airports accounted for ~90% of passenger volumes but less than 50% of airport numbers. Some additional external information has been mapped, i.e. Public Service Obligation (PSO) routes (European Commission, 2024). With respect to coastal airports, a visual, high-level assessment of Flight Radar 24 was undertaken on 19th October 2023 (Flight Radar 24, 2023). Airports less than approximately 15/20 km from the coast were categorised as 'coastal'. While the 2016 Airports Council International publication on airport ownership used for this analysis (ACI, 2016) is the most recently available such report, the airport ownership profile described then has changed only modestly between 2016 and 2022.

Overall, European air passenger numbers recovered to almost 80% of 2019 levels by the end of 2022 (Figure 7-1), with all but two aviation markets achieving above 60% of 2019 passenger levels in 2022.

Figure 7-1 Airport Passenger Performance Snapshot by Country — 2019 versus 2022

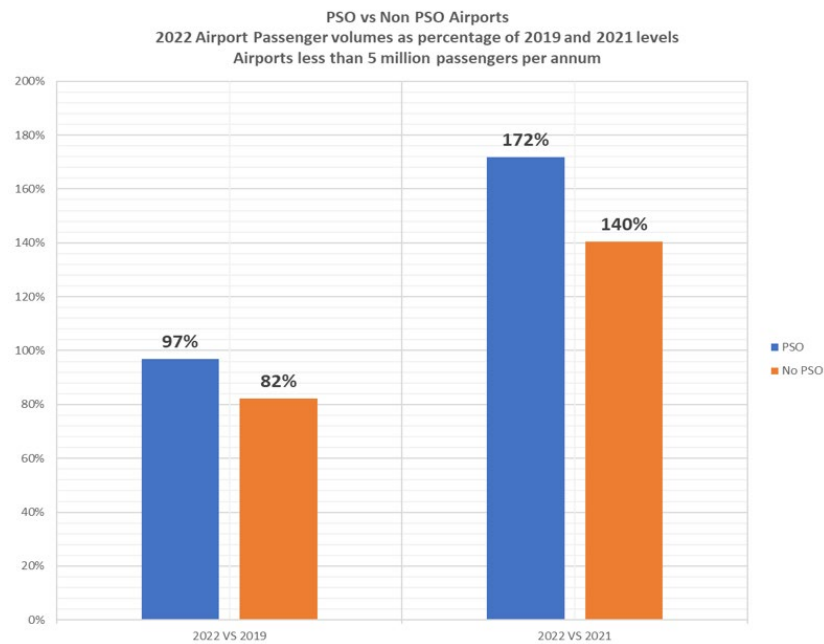
[Source: ACI Intelligence Hub. Analysis by Authors]

Many smaller airports in popular tourist locations, such as Greece and Spain, reached and sometimes exceeded pre-pandemic passenger levels by this time. Markets with significant tourism activity performed best, with Greece and Portugal exceeding 90% of 2019 volumes, while Spain, Italy, Turkey and France achieved greater than 80% of those levels. This exhibit also confirms the better recovery of Mediterranean markets during this time, with the Southern European region performing most strongly. As well as location, airport size and route mix, 2022 trends relative to previous years were also affected by geopolitical events, most notably Russia's invasion of Ukraine which dramatically impacted passenger traffic primarily in eastern European airports. Ukraine's traffic collapsed due to the war, while Finland's recovery was affected by the slower recovery in Asia (a key market for its main carrier, Finnair) and the closure of Russian airspace, which affected many routes out of Helsinki airport, the country's main hub. The Eastern Europe region's performance was, as expected, poorer and would have been lower still but for a continued level of activity (albeit at lower volumes) in Russia's domestic air market.

To assess the influence of specific factors on 2019 versus 2022 passenger performance, the next section of this study provides an analysis of European airport passenger data, focusing on the impact of Public Service Obligation (PSO) routes at an airport, the relative performance of coastal airports, the cyclical nature of passenger traffic, and the influence of airport ownership structures on passenger performance. Except for ownership type, the analysis revealed that airports exhibiting these

characteristics demonstrated a more pronounced recovery in passenger numbers post-pandemic, achieving a return to their 2019 passenger levels by 2022 at a faster pace when compared to other airports. While the correlation between these variables and enhanced passenger recovery is noteworthy, it is important to note that airports recording higher passenger performance may also have been beneficiaries of additional factors, such as increased levels of vertical State aid and/or the establishment of new airline agreements. Further research constraints arise due to the limited availability of comparable financial data across different airports, which poses a significant challenge in drawing definitive conclusions making their examination impossible. Thus, they are not considered in this paper.

Figure 7-2 Impact of Public Service Obligation (PSO) Routes on Airport Passenger Performance (Airports Processing Less Than 5 Million Passengers per Annum)

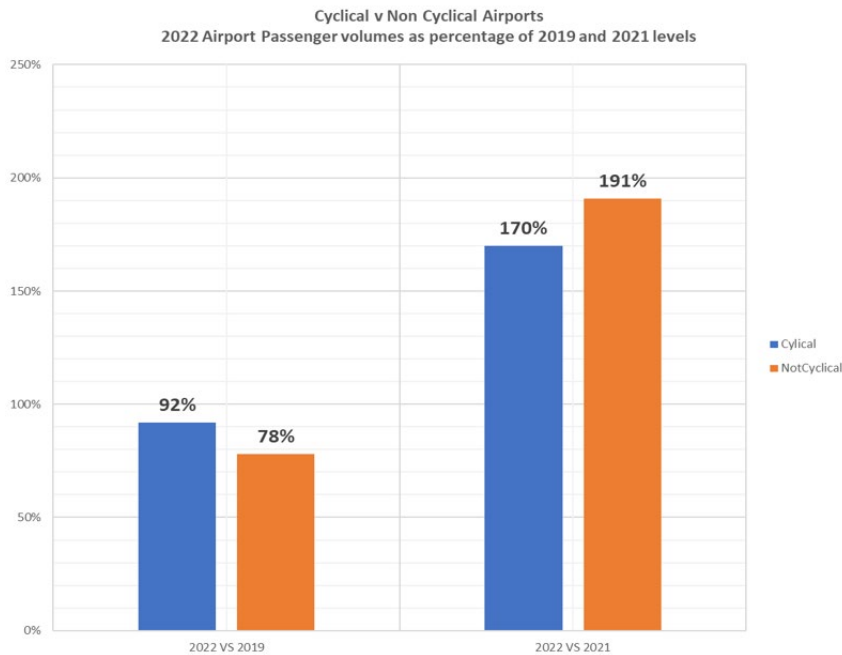


[Source: ACI Intelligence Hub (2023); PSO Inventory: DG Move (2023).
https://transport.ec.europa.eu/document/download/9168af3e-67c7-430f-b46c-61b76236d8cb_en?filename=pso_inventory_table_2023-02.pdf]

PSO Finding: 72 airports in the ACI database operated PSO air routes in 2023. Airports with less than 5 million passengers per annum (as measured in 2019), which operated such routes, delivered a stronger relative passenger performance for the year 2022 versus 2019 than airports of that size without such routes (Figure 7-2). These airports also had a higher percentage increase in passenger numbers between 2021 and 2022.

Note: Airports with fewer than 5 million passengers per annum were selected because the focus of this analysis was to evaluate the impact of the presence of Public Service Obligation (PSO) routes versus their absence at smaller airports, aligning with the overall focus of the study on regional airports.

Figure 7-3 Impact of Cyclical versus Non-Cyclical Airport Profile on Airport Passenger Performance



[Note: Airport cyclicality could only be calculated with respect to airports who provide monthly data to ACI. Such airports account for ~90% of passenger volumes but less than 50% of airport numbers. 2019 passenger numbers used to assess seasonality. Winter = October to March; Summer = April to September. If the ratio of passengers for the winter period exceeds 65% of the annual passenger total for 2019, it is classified as winter seasonality. If it is greater than 65% for the summer period, then it is classified as summer seasonality. Otherwise, the airport is 'non-cyclical']

Airport Cyclicalities Finding: A total of 135 ‘cyclical’ airports were identified (117 summer; 18 winter). Airports with cyclical passenger volume characteristics demonstrated stronger 2022 versus 2019 performance, relative to those not exhibiting such a profile. This trend is, however, reversed when considering 2022 versus 2021 performance. This difference may be attributed to uneven post-pandemic passenger recovery patterns and a stronger initial recovery for larger airports (Figure 7-3). *[Source: ACI Intelligence Hub. Assessment by Authors]*

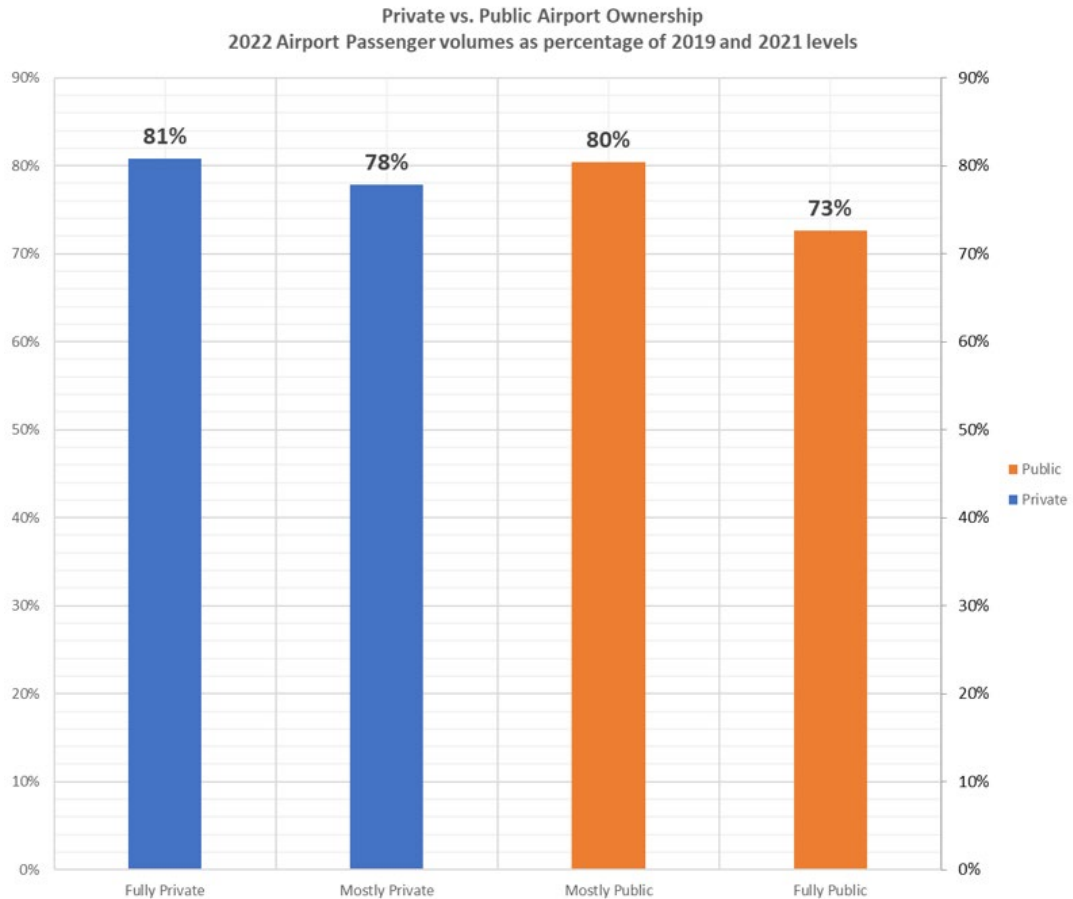
Figure 7-4 Impact of Airport Location (Coastal versus Non-Coastal Profile) on Airport Passenger Performance



Coastal Airports Finding: 113 airports were designated as ‘coastal’. These locations showed a higher degree of recovery in 2022 relative to 2019 passenger numbers, and a more substantial rebound following the lifting of passenger travel restrictions. Such airports might have benefitted from pent-up travel demand, however the uneven recovery patterns highlighted above should also be noted (Figure 7-4).

[Source: ACI Intelligence Hub. Analysis by Authors]

Figure 7-5 Impact of Ownership Type on Airport Passenger Performance



[Source: ACI Intelligence Hub. Assessment by Authors. Airport Ownership Information Source: The Ownership of Europe's Airports (ACI, 2016)]

Airport Ownership Finding: Approximately two thirds of airports are classified as being in full or partial public ownership (ACI, 2016). The ownership type of airports (i.e. public, private or hybrid) had no material impact on passenger performance during this period, other than with respect to airports in full private ownership, where 2022 versus 2019 performance was lower (Figure 7-5). Other measurement factors such as financial and efficiency measures affecting ownership, not considered in this paper, may offer a more meaningful comparison.

The above passenger performance findings by airport characteristic indicate improved passenger performance when airport factors such as PSO routes, cyclical, and coastal location are considered, potentially influenced by the presence of subsidised air routes (PSO) and tourist activity (cyclical and coastal airports). Additional research is required, however, for example, expanding the analysis to include a more normalised 2023 passenger data set, to further examine the relationship between these factors and enhanced passenger performance, in comparison to peer airports lacking these characteristics.

7.6 Airport Manager Survey — 2022

In early summer 2022, airport managers were invited to complete a stakeholder questionnaire. This research was undertaken via an online survey tool and sought the opinions of respondents on airport stakeholder activity and post-pandemic trends in this area, together with views on contemporary challenges and opportunities. Other recipients included members of the authors' professional and academic aviation network. Twenty-seven managers from eighteen airports completed the survey.

With respect to respondent profiles, most returns came from managers in European airports, the majority of these coming from Ireland and the United Kingdom. Respondents held airport management roles across a range of disciplines, including operations, strategy, finance, policy and planning, relationship management and regulation. Respondents had an average level of aviation experience of almost twenty years and had spent just under seven years in their current role, on average. Managers of larger airports accounted for 60% of responses, relative to 40% for those from smaller airports. The average distance to a respondent's nearest competitor airport was 182 kilometres. 41% of airports listed commercial property as a major activity. Other major non-passenger activities included business aviation (23% of airports), maintenance repair and overhaul (22%) and cargo (16%). The survey question set can be found in Appendix D.

Airlines and passengers were the most important stakeholders identified by managers, with an average rating of 4.5 out of 5.0, where 5 is the most important stakeholder and 1 the least (Table 7.1). Other stakeholders with a rating of 4.0 or higher included aviation regulators, airport employees and national/local government.

Table 7.1 Airport Manager View: Identification of Most Important Stakeholders (Scale 1–5) and Assessment of Most Significant Change in Airport Stakeholder Importance Since Pandemic Onset

(a) Most Important Airport Stakeholders as assessed by respondents	Scale 1–5 (5 most important)	Ranking	(b) Most significant increase in stakeholder importance since onset of pandemic (% of respondents)	Ranking (increase in importance)
Passengers	4.5	1	30%	6
Airlines	4.5	1	25%	8
Aviation Regulators	4.3	3	32%	4
Airport Employees	4.1	4	59%	1
Airport Owners	4.0	5	48%	2
National Government	4.0	5	48%	2
Local Government	4.0	5	30%	6
Concessionaires	3.8	8	31%	5

[Source: Airport Manager Stakeholder Survey, 2023]

Respondents were asked to assess their view on the change in importance of airport stakeholders since the onset of the pandemic. Employees, government and the airport's shareholder/owner showed the most significant change in importance over this period. 59% of respondents selected Airport Employees as the stakeholder group whose importance had increased most significantly since the pandemic, followed by National Government and Airport Owners, both selected by 48% of managers. This finding is consistent with the importance of government/owner support and the importance of attracting and retaining staff at a time when the pace of recovery, and its accompanying operational challenges, became a major issue. The relative importance of airlines and passengers also increased during this time, albeit from already high levels.

During the period of the survey in 2022, most respondents (62%) reported that remote/virtual engagement was the most frequent type, with 31% reporting a mix of remote and face-to-face engagement. Only 7% selected face-to-face as the most common style experienced. 45% felt that the nature of engagement was more structured, while 35% believed it to be more ad hoc. Only 20% of managers responding felt that there was no change. It is likely that these findings will be influenced by the future direction of the 'working from home' debate, however it is likely that face-to-face engagement has increased since the survey and will continue to do so.

Most survey airports (62%) have appointed a single airport manager to coordinate stakeholder activity, with other managers at these airports responsible for designated stakeholder relationships. Over 75% of such activity is managed on a formal, structured basis (e.g. regular meetings, formal notes, follow-up actions). 82% of those who answered the question reported that a regular review of stakeholder effectiveness (at least yearly) takes place. Other research (Hiney et al., 2023) suggested that reviews of effectiveness are informal, with the outcome influenced significantly by the assessment of personal and individual dynamics of specific stakeholder relationships.

Airport managers were asked a series of questions about the nature, structure and frequency of engagement with airport stakeholders. The objective of these questions was to assess such engagement characteristics prior to and since the pandemic. The most frequent airport stakeholder engagements were with Airport Operator Groups (96%), Route Conference attendees (61%) and local communities (46%). Respondents were also asked to assess the frequency of airport stakeholder engagement since the pandemic on a three-point scale:

- 57% of managers said it was higher
- 30% felt it was lower
- 13% observed no change

Internal stakeholders accounted for the joint highest level of stakeholder activity (67% of airport managers), along with government and regulatory stakeholder engagement (same score), followed by other aviation stakeholders (e.g. airlines, ground handlers and concessionaires) at 65%. Engagement with non-aviation stakeholders was more moderate (65%), with only 19% saying it had increased.

Respondents were asked whether they had any experience of airport stakeholder groups. This type of dedicated stakeholder group is often established for a fixed period, and its main objective is normally to promote traffic and activity in an airport and its region. It can sometimes be established following structure or market changes which give rise to new threats or opportunities, e.g. promote business growth at Shannon and Cork airports; seek to prevent Plymouth airport closure. More than half of managers responding had experience of such an airport stakeholder group.

The survey showed that contemporary activities such as those focusing on sustainability and decarbonisation are organised on a stakeholder basis, with an organisation-level sustainability stakeholder strategy, including Board/Director level oversight, in place in two thirds (67%) of airports. Respondents stated that external collaboration was a feature of sustainability activity, including aviation organisations and other airports. Less than 10% of airport managers stated that most such activity was undertaken within their organisation, suggesting high levels of external activity in these areas.

While airport-specific State support (vertical aid) is normally reserved for airports with less than 3m passengers per annum in Europe, all airports were eligible for COVID-19-related ‘horizontal’ aid provided to all industry sectors, covering (for example) wage subsidies and route support. With respect to State aid, most respondent airports received such support during the pandemic (Table 7.2). The percentage of airports in receipt of or benefiting from such support was higher than it had been in the previous 10 years (2012). For example, Air Route Promotion (42% versus 27%); Airport Improvement (50% versus 29%) and Airline Support (62% versus 32%). [Note: 22 out of 27 responses were from managers at European airports; others were from outside Europe, or no details were provided].

Table 7.2 Airports in Receipt of State Aid (2022)

<i>Type of State Aid (2022)</i>	<i>% of Airports in Receipt of Aid</i>
Air Route Subsidy	44%
Air Route Promotion	42%
Airport Improvement	50%
COVID-19 Support	80%
Support to Airline Partner	62%
Other	23%

[Source: *Airport Manager Stakeholder Survey, 2023*]

7.6.1 Survey Respondents: Identification of Threats and Opportunities

Survey respondents were also asked to assess the key threats and opportunities faced by their airport at the time of the survey (mid-2022). The key threats identified included a likely adverse impact of current geopolitical instability, with the fear of war highlighted many times. Though a receding concern, resurgence of the COVID-19 virus, leading to return of travel restrictions and health checks, was also highlighted. A further concern was the fear of a sustained recessionary period, considering the economic impact of these combined challenges, including a diminished ability to make accurate forecasts. Other threats included uncertainty regarding how soon the industry might get back to full fitness, given the potential longer-term impact on airport balance sheets, and funding for capital investment. Difficulties recruiting and retaining employees, and the impact of these staffing challenges on operations / passenger service was also mentioned. Smaller airports also highlighted increased airport competition as a threat. Finally, the combined impact of weakened airlines serving their airport, initiatives like *flygskam* (flight shame)¹ and national/international measures to tackle the climate crisis were seen as very real threats by one manager.

When identifying expected opportunities, the most common response focused on the benefits of aviation industry resilience. This was evidenced by a greater than anticipated demand/appetite for travel, and the rapid return of routes towards pre-pandemic levels. Increased government recognition

¹ Flygskam, a Swedish term meaning ‘flight shame’, refers to feelings of guilt or embarrassment associated with the environmental impacts of flying, especially with respect to carbon emissions and climate change.

of and support for critical connectivity was also highlighted. Some managers saw the pandemic as an opportunity to achieve leaner, more cost-effective operations. The potential for greater (operational) flexibility and agility, enabled by digitalisation, was also highlighted, while another opportunity was the use of increased management 'space' during the pandemic to progress sustainability initiatives. Smaller airports highlighted capacity issues at larger ones as highlighting the opportunity for passengers to use regional rather than large city airports. Interestingly, one respondent believed that the response to COVID-19 was largely operationally focused, seeing the response to the pandemic as an intensification of normal interactions, rather than a new and distinct process.

From a stakeholder perspective, relationships were seen as continuing to be at the forefront of airport activity, from a communication and business resumption point of view. One respondent, however, from a smaller regional airport suggested that while 20% of stakeholders are critical, in many cases the remaining 80% of stakeholders take up 80% of their time. Another felt that many regional stakeholders, including local representatives, expressed strong vocal opinions on what airport management should be doing, while possessing lesser knowledge regarding the operation of airports and airlines.

7.7 Airports Operating in a Volatile, Uncertain, Complex and Ambiguous (VUCA) Environment

An increasingly competitive airport market and the uncertain effects of external shock events are the two main factors which gave rise to a more volatile air transport environment for airports during the research period. While effective planning and diversification strategies can improve airport strategic responsiveness and financial performance (De Wit, 2021), the unique impact of events such as the COVID-19 pandemic brought disruption beyond any planning expectations. This factor, and subsequent geopolitical uncertainty, contributed to the need to explore how airports can plan for and respond to such exceptional 'shock' events. In this 'new normal' environment, change is regarded as a key constant, planning and forecasting is more uncertain and regulatory changes occur ever more frequently (Robinson, 2020). Furthermore, the increasing risk, in aviation, of 'Black Swan' events which are difficult to predict (de Wit, 2022; Liu, 2023), requires airports to exercise caution and anticipate future developments, as new information may limit the effectiveness and/or validity of earlier responses.

In such uncertain environments, the term 'VUCA' has become a pivotal framework for understanding the challenges faced by various industries, including the aviation sector. VUCA is a contemporary strategic model which can help organisations categorise and better understand the *volatile, uncertain, complex and ambiguous* challenges they are likely to encounter during difficult times. The VUCA framework has also been used by scholars studying leadership and management

(Akkaya and Sever, 2022; Ramakrishnan, 2022; Sinha and Sinha, 2020), COVID-19 pandemic impacts (Dima et al., 2021; Worley and Jules, 2020), the automotive industry (Mayer and Wilke, 2022), and tourism (Lubowiecki-Vikuk and Sousa, 2021; Major and Clarke, 2022).

The VUCA model has also been alluded to in aviation literature across a range of topics, including *developing resilience when responding to disruption* (Kim et al., 2022); *safety risk management* (Basimakopoulou et al., 2023); *organisational factors and lean management* (Helmold et al., 2022); *sustainable aviation* (Muller et al., 2022); *employee resilience and satisfaction* (Douglas, 2022; Zeynel, 2023) and *the airport user experience* (Tuchen et al., 2020).

The above factors contributed to emergence of a post-pandemic VUCA environment for airports. Indeed, the US Transportation Research Board developed a comprehensive airport guide and methodology to help airport practitioners and stakeholders manage unexpected events as part of their planning and forecasting processes (ACRP, 2015; ACRP, 2023). This toolkit included suggestions for analysing, forecasting, and responding to the impact of a variety of shock events on various airport types:

- The short- and long-term effects of shock events on airline fleet composition, with implications for airport layout, planning, finances, and concessionaires.
- Identifying and capitalising on airport opportunities that may arise during shock events.
- Integrating these considerations into airport forecasting policies and procedures.
- Building a more resilient airport business model.

The use of a VUCA related management framework as a change management and scenario planning model for the era of volatility, uncertainty, complexity and ambiguity, as suggested by Johansen and Euchner (2013), will now be explored, along with the proposed VUCAIR model, designed to be used by airports alongside existing strategic planning processes.

7.7.1 From VUCA to VUCAIR — A Suggested Framework

This paper's assessment of pandemic and post-pandemic events such as greater geopolitical fragility, as described in previous sections, highlighted major challenges for airports and their stakeholders. Volatility in passenger demands, uncertainty in global travel regulations, complexity in integrating advanced technologies, and ambiguity in future market trends have had a significant impact on the operation of airports. These factors have given rise to a challenging environment for the sector and the need for strategic preparedness. Based on this research, the author believes that by undertaking an airport assessment conducted using VUCA's four interrelated factors — *Volatility, Uncertainty, Complexity, and Ambiguity* — airport managers can provide input into key planning, decision making and implementation processes, both strategic and operational in nature.

Development of the suggested ‘VUCAIR’ framework below (Tables 7.3 and 7.4) has been influenced by this study’s identification of an increasing focus by scholars and practitioners on the impact of an uncertain and volatile environment on organisations. Semi-structured interviews and findings from the airport manager stakeholder survey also pointed to a more uncertain future environment following the pandemic and related events since 2020.

The VUCAIR framework is designed to provide airport practitioners and policymakers with a template for understanding key factors and undertaking such a review in the increasingly uncertain post-pandemic period. This approach has the potential to inform decision-making, strategic planning, and operations within airports.

The first table below (7.3) could be used by airports to inform each VUCA element, explore the potential consequences of it for airports and identify potential response actions.

Table 7.3 Part 1A (VUCAIR 1A) — An Airport Framework for VUCA Assessment — 2024

<u>VUCA Component</u>	<u>Volatility</u>	<u>Uncertainty</u>	<u>Complexity</u>	<u>Ambiguity</u>
<u>Component Characteristics</u> <i>[*Characteristics Source: What VUCA Really Means for You (Bennete and Lemoine, 2014) Adapted by Authors]</i>	<i>Volatile</i> “The challenge is unexpected or unstable and may be of unknown duration, but it’s not necessarily hard to understand; knowledge about it is often available.”	<i>Uncertain</i> “Despite a lack of other information, the event’s basic <i>cause and effect</i> are known. Change is possible, but not a given.”	<i>Complex</i> “The situation has many interconnected parts and variables. Some information is available or can be predicted, but the volume or nature of it can be overwhelming to process.”	<i>Ambiguous</i> “Causal relationships are completely unclear. No precedents exist; you face ‘unknown unknowns’”
<u>Description</u>	<i>‘Oceans Of Change’ in 2023. The Perfect Storm?</i>	<i>What is next? Known and Unknown Knowns</i>	<i>The Ever-Changing Nature and Interconnectedness of Events and Factors</i>	<i>It is Not Just Black and White — So Many Shades of Grey: ‘Unknown Unknowns’</i>
<u>Examples of this VUCA Component</u>	⇒ Current economic and geopolitical elements emerging and evolving at increased levels of intensity. ⇒ Change is a constant, with its extent and speed sometimes unknown (is it	⇒ Low predictability / certainty regarding the impact and outcome of unclear political and future geopolitical environments. ⇒ Better and wider passenger choice (and more demanding airlines and passengers). ⇒ Aircraft supply chains not as	⇒ Aviation is a complex and interconnected industry dealing with enormous volumes of activity along the industry value chain, supporting millions of daily passenger movements. ⇒ An airport’s role in this activity requires effective management multi-faceted stakeholder relationships covering	⇒ Unclear link between macro trends and airport-by-airport economics. ⇒ Need to manage activities and make decisions in ambiguous environments, sometimes with imperfect information. Recent events (pandemic, war) and previous ones (9/11, SARS, Financial Crisis) brought such uncertain and ambiguous environments to the fore for airports.

	<p>‘fad <i>du jour</i>’ or an enduring phenomenon?)</p> <ul style="list-style-type: none"> ⇒ For airports, airlines are increasingly demanding and less committed. ⇒ Key cost lines, e.g. fuel, shifting more quickly than before. ⇒ Effect of pandemic on airport activity mix (e.g. pax versus cargo operations). ⇒ Effect of war on air travel globally and near affected region, and increased costs for airlines and airports due to closed Russian airspace. ⇒ Immediate impact of specific 	<p>predictable or reliable as before, affecting supply and route certainty.</p> <ul style="list-style-type: none"> ⇒ Unknown nature of impact of adverse events (e.g. war) on traffic volumes/flow/mix. ⇒ Impact of increasing level of natural weather events (flooding / heatwaves, etc.). ⇒ Management of uncertainty not just DURING these events but dealing with uncertain recovery periods after them. ⇒ Airline and Airport behaviours not as rational as in stable times (e.g. pricing, costs, etc.). Disruptors appearing all along the value chain. ⇒ Competitor ‘new business’ pricing strategy keener than before — can be problematic in 	<p>a broad range of people, operational and commercial functions.</p> <ul style="list-style-type: none"> ⇒ Complexity arises because of the need to process and integrate systems (e.g., Airport Collaborative Decision Making) and ensure seamless linkage between, and optimisation of, airport, airline and Air Traffic Control processes. ⇒ An airport’s need to balance activity growth and development with sustainability and green energy activity, in as cost efficient a manner as possible — across all processes — adds to this challenge. 	<ul style="list-style-type: none"> ⇒ Rapidly evolving health, safety and security guidelines require decision making in a dynamic and ever-changing environment. ⇒ Airport stakeholder uncertainty is a feature of such an environment (for airlines, passengers, concessionaires and others). ⇒ This observation applies primarily to commercial and relationship activities, as regulated day-to-day operations activity must be clear and complied with. Its effect on such operations cannot be ignored, however.
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	events, e.g. overnight introduction of liquid restrictions in 2006.	terms of airport ability to respond. ⇒ Other: regulatory environment (e.g. Max grounding ‘Black Swan’ event)		
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Table 7.4 below (VUCAIR 1B) highlights action areas for consideration in light of the above.

Table 7.4 Part 1B (VUCAIR 1B) — An Airport Framework for VUCA Action — 2024

<u>VUCA Component</u>	<u>Volatility</u>	<u>Uncertainty</u>	<u>Complexity</u>	<u>Ambiguity</u>
<u>Component Characteristics *</u> <i>[* Characteristics Source: What VUCA Really Means for You (Bennete and Lemoine, 2014) Adapted by Authors]</i>	<i>Volatile</i> “The challenge is unexpected or unstable and may be of unknown duration, but it’s not necessarily hard to understand; knowledge about it is often available.”	<i>Uncertain</i> “Despite a lack of other information, the event’s basic <i>cause and effect</i> are known. Change is possible, but not a given.”	<i>Complex</i> “The situation has many interconnected parts and variables. Some information is available or can be predicted, but the volume or nature of it can be overwhelming to process.”	<i>Ambiguous</i> “Causal relationships are completely unclear. No precedents exist; you face ‘unknown unknowns’”
<u>Actions and/or positioning in Response to Challenges [Indicative]</u>	⇒ Responsive strategic mindset. ⇒ Flexible resource	⇒ Planning processes should reflect likely future non-linear trends.	⇒ Purposeful, solution-focused mindset, ensuring complex issues and challenges are dealt with and	⇒ Assess and seek to comprehend/respond to the situation as fully as possible, even if this highlights action-

	<p>components for allocation if circumstances force change (e.g., new airline customer, new burden of dealing with changing security / health restrictions).</p> <p>⇒ Agile infrastructure (including flexible and moveable terminal assets, e.g. mobile food stations).</p> <p>⇒ Talent — effective resourcing policies and right people in key roles to deal with emerging challenges.</p> <p>⇒ Increase organisational defences — cash reserves, selective future</p>	<p>⇒ Understand uncertainty and convey agility and assurance for the short and medium term</p> <p>⇒ Assess how impact of uncertainty is likely to affect passenger / cargo demand, and the ability of airports (and airlines) to predict and respond to same.</p> <p>⇒ Scenario and contingency planning; risk management activities and mitigation factors and actions.</p> <p>⇒ Actions to build financial resilience, especially capital and cash.</p> <p>⇒ Develop and share key information with main stakeholders.</p> <p>⇒ Airport awareness of key identifiers to help anticipate and</p>	<p>resourced effectively.</p> <p>⇒ A well-developed airport stakeholder management framework</p> <p>⇒ Designed to deliver effective collaboration amongst key groups in time of crisis — airlines, ground handlers, concessionaires, regulators, local businesses and communities.</p> <p>⇒ Appropriate level of specialist skills, e.g. cybersecurity, airport operations management, passenger flow prediction, etc.</p> <p>⇒ Focus some of resources on anticipating and addressing specific complexities (short term project).</p> <p>⇒ Financial benefit through alternative use of airport facilities if unused or</p>	<p>defying ambiguity.</p> <p>⇒ Understand what it means to all aspects of airport activity and business and identify/execute appropriate actions.</p> <p>⇒ Effective communication key — communicate levels of certainty/uncertainty: what is known, and what is not known, in a proactive, supportive and consistent manner.</p> <p>⇒ Flexibility with stakeholders key — this agility best demonstrated in how airport reacts and adapts to changed situations and updated information.</p> <p>⇒ Identify and test contingency scenarios, so that they can be activated smoothly if/when required.</p>
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	<p>investment, cost discipline.</p> <p>⇒ Right balance with respect to resource planning to meet future shocks (e.g., diversion of internal airport resources).</p>	<p>reduce levels of uncertainty</p> <p>⇒ Plan response to key (step) changes triggered by likely trigger points, e.g., collapse in demand in one or many markets.</p> <p>⇒ Long term/master planning remains a key element, but a necessarily more flexible and responsive component of an airport's planning environment.</p>	<p>underused due to external event?</p>	
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Having assessed the challenges facing the airport using the VUCA Framework above, the next step for an airport is to respond to these. Models such as McKinsey's Three Horizons Model of innovation (Blank, 2019) provide a framework for responding through incremental and breakthrough innovation. In today's environments it can, however, be argued that the time between these stages is far shorter than before, due to the increasing impact of technology and disruptive behaviour. The VUCAIR 2 planning template, developed as part of this research, highlights typical specific action areas which an airport might consider to effectively (a) react to the threats and (b) identify the opportunities presented by VUCA challenges for innovation, operational efficiency, digitalisation, sustainability (Table 7.5; Column 3). These actions will contribute to building an effective airport 'defence' in a VUCA environment, and enable delivery of improved performance and airport positioning, from a people, financial, operating and stakeholder standpoint.

Table 7.5 Part 2 (VUCAIR 2): Template for Airport Planning Actions in Response to the VUCA Assessment Carried Out Using the Above Framework: *Right-most column to be completed by airport management*

<i>(Actions necessary to respond effectively to 'VUCA' Environment)</i>	<i>Description of Airport Response Areas to Consider</i>	<i><Airport to insert specific actions in this column; examples provided></i>
Short- and Long-Term Horizon Planning (Flexibility, Agility)	<ul style="list-style-type: none"> • Flexible strategies that can be adjusted speedily in response to changing circumstances • Continued awareness of relevant airport Key Performance Indicators (KPIs) and subtle changes in the same • Scenario planning, supporting informed decision-making 	<ul style="list-style-type: none"> • More frequent airport strategy reviews than before • Identify any change in key airport metrics, e.g. cost ratios and aeronautical versus non-aeronautical revenue mix • Propose airport actions in response to such changing trends
Inclusive and Co-Ordinated Stakeholder Collaboration	<ul style="list-style-type: none"> • Build and maintain strong relationships with key airport stakeholders, in particular airlines, government bodies, suppliers, and local communities • Enhanced and effective problem-solving during times of rapid change and disruption • 'Make friends before you need them'! 	<ul style="list-style-type: none"> • Identify which airport stakeholders have the greatest current influence on airport activity, e.g. airlines, employees, government • Develop engagement strategies to maximise airport positioning, e.g. new routes, staff retention, policy advocacy
Technology and Digital Evolution Leadership	<ul style="list-style-type: none"> • Awareness of key airport impacts associated with key IT trends, hardware and software • Data analytics, artificial intelligence, cybersecurity and robotics 	<ul style="list-style-type: none"> • Review of all airport processes from a digitalisation perspective • Objectives: better customer and staff experience, reduced costs, increased

	<ul style="list-style-type: none"> • Enable secure and streamlined airport operations, with optimum allocation of (scarce) resources • Enhanced employee and passenger experiences 	airport efficiency, contactless travel
Continuous, Agile and Adaptive Learning	<ul style="list-style-type: none"> • Best in class industry training and continuous learning programmes • Adaptive mindset and updated awareness of best practices, regulations and guidelines, on top of current aviation trends • Ensure a more speedy and agile airport response to changing industry circumstances 	<ul style="list-style-type: none"> • Increased management focus on key future aviation/airport trends • Identification of airport specific impacts • Smartened airport infrastructure, e.g. ability to change use of terminal space, for example mobile concession structures
Effective Communication and Engagement	<ul style="list-style-type: none"> • Regular, consistent and transparent communication with all stakeholders • Clear communication as appropriate to airport stakeholders affected by operational, business and/or safety/regulatory change • Comfort and reassurance mindset, assertive where necessary 	<ul style="list-style-type: none"> • Development of key airport messages which articulate key focus, e.g. local businesses use local airport; government department supportive policy; passengers and community sustainability focus
Contingency Planning and Building Financial Resilience	<ul style="list-style-type: none"> • Need for suite of all-embracing contingency/resilience plans • Appropriate financial reserves to weather unforeseen events • These should outline protocols for rapid response and recovery • To be used when managing airport effects of further health crises, natural disasters, geopolitical upheavals and once off incidents 	<ul style="list-style-type: none"> • Review existing risk frameworks to account for greater future threats, e.g. cybersecurity and AI • Develop airport pandemic / shock-event contingency plans • Financial resilience measures, achieving balance between costs, increased revenue and a reserves policy
Adapting to Climate Change and Delivering Sustainability / 'Green' Initiatives	<ul style="list-style-type: none"> • Focus on transition to renewable and more efficient energy solutions related to core airport activity and operations • Plan for effective response/adaptation to sustained change in weather and climate patterns • Develop and build sustainable airport infrastructure • Green energy options for key customers, especially airlines but also concessionaires 	<ul style="list-style-type: none"> • Sustainability a core activity and reflected in airport strategy and performance frameworks • Essential baseline factors achieved; all new investments in infrastructure to improve environmental footprint and reduce airport CO2 emissions

		<ul style="list-style-type: none"> ● Future trends, e.g. Sustainable Aviation Fuels — leader or follower?
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[Source: Developed by Authors]

7.8 Conclusions

This paper's overall assessment of aviation market conditions and key factors affecting airport performance, informed by survey feedback and research observations, noted that the pace of the aviation industry's recovery from the effects of the pandemic was stronger and faster than anticipated, in particular the speed of a return to (and beyond) 2019 passenger levels. Larger airports were first to rebound, with smaller airports quicker to return to 2019 levels. The lag in Asia's recovery can be partially accounted for by the relative delay in fully removing long-haul travel restrictions. Another factor affecting long-haul recovery was the permanent retirement of a portion of the long-haul fleet, reducing global capacity in that part of the market. Sector resilience was underpinned as these recovery and growth rates continued through 2022 and 2023. A niche passenger category, experiential travel, has grown since the pandemic, wherein a greater number of travellers visit other countries for events such as large festivals and major concerts.

Survey respondents reported, however, that factors such as the conflicts in Ukraine and the Middle East and constrained aircraft supply were key factors contributing to future sector uncertainty. Furthermore, the unprecedented impacts of airport congestion and activity 'capping' by airports and airlines, which took the industry by surprise in 2022, persisted, although not as severe in scale. These events were the consequence of a fragile operating environment, caused in part by a faster than expected return of demand, high levels of staff departure from key front-line roles and reduced aircraft availability. The ongoing effect of pandemic related airport impacts was identified as a key challenge for aviation and airports. This had an impact on activities and services for longer than desired, caused by the loss of key personnel at all levels, serious operational issues and lower/slipping customer service levels. The increased attention given to cost and efficiency across the aviation value chain has reduced the relative attractiveness of the sector to new staff (e.g., low wages, less favourable contract terms, unsocial working hours). Research showed that challenges attracting and retaining such core staff remained, with a 'battle for talent' due to this poorer relative attractiveness of the airport/aviation sector to new staff, when compared to other industry sectors such as retail. Increased levels of disruption were also caused by extreme weather events, IT disruptions and indirect effects of conflicts, for example airspace closures. Survey responses showed that environmental and sustainability activities affecting day to day operations became more embedded in airport strategy and operations activities during this period, both airside and landside.

To remain competitive and efficient, airports needed to adopt an agile and adaptable mindset and a

proactive approach to strategy formulation. By doing so, airports can not only navigate the complexities of today's environment but also emerge as innovative leaders ready to shape the future of aviation in an increasingly interconnected world.

Based on these findings, resilience is likely to be an essential prerequisite for aviation organisations operating at a time where ‘the only certainty is uncertainty, and the only constant is change’. A balanced approach to managing this challenge will focus on many of the factors mentioned above — operational and financial stability, agility, customer facing strategies (e.g., increasing digital and contactless engagement), and sustainability improvements and efficiencies across parts of the airport. This focus will, of course, be against the backdrop of an industry where safety, security and regulation are paramount and where needs and requirements are constantly evolving.

Future research could address the limitations of a passenger-only airport performance analysis by incorporating a more diverse dataset including additional information, in particular benchmarking data, thus enabling a more nuanced understanding of the factors influencing airport passenger traffic recovery in the post-pandemic era.

This research has provided valuable insights by demonstrating how external shocks and crises can test the resilience of airports. The paper has shown how airports dealt with a multifaceted range of major challenges during a very uncertain period in 2022/23. Their response to the COVID-19 pandemic and other previous ‘shock’ events, has highlighted the ability of airports to manage and deal with unexpected adversity in a resilient manner, continuing and enhancing their key connectivity role in an increasingly fragile and uncertain world. There are a number of areas in which this paper contributes to the expansion of VUCA-related research, and specifically to research regarding the challenges faced by airports during volatile and uncertain times. It offers an original and meaningful perspective on the impact and management of these volatile circumstances on airports during times of instability and uncertainty, by proposing a customised framework to guide airports in enhancing their resilience and operational effectiveness.

The proposed VUCAIR framework can help to ensure that airports are better prepared to meet the challenges of economic volatility, geopolitical instability and other unforeseen crises, while improving their agility and adaptability during rapidly changing and increasingly uncertain times in a manner that benefits both airports and industry stakeholders. It is expected to help airport leadership to anticipate and develop a response to the increasingly short-term VUCA factors that are a current and likely permanent feature of the airport, aviation and general economic/social environment.

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8 Discussion



8.1 Introduction to Discussion and Preview of Contents

Through its introduction and five preceding papers, and against the backdrop of an unprecedented period marked by the COVID-19 pandemic and subsequent geopolitical uncertainty, this thesis has considered regional airport characteristics, models and challenges, together with several vital contemporary factors affecting these organisations:

- *Regional Airport Business Models*
- *Airport Governance and Management*
- *Impact of COVID-19 on Airport Stakeholder Relationships*
- *European Regional Airport Challenges and State Aid Considerations*
- *Airport Resilience in Challenging Times*

This chapter considers how the above-mentioned topics are connected. It commences by reporting the initial impacts of the COVID-19 pandemic on airports, describing major pandemic events, observations and findings most relevant to the key research areas and to the broader field of study. Stakeholder management action is reviewed in this multifaceted assessment of airport activity at such an important time. Airport State aid provisions and developments have also been considered. The broader relevance of this research to airport management practices, policymaking, and future strategic orientation is also assessed. In recognition of the constantly changing and increasingly volatile environment in which airports operate, an overarching strategic assessment framework for airport business models, activity and resilience is proposed. This integrated airport business model canvas, *Flightpath*, is designed to assist airports in navigating volatile and challenging times, thereby helping to improve their overall resilience and adaptability in the face of ongoing and increasing levels of change. A reflective analysis covering the author's experience of conducting primary qualitative research during challenging pandemic conditions is also included.

The first section of this chapter assesses the operational, economic, and strategic impacts and

challenges posed by the emergence of the COVID-19 pandemic and its subsequent developments on aviation and airports. It specifically considers factors pertinent to the author's research topics. This approach underscores the pandemic's significant relevance to the aviation sector and the author's area of study, airports.

8.2 Impact of the COVID-19 Pandemic on Airports and Aviation

The following are selected aviation industry leadership perspectives on COVID-19, gathered from Spring to Autumn, 2020:

- ‘A stress scenario beyond anything that could have been imagined in the aviation industry’ (Morris, 2020)
- ‘An existential threat for the industry as a whole’ (Gitten, 2020)
- ‘A one in a one-hundred-year aviation event’ (Blaney, 2020)
- ‘A black swan event, with a similar economic impact to that of World War Two’ (Nicola et al., 2020)
- ‘It will be quite horrendous for regional airports in the coming years’ (Jankovec, 2020)

The sudden outbreak of the COVID-19 pandemic and its rapid spread from March 2020 represented a classic 'shock' event for the aviation industry. The above quotes from aviation industry veterans and commentators come from the first few months of the pandemic (March to June 2020) and highlight the significant scale and expected impact of the pandemic. Passenger travel collapsed overnight as countries worldwide imposed sweeping travel restrictions on citizens and visitors. Regional and secondary airports suffered most in the first stage of the pandemic. For the overwhelming majority of airports, especially smaller ones, most, if not all, flights were cancelled. Cargo movement became a priority, especially for carriage of medical and other pandemic-related supplies. E-commerce volumes then increased dramatically, and this greater diversification of activity saw some airports experiencing increases in cargo traffic. By April 2020, commentators envisaged long-term industry changes, with a full return to 2019 volumes taking three to five years. Long-haul traffic was expected to be the last sector to experience recovery, with one reason given being the expected early retirement of an older generation of long-range aircraft. It was believed then that commercial business travel volumes might never reach previous levels, given the rapidly evolving ability to conduct business virtually. This might provide a potential opportunity for business aviation where passenger proximity health concerns might not be as pronounced. Long-haul, narrow-body travel would grow, while regional travel (with smaller aircraft) was expected to become more prominent due to superior economics. (Serrano and Kazda, 2020; Donovan, 2020).

As of mid-2020, the impact of these constraints on the airport sector was expected to be adverse. The specific effect on regional airports — the impact on revenue and costs and how developments might

affect the relative security and certainty of airport funding (State and other) — was uncertain at that time. Governments were expected to be much more financially constrained in the future due to significant pandemic costs across all aspects of national life and activity. While speculation at the time included the possibility of some airport closures, however, governments moved quickly to provide financial support to airports and airlines (Berti, 2020). Even before the pandemic, Kazda et al. (2017) had emphasised the importance of policymakers understanding the economic role of regional airports, and the (financial) challenges they face, in informing government policy development and decision-making. In addition, trends such as deregulation, higher levels of private ownership, and more demanding airlines/passengers required airports to pay greater attention to customer targeting and associated marketing activities, as Graham and Halpern (2021) noted.

The emergence and successful roll-out of the COVID-19 vaccines, however, transformed the airport sector's outlook and focus. Before its arrival, the provision of significantly greater terminal space to allow for socially distanced flight boarding and additional health screening facilities were expected to be critical future airport requirements, with such demands likely to affect regional airports disproportionately due to poorer economies of scale. Those airports with surplus terminal capacity were, however, likely to accommodate revised processes more efficiently. Following the introduction of the vaccines and their subsequent roll-out in mid-2021, the above concerns gave way to industry planning for a 'return to the air', a phase seen as critical by all aviation stakeholders, with stakeholder collaboration and coordination viewed as essential during this period. In the post-vaccine period, they planned to return to the air and ultimately return to normal operations. The initial recovery period first focused on larger markets, routes, and traffic in larger/hub airports (Sun et al., 2020; Suau-Sanchez et al., 2020). Subsequent regional airport passenger recovery was stronger relative to larger airports, due to the slower return of long-haul markets (especially Asia), whose routes were primarily out of larger airports, and the earlier than planned retirement of older widebody aircraft (Pallini, 2021). It was expected that there would be fewer and smaller airlines, and migration of air traffic from regional to larger airports was anticipated, due to a greater airline focus on yield and volume, as previously reported by Lian and Ronnevik (2011) and Dobruskes et al. (2017). Collaboration amongst key stakeholders was identified as key to recovery. EUROCONTROL identified coordination as a critical feature in the recovery of air traffic, identifying a difference between coordinated and uncoordinated scenarios — a 15% traffic reduction in 2019 in a coordinated scenario versus an actual 25% reduction in the absence of such coordination (EUROCONTROL, 2020). Given prior infection knowledge, e.g., SARS, more coordination might have been expected at the outset (Sun et al., 2020). Moves to a partnership-focused approach were however noted, with some industry webinars reporting that some airports had already been undertaking route reconnaissance on behalf of airline stakeholders post-COVID-19 (OAG, 2020).

While airport assets were expected to survive the pandemic, the possibility of some airport entities not being so fortunate was raised by Forsyth et al. (2020). In terms of airport ownership, while Voltes-

Dorta and Pagliari (2012) previously contended that corporatised and privately owned airports manage better under challenging times, there was little difference in passenger performance when considered by ownership type (ACI, 2023). The need for efficiency had been previously emphasised by Adler et al. (2013), who found that airports could reduce costs by up to half when operating at optimum levels, and increase non-aeronautical revenues by one quarter. MacIlree and Duval (2020) highlighted the role of ‘aeropolitics’ in global aviation as essential when dealing with COVID-19 fallout. If State aid requirements were to significantly tighten, many airports would likely feel more vulnerable.

Furthermore, the increasing application of conditions regarding sustainability and decarbonisation to COVID-19 recovery policies and interventions, including State aid, was noted by Abnett (2020), Gossling et al. (2020), and Efthymiou and Papatheodorou (2020), with a potentially adverse impact on European short-haul routes suggested. State aid provided to Air France required the airline to cease operating an (albeit modest) number of domestic routes with this ban, on flights where travel by train was less than two-and-a-half hours, coming into force in 2023 (Zadeh, 2023).

8.3 Responding to the pandemic challenge

Many regional airports were dramatically affected by COVID-19 and remained closed to most traffic during the first 12–15 months of the pandemic. State aid continued to be an essential lifeline during this time of almost zero revenue but continuing, albeit reduced, costs (European Commission, 2020). The European Parliament reported that without State support, many regional airports would face the threat of insolvency (EP, 2020) when a more significant investment in sustainability and digitalisation would be required (Costanzo, 2020).

Senior aviation leaders and commentators were unequivocal in terms of challenges and actions necessary, with ACI’s European Head contending that it would be ‘quite horrendous for regional airports in the coming years’ (Jankovec, 2020), while the Centre for Aviation’s Chairman Emeritus believed at the time that a lack of future policy coordination would likely result in less competition and greater levels of protectionism, giving rise to a need for essential intergovernmental coordination (Harbison, 2020). Collaboration was seen as likely to play a vital role in ‘getting back into the air’ and recovering from the pandemic’s immediate effects. Several key industry associations, including EASA, ICAO, ACI and IATA, commenced an unprecedented cooperation process to develop a coordinated short-term plan to help get Europe flying again. By the end of 2022, up to 90% of regional airports reported traffic levels similar to those in 2019. Increasing competition for new business and the continued financial effects of the pandemic, however, meant that regional airports continued to face highly challenging times. Additionally, a deadline of July 2027 for the end of the current EU State aid framework for airport aid, a key ‘income’ line for many regional airports, and the need to invest in essential future activities promoting decarbonisation and digitalisation further exacerbate these challenges. Future changes to European regional airport structures are likely to be

influenced by how the critical economic role of regional airports on the one hand, and their often-precarious financial status, on the other, can be reconciled and resolved in an increasingly uncertain time.

From a traffic standpoint, 2.3 billion passengers passed through European airports in 2023 (ACI, 2024), reaching 95% of pre-pandemic levels. Airlines displayed a strong post-pandemic focus on growth across all airport and route types. With ‘less than a dozen major airlines/airline groups having close to 800 European airports to choose from’ (ACI, 2023b), airlines have more choice and agility than smaller airports (i.e. the capacity to allocate aircraft) and more negotiating leverage relative to these airports. As traffic grows, non-aeronautical revenue opportunities also grow. Airline deals negotiated with regional airports are, however, likely to have reduced the volume of aeronautical revenue, requiring a greater airport focus on non-aeronautical revenue. The future performance and viability of these secondary airports could be impacted by this trend, especially if they are dependent on a single low-cost carrier whose cancellation or even reduction of activity would devastate airport finances, requiring increased B2B marketing activity (e.g. incentives, longer-term airline contracts/commitments).

The last year for which detailed ownership information is available shows that 6% of European airports are entirely private, 59% are fully public, and 25% are of mixed ownership (ACI, 2016). No significant change to these proportions is expected in the future. For example, the Irish government has previously expressed its intention to keep ownership of the country's main airports in the State's hands (Department of Transport, 2019). In Europe, the private ownership model for airports is most prevalent in the United Kingdom, part of that nation's privatisation process during the 1980s/1990s. Shannon Airport, the case study airport from Paper 1, suffered a devastating pandemic collapse in passenger numbers. Two of the airport group's key businesses, Shannon Airport itself and Shannon Heritage, which owned and operated several tourist sites, suffered a collapse in passengers/visitors and revenue. At the same time, costs did not fall to the same extent, due to a higher proportion of fixed costs. The third business, Shannon Commercial Properties, performed strongly, however, proving the benefit of a diversified business model for (then) Shannon Group. Maintenance (MRO) and cargo operations at the airport continued, with aircraft parking constituting an added revenue generating activity. One million pieces of Personal Protection Equipment (PPE) were carried on a single flight operated by an Antonov AN-225 aircraft. Nonetheless, the Group did report a financial loss in 2020, and announced plans to dispose of its Shannon Heritage business in 2021 (Shannon Airport Group, 2022). While its business model did, therefore, help the organisation through challenging times, and consideration of similar models for other European regional airports has potential attractions, most European regional airports' activity is concentrated on airport operations, with much more modest property and other activity, unlike the Shannon model.

From a growth perspective, airlines faced challenges expanding their presence in larger, capacity-constrained airports. They accused such airports of acting as monopolies, despite the economic regulation processes in place at many major airports (Noeth, 2023). On the other hand, a significant number of loss-making airports with route expansion capacity, comprising up to 80% of the total number of airports (ACI, 2017), survived due to State aid. There was a relatively modest level of airport closures and openings in recent years, as robust local community and political resistance often successfully opposed airport closures (Calder, 2022). Several United Kingdom airports that 'failed' under private ownership were, however, closed (Plymouth and Doncaster/Sheffield), while others were brought back under government ownership (Prestwick and Cardiff).

Mitigating the risk of regional airport closure through activity diversification was considered an option, such as providing local facilities to communities and business groups as conference centres and utilising surplus terminal or office space for alternative uses. This approach would, however, be challenging for smaller airports due to their size, remote location, lack of critical mass / economies of scale, and fixed cost base. Regional airport managers likely see their most essential task as driving efficiencies to compensate for these imbalances and continuing to attract new airline business.

In addressing the post-pandemic challenges faced by regional airports, this research has highlighted airport stakeholder activity, collaboration and alignment as important factors contributing to the recovery and future growth of aviation and airport activities. The next section highlights the importance of airport stakeholder activity during the crisis and in the post-pandemic landscape.

8.4 Post-pandemic Impact on Airport Stakeholder Relationships and Importance

The primacy of the airport–airline stakeholder relationship was universally recognised amongst airport stakeholders interviewed for this research. National and local government, regulators, tourist organisations, representative associations and airport owners/shareholders were the other critical stakeholders identified, with employees and government being recognised as vital post-pandemic stakeholders. Personal relationships were critical to assessing stakeholder effectiveness, and the larger the organisation (airport or stakeholder), the more likely it was to have structured engagement processes in place. Key relationships, such as regulatory ones in Ireland/UK and with the main airport shareholder (the State) in Ireland, were identified as even more formal, with adherence to a Code of Governance for State Bodies an essential requirement for Irish State-owned airports (Department of Public Expenditure, 2023). The government was identified as a critical stakeholder for Irish airports across many dimensions — owning those that account for over 95% of air traffic to and from the country. It also provides essential funding for the smaller and primarily privately-owned airports. Key aviation regulator stakeholder relationships in the United Kingdom and Ireland — IAA/CAA; EASA — covered key airport activities including safety, security, operations and, in some cases, economic activity and regulation.

Everybody worked well together during the initial shutdown period. Strong levels of cooperation focused on protecting passengers, staff and assets. Nothing seemed impossible. Following the immediate aftermath of this period, people ‘paddled their own canoe’. Moreover, perhaps in light of crippling uncertainty and perceived existential threats facing airports and stakeholders, most parties maintained only essential stakeholder contact during subsequent months. Collaboration was seen early on as a critical requirement for recovery. It could, however, have been done better in terms of ‘getting back into the sky’, with differing regulations by country a vital issue. For example, Ireland's aviation task force produced actionable recommendations quickly. Many stakeholders, however, believed it took too long to implement them. The reduction in airline and airport workforces disrupted many key stakeholder relationships, and the loss of critical labour and organisational memory was a concern.

From an airport management perspective, there was a strong appreciation of the benefits of stakeholder management and a belief that effective airport stakeholder activity, much of which remains informal, is essential when addressing the regional airport challenges highlighted in this chapter. Airlines became even more critical to airports post-pandemic, while employees and government increased most in importance during this period. Some had argued for a shift to a more strategic approach to stakeholder management, e.g. airports thinking ‘outside the box for airlines’, notwithstanding the financial impact of airline deals which gives rise to a need for careful management of airport costs. The predominance of single-airline stakeholders has become something of a ‘bear-hug’. For example, the low-cost carrier share of available seats for regional airports increased since the pandemic (ACI, 2023), with many airports hosting just one such carrier with a very high share of passenger activity. Should these dependent airline relationships become fragile or volatile, the airport's financial and business risk will become elevated. Table 8.1 shows the increases in Ryanair's market share of seats at selected United Kingdom and Irish airports between 2019 and 2023.

Table 8.1 Ryanair Market Share for Selected Airports, 2019 versus 2023*Available Seats June 2019 vs June 2023: Ryanair Market Share for Selected Airports.*

Airport Name		Ryanair Market Share 2019 (%)	Ryanair Market Share 2023 (%)	Change (Percentage Points)	Percentage Change in Ryanair Market Share (%)	
Dublin		38	44	6	16	
Cork		42	67	25	60	
Shannon		46	66	20	43	
Ireland West		75	91	16	21	
Kerry		80	100	20	25	
IRISH AIRPORTS *		40	48	8	20	
Belfast Intl		10	16	6	60	
Birmingham		17	21	4	24	
Bristol		21	19	-2	-10	
Edinburgh		20	30	10	50	
East Midlands		46	48	2	4	
Glasgow		5	7	2	40	
Leeds/Bradford		27	31	4	15	
London Gatwick		2	2	0	0	
Liverpool JL		40	41	1	3	
Luton		12	13	1	8	
Manchester		16	23	7	44	
Newcastle		11	18	7	64	
Stanstead		70	76	6	9	

* Only airports serviced by Ryanair included/

DCU Research; Airport/Airline Data

8.5 Stakeholder Theory at the Crossroads — An Aviation Perspective

Many stakeholder themes explored in a *Business & Society* Special Issue — *Stakeholder Theory at the Crossroads* — provided contemporary context to aviation-focused research in this area. Hatherly et al.'s (2017) review of stakeholder tensions has relevance when considering the airport-airline relationship as described above — most airlines are private entities with shareholders, and these stakeholders' interests will typically be placed above those of other airline stakeholders, such as airports. Crane (2018) argued, however, that while organisations will indeed seek to categorise and prioritise stakeholders, these parties are increasingly interconnected, and there is much greater visibility amongst all stakeholders concerning relationships with specific ones. Many airport stakeholders will also engage directly with one another. Indeed, the nature of triangular airport relationships (usually involving airports and airlines together with tourist organisations or municipal authorities) is perceptible, and behaviours observed can influence degrees of trust across stakeholder groups. Stakeholder tension is relevant to route development and contract negotiation, such activity being fundamental to airport economics, and with new routes expected to generate a sustainable financial return from day one. Desai (2018), examining stakeholder management in a community policing context, suggests that effective stakeholder collaboration allows for greater access to

information from external stakeholders, which may be mutually beneficial, for example, new route research in the context of an airport–airline relationship. Desai (2018) also argues that such close collaboration, with its implication of more significant information access, allows external stakeholders to examine more closely how an organisation operates and presumably draw conclusions regarding efficiency and effectiveness. Such conclusions could, for example, be used by an airline when seeking to minimise airport charges associated with route operation. Freeman et al. (2018) argue that tensions between strategic management and stakeholder theory are more apparent than real. If their argument is sound, it means that introducing a more formal regional airport approach to stakeholder management activity should be more manageable. Graham (2020) recognised the importance of internal stakeholders, suggesting that they may more effectively contribute to adopting new practices than external parties. This supports the finding of the airport manager survey which identified employees as a key group, and is a relevant point for airports seeking to attract and retain staff while promoting and implementing sustainability and digitalisation initiatives.

Verbeke and Tung (2013) contended that a significant change in stakeholder pressures, such as those caused by the pandemic, required a more transformational approach to stakeholder activity. In another publication relevant to current events, Garcia-Castro and Aguilera (2015) described how Iberia previously sought to distribute economic losses it suffered amongst airline staff, rather than having them borne exclusively by equity holders. Aviation employees bore some of the brunt of the economic impact of COVID-19 on their organisations, with airport, airline and other employees subject to salary reduction, furlough and, inevitably, layoffs. Of course, these decisions gave rise to significant challenges and disruption across the sector following a speedier-than-expected initial recovery phase.

During a 2023 aviation conference, an ICAO Director stated, ‘To achieve resilience, everybody has to work collaboratively’ (Khalifa-Rahma, 2023). Given events during the pandemic years and the increasingly volatile subsequent period, it is expected that greater focus and nuance will be features of the future development and management of airport stakeholder relationships.

8.6 European Regional Airports: The Role of State Aid

State aid remained a ‘third revenue line’ for European airports, and during part of the pandemic period, it became the ‘first’ revenue line for many airports. Significant airport and airline aid was provided during the pandemic — without which many organisations would have gone out of business. Support for Public Service Obligation (PSO) routes also continued, even though such activity was significantly reduced during the pandemic.

The fiscal sustainability of ongoing airport aid (post-2027) was identified as a critical future factor for regional airports. Although European State aid arrangements for airports were due to end in 2024,

the European Commission extended this period to 2027, justifying this prolongation on the grounds of the ongoing financial impact of the pandemic on smaller airports. Any State aid regime which replaces the one currently in place should seek to ensure a fair and competitive airport market, balancing the need to support regional airports on the one hand (given their local economic and social impact) and their financial viability on the other, recognising the objective of reserving aid for organisations which are reasonably expected to be able to continue to operate in a financially viable manner. A more rigid application of rules will have significant consequences for airport viability.

Should it persist, an increasingly volatile and uncertain environment might further affect travel demand adversely, impacting smaller airports more than others. Failure to address this issue will maintain the status quo of too many unprofitable airports already in Europe. Other options alongside State aid might be considered; for example, select private sector involvement in airport investment which could reduce the level of State aid required. For example, a low-cost carrier terminal or dedicated low-cost carrier area funded by the low-cost carrier airline (all compliant with competition and equal access regulations). Increased use of energy-efficient and sustainable infrastructure / digitalisation, even if initially funded through State aid programmes, might also reduce the need for future government support. Based on State aid considerations and future developments as highlighted, a draft assessment framework for State aid applicability, EURAIR, is proposed. This template outlines a range of factors likely to influence State aid decisions, highlighting positive and negative characteristics (Appendix A).

8.7 Factors Affecting Airport Resilience (in Challenging Times)

‘There are two airport extremes in 2024: Those with insufficient capacity and too much noise, and those with too much capacity and not enough noise.’ (Author)

Following the ‘return to the air’ in 2021, airports and airlines recovered lost passenger volumes much more quickly and strongly than expected, with travellers quickly making up for lost flying years. Some larger airports, however, suffered chronic congestion issues and could not efficiently handle the volume of passengers and baggage they faced (Yeginsu, 2022). Not expecting demand to ramp up so quickly, airports and other organisations in the sector did not have adequate staffing capacity to meet requirements, having parted company with many employees for cost reduction reasons during the pandemic. The adverse impact of these reduced staffing levels on operations, efficiency and customer satisfaction, especially in larger airports, persisted for many months. The attractiveness of the airport sector to new staff likely diminished due to changes in the market. For example, the growth of e-commerce/logistics organisations and other sectors such as retailing, where locations are likely to be closer to population centres and working hours not as unsocial, may have reduced the sector’s attractiveness to existing and new staff. For some airports, including regionals, a reduction in employee remuneration and terms of employment relative to other employers may be another

factor. These factors may reflect cost actions airports may have been taking to ‘finance’ new and keener airport–airline deals. Addressing staffing challenges and their impact on operations remained a key business objective for all airports. Other issues affecting these organisations during the review period include extreme weather events (Klint, 2023), information technology issues (Maclellan, 2023), strike action (Lomas, 2024) and the effects of war (Hong et al., 2023).

The impact of these uncertainties exacerbated already serious regional airport challenges and uncertainties. These uncertainties, as intense in 2024 as at any stage ever before then, represent a potential threat to long-term airport health and resilience. This dramatic increase in uncertainty affected smaller airports — those consistently facing financial challenges and pursuing increased connectivity — hard. Cash preservation, efficiency and customer/stakeholder demands became crucial challenges at a time when capital investment requirements were likely to increase, with ACI estimating a need for \$2.4 trillion of new airport capital expenditure by 2040 (ACI, 2022). Employee recruitment and retention and customer service were likely to remain key airport issues for the foreseeable future. This ‘battle for talent’ reflects the poorer relative attractiveness of the sector to new staff (low wages, out-of-town locations, less favourable contracts, unsocial working hours) as described above.

It is interesting to note that certain airports and stakeholders used the opportunity of the pandemic to plan for growth. In Ireland, Emerald Airlines was set up by the Executive Chair of an aerospace company. By 2024 it operated flights under the Aer Lingus banner from 15 UK airports, primarily serving Dublin and Belfast and feeding local UK passengers onto Aer Lingus’s transatlantic route network (Harding, 2021). In another example, Ryanair did not park its aircraft or furlough its pilots, keeping both ‘current’ during the pandemic (Lee, 2020). This approach and the airline’s healthy cash position at the outset of the pandemic meant that Ryanair was very well placed to resume and rapidly expand its operations to unprecedented levels when government restrictions were lifted. Cork Airport’s primary runway rehabilitation was initially expected to take nine months. Management took advantage, however, of the massive pandemic drop in passenger numbers to close the airport fully for ten weeks and complete the overlay (on budget) within this timeframe (Roche, 2021). In the United States, several municipalities planned the pursuit of European connectivity, where none currently existed. For example, airports such as Cleveland secured new Aer Lingus route business through a ‘strong and united stakeholder coalition’, involving airports, municipalities, and business chambers, albeit underpinned by financial inducements (Glaser, 2022).

Airport competition for airline business has never been stronger. Their relentless cost focus ensured that low-cost carriers continued to extract strong commercial terms from airports. Increased levels of non-aeronautical revenue in these locations remain contingent on such airline deals remaining in place. Increased ‘single customer exposure’ increases the financial risk for regional airports. During 2023/2024, the impact of reduced aircraft supply, caused by the accelerated retirement of older

equipment, Boeing short-haul aircraft groundings and engine issues impacting Airbus A320 aircraft family availability, further fuelled airport competition for scarcer airline routes. For Ireland and the United Kingdom, both island nations with a high dependence on aviation activity, national policies underpin the sector's importance to each nation's economic objectives. Regional airport activity should be critical to these plans, with regional activity being a vital component of each country's national planning framework, i.e. UK: *Levelling Up*; Ireland: *Balanced Regional Development* (Levelling Up, 2022; NPF, 2023). These policies should help promote and encourage local use of airports and ensure that the government does not overlook regions at the expense of capital cities (whose interests must also be considered/accommodated). Pursuing these activities will require high levels of collaboration across a broad range of airport stakeholder groups.

Environmental activities, responsibilities and governance will play an increasingly important role in future airport activity, becoming embedded in airport strategy and operations. These include use of green energy, energy efficient heating and lighting and increasing use of electric vehicles airside. By 2024, achievement of carbon accreditation status became an essential baseline factor rather than a competitive differentiator. The most significant carbonisation challenges lie ahead (aircraft, engines, fuel), and regional airports may be likely to experience the first winds of change in these areas, given the smaller aircraft and engine sizes associated with regional traffic.

The factors highlighted in this section demonstrate some of the critical challenges faced by regional airports. Collectively, these have the potential to reduce airport resilience, giving rise to the need for a strategic management approach supporting improved airport viability and growth. The next section of this chapter introduces a suggested airport strategic management framework designed to address these multifaceted challenges, aiming to enhance the resilience of regional airports and improve their prospects for long-term viability and success.

8.8 Integrated Airport Business Model Canvas — A strategic airport framework for challenging times

The use of strategic analysis and business review tools/models is essential to assessing an organisation's performance and prospects during such difficult times. An airport's strategic positioning can be assessed using many different approaches. Different models have varying features, and each one has limitations. Osterwalder and Pigneur's Business Model Canvas (2010) outlines key components of the value model driving a company's business. This model describes how value is generated, transferred, and delivered to key stakeholders, with 'value' derived from a combination of entities being customers and partners, core business propositions, and financial performance. A Business Model Canvas can make connections more explicit (Joyce and Paquin, 2016) and identify value-creation opportunities (Johnson et al., 2008).

The Business Model Canvas can also highlight how a change in one variable might affect others. For

example, the financial impact (cost and revenue) of the provision by an airport of (say) discounted customer parking using available underutilised land or subsidised public transport services could be offset by an improved customer value proposition, higher passenger numbers, and increasing non-aeronautical revenue. The Business Model Canvas does not, however, provide extensive insight into the macro and micro forces affecting an airport, as it is created primarily from an internal company standpoint at a certain time. Other strategic tools have similar limitations, usually featuring specific matters affecting an organisation's activities. For strategy-building purposes, using a range of models is always preferable. Building on these existing strategic frameworks, a holistic strategic management framework, incorporating the above frameworks and other strategic tools, can further help improve airport strategy development processes during such challenging and rapidly changing times.

8.8.1 An Integrated Airport Business Model Canvas — (Flightpath): A Tool for Airport Innovation and Adaptability

Based on primary research findings, particularly interview and survey results, along with contemporary secondary research observations from literature, experience, and reportage as reported in this thesis, the author believed that there was merit in considering how a fresh strategic management framework might assist aviation researchers and practitioners in identifying factors that inform key decision-making processes for airports. This could be achieved by reflecting an organisation's essential features, strengths, and challenges in a more holistic manner, within the context of an environment increasingly highlighted as uncertain by interviewees, survey respondents, and the literature. Airports could, for example, use an integrated airport business model canvas to highlight the most relevant exogenous and endogenous factors, information obtained from other strategic review activities. Such consideration of key airport characteristics, industry trends, opportunities, challenges, and competitive threats, could inform the identification of critical strategic forces — positive and negative. An integrated model could then be used to summarise and present the fundamental factors affecting an airport's operations and business activities.

A prototype of such an Integrated Airport Business Model Canvas (*Flightpath*) has been developed. This framework builds on the features of Osterwalder's Business Model Canvas. It provides a comprehensive, multifaceted view of an airport's business landscape, encompassing an assessment of strategic positioning and intent, internal activities, business performance, the competitive landscape, likely future challenges and opportunities (internal and external) and a summary of crucial 'headwinds and tailwinds' affecting an airport's operations and business. It also provides for airport articulation of an overall strategic summary.

A visual holistic representation of this integrated Airport Business Model Canvas (*Flightpath*) as of March 2024 is shown in Figure 8-1. This figure demonstrates the nature and shape of this new

Integrated Business Model Canvas. Figure 8-2 shows a completed version of the summary framework page as it applies to Shannon Airport, Ireland, as of March 2024. Each component of the framework is designed to be expanded on in greater detail, and Appendix B shows a fully completed workbook for Shannon Airport, Ireland, containing completed content for each individual component.

Figure 8-1 Integrated Airport Business Model Canvas (Flightpath)

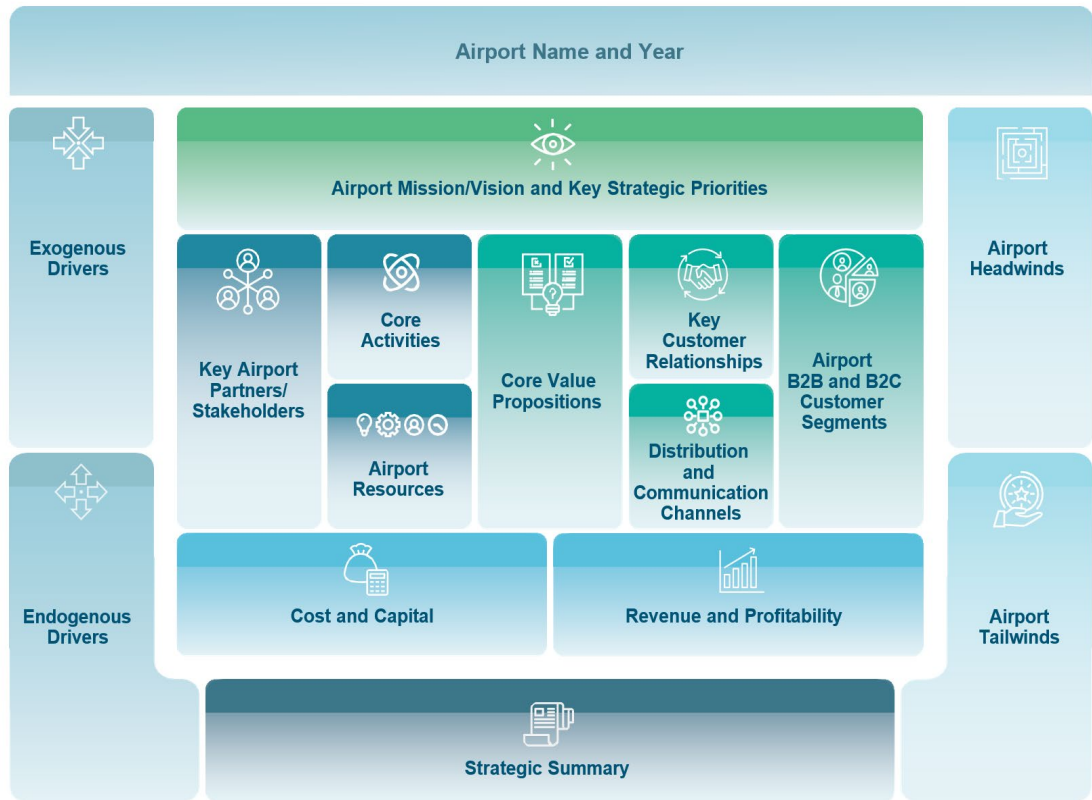


Figure 8-2 Integrated Airport Business Model Canvas (Flightpath): Shannon Airport

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Business Model Canvas by Component (Highlights)

Shannon Airport, March 2024

Exogenous Drivers



- Uncertain geopolitical and macroeconomic climates impact
- National Aviation Policy: Irish Government support for regional development
- Dominant position of largest national airport
- Decarbonisation focus
- Increased national focus on defence

Endogenous Drivers



- Operational capability (airport and company)
- Effective resourcing policies and practices to attract and retain staff.
- Succession Planning
- Active stakeholder management programme with key messages in alignment with strategic priorities /
- Alignment of airport culture with strategic ambition

Shannon Airport Mandate, Vision / Mission and Values



Mandate (from Government): To "promote and facilitate air transport and aviation services in and around Shannon Airport and to optimise the return on its land and property and on its shareholding in any subsidiary company"

Vision: To reach forward and build a connected, thriving place

Mission: Build sustainable livelihoods and a vibrant economy for our people and region by shaping opportunities in aviation and property

Key Airport Partners/ Stakeholders



- Airlines
- Airport Suppliers (Retailers, etc.)
- Government
- Commerce Chambers
- Ground Handlers
- Hangar Tenants
- Business & Tourism Organisations
- Aviation and Other Regulators

Core Activities



- Airport management, operations & development
- Passenger services/retailing
- Community engagement
- Sustainability initiatives

Airport Resources



- Airport and property infrastructure
- Committed workforce
- Focused leadership team
- Innovation DNA
- Iconic brand

Core Value Propositions



- Ireland's 'Airport of Choice' for connectivity and business
- Superior customer experience: 'Easy to Get To, Easy to get Through'
- US Customs and Border Pre-Clearance
- Transatlantic gateway
- Significant growth capacity

Key Customer Relationships



- Airlines, especially Ryanair and Aer Lingus
- Concessionaires, MROs/hangar tenants
- Local Authorities and Government

Distribution and Communication Channels



- Relationship Approach
- Key partners / local organisations
- Airport and aviation bodies
- Enhanced digital presence

Airport B2B and B2C Customer Segments



- Airlines
- Passengers
- Service Providers
- MROs
- Cargo Operators
- Ability to 'reach' passengers directly

Airport Headwinds



- Location and low population density = demanding route economics
- Strong competition from Dublin/other Irish airports
- Highly dependent on two airlines: Ryanair and Aer Lingus
- Compliance and decarbonisation costs
- Labour market constraints

Airport Tailwinds



- Strong post pandemic performance
- New routes
- Airport infrastructure delivers much capacity for growth
- Diversified business at group level – served company well during previous crises, and can do so again

Cost and Capital



- High operating costs relative to peer airports
- Significant payroll and non-payroll costs, including utilities
- Modest long-term debt (capacity for investment)
- Effective capital deployment

Revenue and Profitability



- Strong growth in key passenger and revenue metrics
- Adequate capital and reserves
- Low-cost carrier dominance erodes aeronautical revenue
- High proportion of non-aeronautical revenue a concern

Shannon Airport Group: Strategic Summary



"A key and unique transatlantic gateway with a strong UK and European route network, ensuring seamless connectivity and enhanced passenger experiences. A strategic focus on added value aviation services, property, innovation and growth, both regionally and nationally."

Other supporting strategic frameworks are included as part of the workbook. They are designed to help an airport identify and assess its strategic positioning. These include other strategic models together with templates covering stakeholder management activity, including stakeholder identification, categorisation and management. Collectively, they contribute to completion of the Integrated Airport Business Model Canvas by suggesting exogenous and endogenous factors and assisting in the identification of airport tailwinds and headwinds. There is some overlap between these frameworks, which enhance the airport's analysis through additional external and internal assessments.

This strategic framework, which represents a contribution to theory and practice, will also be able to accommodate two further tools developed as part of this research: VUCAIR, the framework for airports in VUCA times; and the EURAIR State aid assessment tool for airports and policymakers applying for or contemplating operating (government) support.

The following pages (Figures 8-3, 8-4, 8-5, 8-6) provide some examples of completed components of the integrated Airport Business Model Canvas, showing how elements of the framework can be practically considered and populated by an airport (Shannon) during contemporary times. Appendix B contains the prototype of a fully populated business model workbook for Shannon Airport.

Figure 8-3 Canvas — Exogenous Drivers

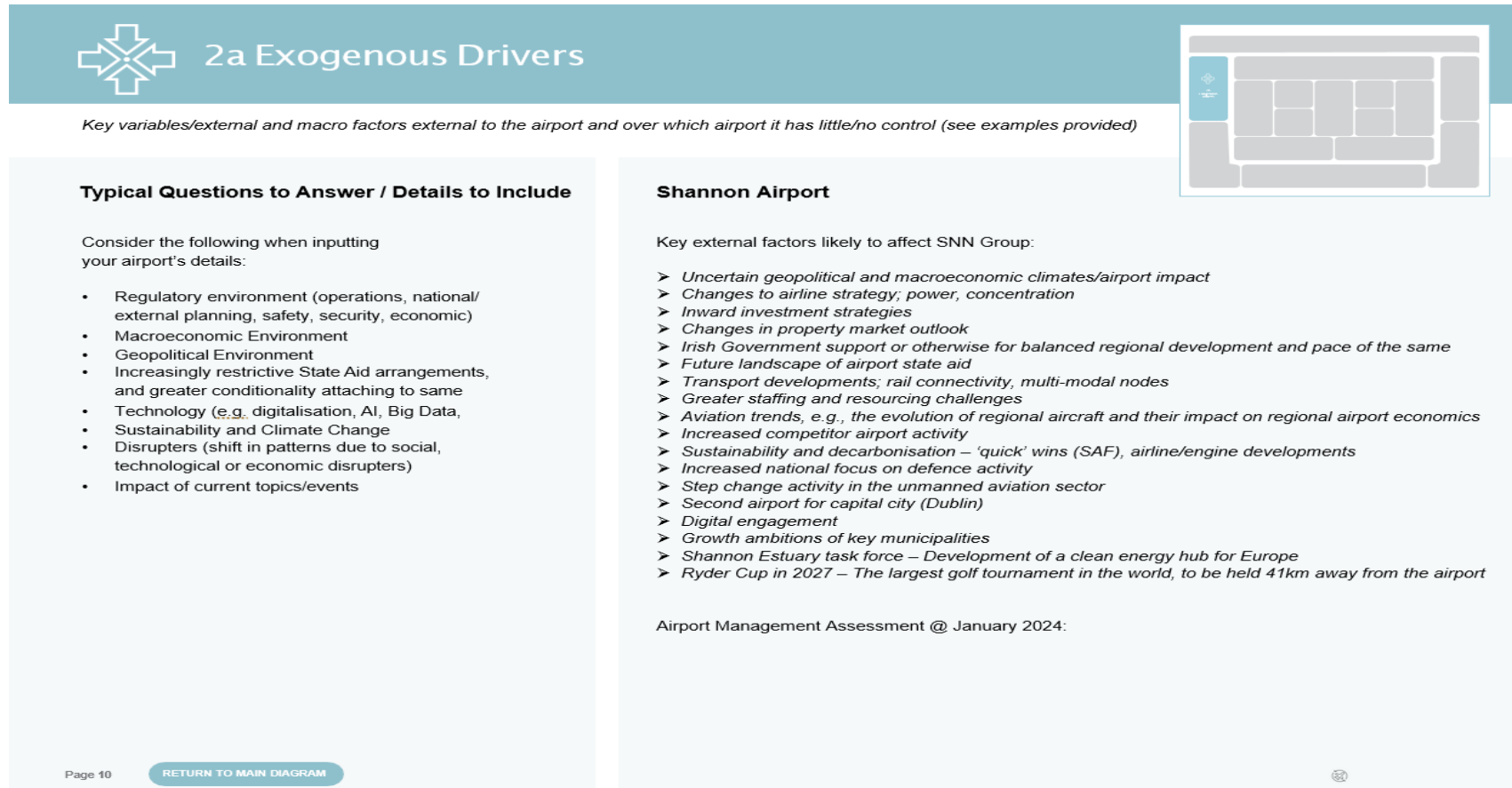


Figure 8-4 Canvas — Endogenous Drivers

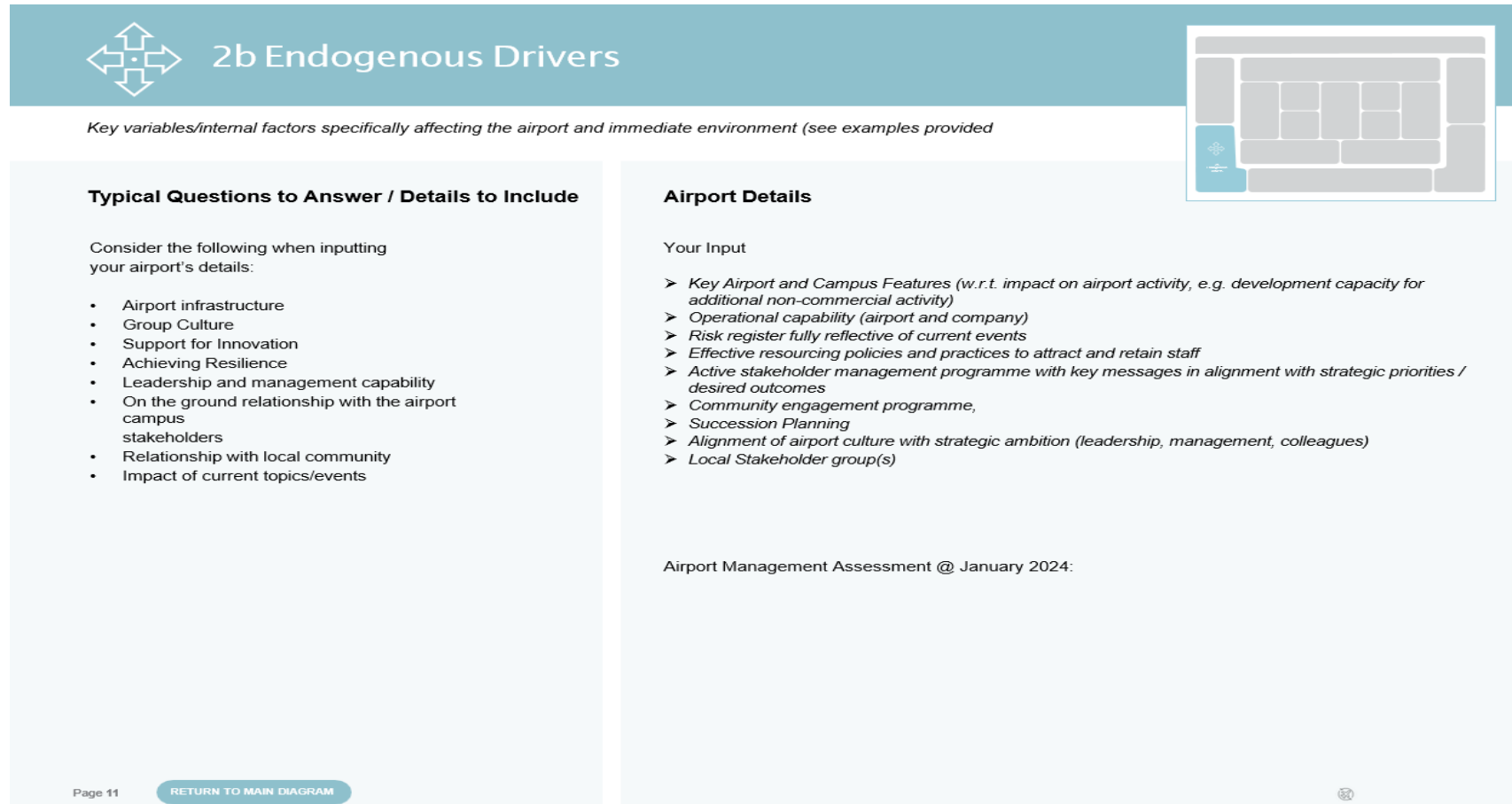


Figure 8-5 Canvas — Key Airport Partners/Stakeholders

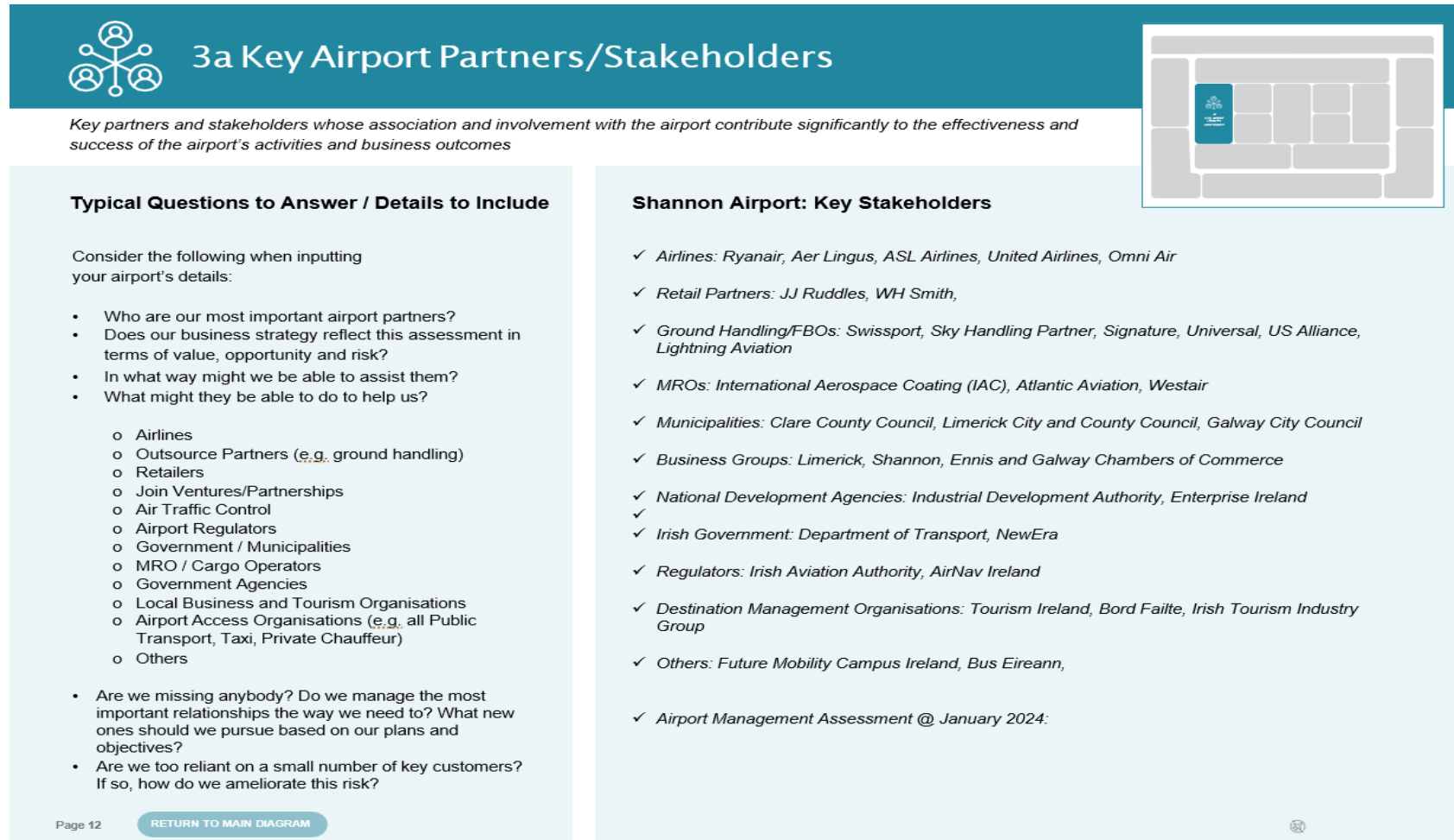


Figure 8-6 Canvas — Airport Strategic Summary



7 Strategic Summary

A summary of the airport's 'essence' and current positioning (20/30 words)

Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- This section of the model is an opportunity for an airport to craft and communicate its 'core' to all stakeholders in summary form.
- It concisely summarises the airport's existing position, unique feature(s) and growth prospects in an assured, confident manner.

Shannon Airport – Strategic Summary

“Shannon Airport: A key transatlantic gateway with a strong UK and European route network, ensuring seamless connectivity and enhanced passenger experiences. A strategic focus on property, innovation and growth, both regionally and nationally.”

Airport Management Assessment @ January 2024:

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RETURN TO MAIN DIAGRAM



This proposed integrated airport business model canvas is designed to be completed by airport leaders and managers for their airport. It is also, however, likely to be of value to research scholars, key airport stakeholders and competitors. One key benefit of considering a model such as this during strategic activities is the ability of airport leadership to ‘see’, test and review the desirability, feasibility and viability of actions, initiatives and innovations in a more integrated manner than heretofore.

8.9 A Reflection on Qualitative Research During Pandemic Times

During the course of this PhD programme, research activities and practices had to adjust to a new ‘virtual reality’ during the period of the pandemic. These observations summarise some of the key features and impacts of this changed research approach.

From the perspective of expert commentary on contemporary events, it was noted that aviation industry leadership observations, covering facts, insights and opinions, were more accessible than previously observed through interviews, webinars and other quality online communication channels, familiar to everybody ‘working from home’. These included, for example, EUROCONTROL’s ‘Straight Talk’ series of conversations with industry (including airport) CEOs (EUROCONTROL, 2024) together with other leading aviation information organisations such as The Official Airline Guide (OAG), the Centre for Aviation (CAPA), Flight Global and Aviation Week. The expression of uncertainty was a recurring and critical feature of these free-of-charge webinars, which took place openly and regularly from the outset. In the past, access to such thinking, whether through subscription, conference or seminar, typically came at a significant cost. It is possible that a recognition of the role of collaboration and openness resulted in this greater stakeholder willingness to share, in real-time, the challenges being experienced, the critical state of the industry, providing an opportunity to highlight the need (a) for industry collaboration and cooperation and (b) for States to act, both horizontally and vertically.

Since 2020 the literature has featured a growing number of COVID-19-related articles, both general and aviation-specific. Topics covered included the effects of the collapse in aviation demand across the sector on routes and services and the impact of deteriorating airport finances. The allocation of State aid and the terms and conditions applied to such support were also studied. With respect to pre-pandemic literature, papers reviewed included the impact of previous crises, such as the 2002–2004 SARS (severe acute respiratory syndrome) outbreak and the 9/11 terrorist attacks. These directions from literature, albeit based on a small number of previous adverse events, also provided valuable insights for researchers, notwithstanding the extraordinary and continued impact of COVID-19.

Previously, Sturges and Hanrahan (2004), while highlighting the advantages of face-to-face interviewing, including ‘close interaction in the environment of the respondent’, had suggested that telephone interviews could provide research information of similar quality in certain circumstances.

The ability to conduct interviews during 2020 and 2021 using video conferencing significantly enabled research activity. A much more extensive range of interviewees was available, enabled by the more convenient planning associated with online conferencing relative to real-world meeting. The almost ubiquitous use of virtual engagement since the outbreak of the pandemic for meetings, conferences, and interviews increased participant familiarity and comfort when using video engagement platforms such as Zoom, Microsoft Teams and Skype, meaning such limitations are not as relevant as they were previously. Furthermore, as Lobe, Morgan, and Hoffman (2020) suggested, interviewee availability was much less of an issue than was experienced during previous research activities, with no geographical and fewer time limitations, allowing for more interviews to be undertaken. This outcome helped address potential interviewee bias issues, as Qu and Dumay (2011) had previously highlighted, by ensuring a broad range of participants from all key airport stakeholder groups, with the most important ones, such as airlines and airports, exceptionally well represented. The necessary formality associated with research interviews was enabled by a pro forma opening section covering consent, privacy, approval to commence and emphasising the interviewee's ability to withdraw at any time.

A further research benefit, highlighted by Jairath et al. (2021), was that the use of videoconferencing platforms greatly assisted researchers seeking real-time inputs and insights into the impact of the pandemic. Teti et al. (2020) also noted the importance of qualitative data collection in gathering and communicating an understanding of the impact of and response to significant events such as COVID-19. This observation can also apply to aviation research, given the devastating impact of COVID-19 on the sector. The benefit to qualitative researchers of becoming familiar with virtual research tools is potentially significant, given the likelihood that remote interviewing will continue to be a key feature of academic research in a post-pandemic world.

Using observations described in this discussion, the introduction and preceding papers, the concluding chapter of this thesis revisits and responds to the Research Questions set in Chapter 1, considers this work's contribution to research and practice, identifies research limitations and suggests topic for further study.

9 Conclusions

9.1 Research Conclusions: Introduction

The principal objective of this PhD research has been to review regional airport activity and performance through the theoretical lens of stakeholder management, considering various airport stakeholder engagement arrangements and activities. Considering this framework and the backdrop of a ‘normal’ operating environment for aviation, which was then followed by the pandemic and an increasingly volatile period after that, this dissertation has considered regional airport characteristics and activity, informed by the research questions that were set out for answer. These were:

- Research Question 1 (RQ1): What are the key characteristics that define regional airports in terms of their definition, performance and impact?
- Research Question 2 (RQ2): How can airport stakeholders be identified and categorised by degrees of importance and levels of collaboration and their impact on the airport business?
- Research Question 3 (RQ3): How can stakeholder management activities affect overall airport performance during external shock events, such as the COVID-19 pandemic?
- Research Question 4 (RQ4): What is the future role of State aid with respect to future European regional airport activity?
- Research Question 5 (RQ5): How might effective planning lead to improved levels of airport activity, performance and business resilience during increasingly uncertain and volatile times?

This concluding chapter summarises the analysis and findings associated with this dissertation, addressing the research questions posed in the introduction and above. It highlights the key contributions to academic discourse, industry practice, and policy factors. Research limitations and areas for further study are then suggested, followed by concluding remarks.

9.2 RQ1: What Are the Key Characteristics That Define Regional Airports in Terms of Their Definition, Performance and Impact?

While an agreed definition for ‘regional airports’ remains elusive (a recurring topic of research) Chapter 1 describes the findings that these airports continue to be typically regarded as secondary to a country’s largest airports and are based in a nation’s recognised, and sometimes defined, subsidiary regions. Route networks are predominantly short to medium-term, feeding traffic into a nation’s main airport, hub airports, locations with high Visiting Friends and Relatives (VFR) traffic and some routes to holiday locations and other regional airports. Passenger volumes are typically less than five million passengers per annum, with lower levels of one and three million defined by European authorities for the purposes of considering levels of State Support for airport operations.

The importance of regional airports and stakeholder engagement to local and regional development

and economic growth is broadly accepted, confirmed by primary and secondary research findings (Chapters 1, 3 and 5). These organisations continue to be recognised as necessary to their hinterland, significantly impacting the regions they serve, particularly in supporting local business and tourism activity. This point was emphasised most strongly during interviews undertaken with airport stakeholders and managers (Paper 3). Justification for this contention is sometimes provided by economic impact statements, which measure inputs and outputs. For the most part, local stakeholders, especially politicians and business representatives, highlight this contribution in a more holistic, non-quantitative manner, for example by emphasising the strength of one-to-one relationships and the ability to resolve issues.

Because of their size, the significant levels of capital investment undertaken for airport infrastructure influence the modest returns achieved relative to larger airports, given their lower passenger numbers and economies of scale (Chapter 1). Future regional airport capital requirements will include investments in sustainability (e.g. alternative energy sources on site) and digitalisation (e.g. elements of a contactless passenger journey through the airport), together with ongoing spending on safety, security and operational improvements. Capital availability/allocation will continue to be a key management challenge for airports, considering these future investment needs (Chapters 6 and 7).

Regional airports faced many significant business challenges in 2024, some familiar and some increasing in importance. Already intense competition for airline business (Chapters 1 and 8; Papers 1 and 2) has increased in intensity since the pandemic (Paper 5), increasing pressure on airport costs (with variable expenditures such as employee costs most capable of being improved in the short term, but at what cost). This trend has placed a greater regional airport focus on non-aeronautical revenue, given the 'hit' to aeronautical revenue from keenly negotiated airline deals (Chapters 7 and 8). It should be noted that while for larger airports, economic regulation and per-passenger airline charge 'caps' may also affect aeronautical revenue, the 'single-airline' dependence risks are not as severe, given greater demand and a likely better spread of airline customers.

It was shown that many regional airports have become increasingly dependent on a single (usually low-cost) carrier (Paper 5). For many, the financial risk associated with such single-airline power and dependence was reaching a critical stage in 2024. For example, the balance between aeronautical and non-aeronautical revenue has likely tipped in favour of the latter due to reduced airline revenue. If, however, an airline, with its more agile and nimble (literally mobile) airliner assets, decided to suddenly leave an airport because it could not continue to offer such arrangements, the financial consequences would be devastating for that location. Achieving a more balanced airline customer base (even if it is just two or three carriers) helps reduce this risk. The ability and willingness of low-cost carriers to leave airports if they 'do not get their way' cannot, however, be underestimated.

Activity diversification, such as described for the Shannon Airport Group (Paper 1), is another way

in which airports might mitigate single-airline risk. In addition to the optimum use of airport assets, including for other non-aeronautical purposes, property activity might be an option, given most airports' large physical 'footprint'. While such business diversification greatly assisted Shannon Airport Group during the pandemic, much of its property business was, however, acquired as part of a state decision to transfer ownership of a property company to the airport group. Therefore, the transferability of this type of ownership model to other airports is likely to be limited. The opportunity for multi-function airport business models is also modest. Other types of diversification may include involvement in new airport innovations, which are easier to explore and evaluate in less busy airfields. While costs associated with such experimentation might be modest, revenues received are also likely to be low, however, with one airport leader noting that 'experimentation doesn't keep the (runway) lights on'.

Location, location, location is important for airports too. If a regional airport's location is sub-optimal, for example, due to low population density or the proximity of easily accessible larger airports (with more routes), it will continue to face challenges attracting new activity and exhorting local populations to use the airport. Many regional airports were built in locations where they would not be built today, given the changed transport infrastructure and greater large airport accessibility via motorway or high-speed train. Many others were former military airfields.

Economic and aviation-related central government policies will be crucial for airport activity and performance in many nations, especially smaller ones (Chapters 3, 5 and 6). Governments often promote policies supporting economic growth in a balanced manner, although not to the disadvantage of 'big city' development. Indeed, key investments sometimes appear to continue to favour larger cities and their surroundings at the expense of regions, and regional airports. It will never be possible for policymakers to direct airlines to fly to a particular location. If economic activity is increased by, for example, government decisions to invest in industrial and economic infrastructure in these regions, this policy is, however, likely to benefit airports and other local infrastructure organisations.

The challenges described above were exacerbated by the pandemic and an increasingly demanding and volatile environment for regional airports. Post-pandemic, airport observers continued to believe that many regional airports are unprofitable and that their survival would be far more uncertain without State aid (Chapters 5 and 6), a topic further considered later in this section. It is difficult to see any significant shift to private airport ownership for all but the largest airports. If fiscal conditions tighten at the national level, governments may, however, become more open to risk-sharing models involving the private sector, for example, constructing a dedicated low-cost terminal or building commercial/office facilities on airport land.

Policymaker deliberations regarding the future shape and size of regional airport infrastructure will continue (Paper 4). The adage that 'the best airport is the one that is already there' suggests that any

attempts to close airports, especially those in public ownership, are likely to be resisted, even though the corporate structure and ownership of such entities might be affected.

9.3 RQ2: How Can Airport Stakeholders Be Identified and Categorised by Degrees of Importance and Levels of Collaboration and Their Impact on the Airport Business?

9.4 RQ3: How Can Stakeholder Management Activities Affect Overall Airport Performance During External Shock Events, Such As the COVID-19 Pandemic?

In Paper 3 airport stakeholders were identified in terms of their importance and influence on an airport's operations and the level of airport engagement required and expected. Airports and airlines were universally recognised as each other's key stakeholder by most other stakeholders, with the nature of these relationships impacting the shape of other airport stakeholders, for example ground handlers and concessionaires. Other significant stakeholder groups identified included the airport's owner, national and local government, business and tourist organisations, companies operating at the airport, passengers, and airport employees. The perceived importance of many of these stakeholders increased following the pandemic, in particular employees, national government, owners and, of course, airlines. Indeed, collaboration with airlines and other airport stakeholders has become more embedded, and the predominance of the airline role and associated power is ever more important, with potential adverse impacts which need to be managed.

The results from semi-structured interviews emphasised that stakeholder relationships were regarded as necessary by all airport managers and stakeholders, even if the term 'stakeholder' was not universally recognised or employed. Generally, larger organisations, whether airports or their stakeholders, had a more formal and structured approach to stakeholder activity, for example, regularly scheduled meetings and activity templates. Many aviation organisations have structured stakeholder arrangements covering operational activities such as air traffic management, safety and security, including engagement with Airport Operator Committees, Aviation Authorities and Departments of Transport. It was shown in Paper 2 that Irish airports, mostly State-owned or State aid-dependent, had greater levels of government engagement than airports in the UK's mostly privately owned airport system. Specific airport stakeholders, e.g., airlines and concessionaires, have high levels of bilateral engagement. Much post-pandemic engagement was expected to be virtual. Unlike in office environments, however, a higher percentage of airport workers have returned to their physical location, and many other airport stakeholder meetings have reverted to a face-to-face arrangement. No significant change is expected to these arrangements.

Pre-pandemic airport stakeholder engagement was generally regarded as positive by airport stakeholder interviewees (Paper 3). Central tensions focused on contract negotiation and day-to-day operational issues, especially at peak times or in response to external events. Extremely high levels of positive stakeholder interaction were observed during the initial pandemic shutdown period, but

the initial post-shutdown phase was much quieter, with organisations focusing on their own activities and challenges.

The strength of personal relationships and problem resolution success, rather than more formal review activity, was seen to be vital in interviewees' assessments of the effectiveness of stakeholder activity. While not the most surprising finding, this dependence on individuals could impact the strength of airport stakeholder activity if current staffing challenges persist, particularly the loss of key airport employees (and associated 'organisational memory') and to frequent a change of key stakeholder relationship managers. Stability with respect to such relationships, particularly the most important ones identified, is desirable, if not essential.

Commercial and strategic engagement, though it sometimes involved the most senior parties from the airport and stakeholder organisation, was less frequent and usually occurred in response to specific events such as route launches or contract renewals. A more structured and planned approach to these crucial relationships is feasible and desirable, given the increased rate of change, with its attendant airport impact, in the aviation industry. This approach should allow for better future anticipation and assessment of the impact of stakeholder activities/relationships on performance, for example, expected future airline developments (including route selection) and other trends that might impact activity and facilities at the airport. Furthermore, the challenges and issues for regional airports highlighted above emphasise the importance of effective local stakeholder activity promoting the use of local airports and advocating central government support for regions in addition to capital cities (whose growth ambitions also have to be considered).

The pandemic and subsequent uncertain environment highlighted the desirability of effective and planned collaboration amongst aviation stakeholders. Some authorities, such as EUROCONTROL (Paper 3), had highlighted lack of collaboration as a reason for a less-than-optimal return to the air once post-pandemic government restrictions were lifted. Practitioners should consider how shared stakeholder collaboration might be achieved in the run-up to future events affecting airports and aviation. Indeed, at a late 2023 aviation management conference in Luxembourg, Mr. Mohamed Khalifa Rahma, ICAO Director, when advocating for a better aviation response to the next crisis, argued that 'to achieve resilience, everybody has to work collaboratively'. While the return to pre-pandemic airport passenger levels may have reduced the sense of urgency that existed during 2020 and 2021, the emergence of new uncertainties since then underpins the importance of such collaboration.

9.5 RQ4: What Is the Future Role of State Aid With Respect to Future European Regional Airport Activity?

There was little doubt that regional airports would continue to face the same cost and revenue challenges during 2024 and beyond as before, a post-pandemic point made by many stakeholder interviewees (Paper 3). Some factors, for example, continued intense airport competition for cut-price airline deals, added further to the pressure of efficiently managing airport costs and revenues. State aid will continue to be an essential future factor affecting regional airport economics (Chapters 4, 6 and 7).

The European Union's State aid framework is due to expire in 2027; this date having been extended for three years from 2024 due to the pandemic. While such aid for regional airports is likely to continue in some manner thereafter, the expiry of the current scheme represents an opportunity for policymakers to reconsider previously accepted rationales for State aid and apply more robust assessment criteria, in particular identifying, on the one hand, how to make enduring the positive impact of a single State aid intervention to a regional airport, versus such airports relying on this aid as a continuing 'third revenue line', with severe consequences for viability if it disappears, on the other. This issue again highlights firmly held views on the role of a regional airport. Many smaller airports are in peripheral locations, including remote areas and islands. As they are the primary and sometimes only entry point for these locations, their role in connecting citizens to other parts of a nation for medical, social and economic reasons ensures that they should and will continue to receive aid. For other regional airports, seen as a fundamentally important 'engine' for their regional economy, receipt of ongoing support to sustain operations should be accompanied by an increased focus on viability and (financial) sustainability in the medium to long term.

It is not expected, however, that this State aid conundrum will be finally and decisively tackled, with some elements of a 'kick the can further down the road' approach, especially with respect to continued support for unviable airports, likely. As shown in Paper 4, however, the potential for improved decision-making exists if policymakers apply a more rigorous set of assessment criteria, for example, reviewing airport aid from the perspective of the national airport system and of potentially transformational regional airport investments in sustainability and digitalisation initiatives. Airports themselves will need to pay special attention to financial actions that might reduce their dependence on State aid, and stakeholder engagement with local representatives and policymakers involved in State aid activity will increase in importance. Steps airports could take to minimise future aid requirements include increased route activity, enhanced cost and efficiency management, income diversification, and expansion of airport-related or airport-focused commercial activities. Practitioners and policymakers may be interested in the EURAIR assessment framework for State aid applicability developed as part of this research, which considers factors likely to influence State aid decisions (Appendix A).

The level of airport closures remains extremely low. Despite economic arguments, there is no substantial evidence that it will increase in future years. No matter how challenging a nation's finances become, any move to close airports will likely be resisted, a point alluded to by some interviewees (Paper 3). If the view persists that most regional airports will not survive without State aid, and should therefore receive it, and that such aid is an embedded third revenue line for these airports, this dogma is likely to be an inhibitor of significant structure change. It should be noted, however, that, since 2010, several regional airports have closed, either entirely or to commercial traffic. These include Plymouth, Blackpool and Doncaster/Sheffield in the UK; Galway, Sligo and Waterford in Ireland and Rygge (near Oslo) in Norway. While some airport stakeholders believed that this was likely to become an issue in future years, they did not want to countenance the probability of this happening to *their* airport (Paper 3). In a new post-2027 State aid regime for European airports (Paper 4), this inevitable challenge will need to be confronted in a way not heretofore experienced.

The economics of airports (Chapter 1) should be factored into decisions regarding airport positioning within national policy and regarding State aid procedures applying to them, i.e., there should be a clearly defined role for regional airports in terms of activity and impact, clear policymaker expectations and an understanding of the impact these decisions have on airport performance and feasibility.

9.6 RQ5: How Might Effective Planning Lead to Improved Levels of Airport Activity, Performance and Business Resilience During Increasingly Uncertain and Volatile Times?

'The only constant is change' (Heraclitus); 'Uncertainty is the only certainty there is' (Paulos).

A much more volatile and constantly changing landscape can be expected for regional airports throughout the remainder of the 2020s, and beyond, as described in Paper 5. The many challenges they face, exacerbated by the impact of the pandemic, will continue to be affected by subsequent geopolitical and macroeconomic uncertainties. A further area where regional airports experienced significant post-pandemic difficulties was how to attract and retain staff, and these airports will continue to face the twin challenges of less attractive locations, sometimes unsocial working hours, and pressure to reduce employee costs due to intense competition for keenly priced airline deals.

From a regional perspective, the support of local communities for increased airport activity will remain crucial. The 'use it or lose it' message applies equally to airports and their route connectivity. Even if performance is challenged, the perceived lack of 'jeopardy' concerning airport closures suggests that more radical steps may be necessary to improve local use of local airport facilities, including during uncertain and volatile periods described in Paper 5. Indeed, increased and more systematic stakeholder collaboration will be essential in airport and aviation's responses to these

challenges and future emergency events, which are expected to arise more frequently.

Airport stakeholder activity should become multi-directional, for example with respect to triangular stakeholder models involving airports and airlines, together with third parties including Destination Management Organisations (DMOs) or local government. Furthermore, developing a stakeholder structure to support the establishment of ad hoc, succinct, and issue-focused stakeholder groups will help improve the effectiveness of these bodies with respect to idea/initiative generation and follow-up activity / implementation.

With respect to decarbonisation, the most significant challenges lie ahead. Regional airports are likely to be the first to experiment with and benefit from major decarbonisation initiatives, as these might initially involve smaller engines and smaller aircraft, of the size more frequently seen in smaller airports (Paper 5).

Considering these aviation industry forces, national policymakers should review and more strongly align (1) national economic policies, (2) national/local aviation policy and (3) the manner of support provided to regional airports. For example, are there too many such airports in Europe? State aid and airport viability characteristics may both need to be redefined. If national policy direction favours larger cities (explicitly or implicitly) and regional imbalances continue, it might be easier for governments to conclude that there are too many airports. Furthermore, if an airport receiving State aid is situated in an area neglected by national planning policies, where most economic support is concentrated on large cities and their surrounding regions, the government may not be maximising the value of such airport aid, at a cost to its taxpayers. Many countries may need to assess, review and align national economic policies, national/local aviation policy and the support provided to smaller airports in a structured manner that better reflects this volatile and constantly changing external environment.

Fit-for-purpose strategic frameworks can assist practitioners, policymakers, and researchers to better understand, plan and respond to the current and expected future aviation and airport environment. This objective can be achieved by assessing existing airport performance while considering the additional impact of future external shocks (not just pandemics) on airport performance and certainty. How can an airport become more resilient to these factors? What impact does this have on resilience? The strategic airport canvas framework developed as part of this research in Chapter 8 (*Flightpath*), is supported by two further assessment tools: VUCAIR (Paper 5), which develops a framework for assessing and planning airport activity in an environment with continuous and unexpected change and EURAIR (Paper 4), which highlights suggested future airport State aid assessment criteria. The main objective of these strategic management frameworks is to support airport leadership efforts to improve activity, performance and resilience, during a period when the time interval between significant shock events is decreasing.

9.7 Overall Research Contribution of This Dissertation

This PhD thesis has contributed meaningfully to stakeholder management by providing researchers and practitioners with a deepened understanding of airport stakeholder management characteristics and activities, both during stable periods and at times of crisis, such as a pandemic event. It has explored how aviation organisations manage and assess stakeholder activities and how they respond to urgent stakeholder needs during a crisis event, highlighting the interplay between the stakeholder theory framework and practical applications and outcomes of the same during a period of crisis management.

The thesis contributes to strategic management theory and practice by suggesting *Flightpath*, a strategic framework for airports to recognise a more uncertain and rapidly changing external environment. This model, specifically tailored for the airport sector, builds upon Osterwalder and Pigneur's Business Model Canvas. This enhanced approach contributes to academic discourse and offers airports a pragmatic guide to navigate ever evolving and rapidly changing organisational challenges. Through a comprehensive analysis of a specific airport, this work addresses the gap between theory and practice, providing valuable insights for researchers, policymakers, airport managers and stakeholders involved in airport activity.

This PhD thesis makes the following key contributions:

9.7.1 Stakeholder Theory

1. This thesis adds to the body of academic knowledge regarding stakeholder management's potential impact on future regional airport activities and performance, through a series of semi-structured interviews with airports and their stakeholders. It contributes a detailed 360-degree assessment of the nature and management of airport stakeholder relationships during normal periods. These interviews were conducted with reference to the stakeholder management theoretical framework proposed by the author, based on the Freeman approach and guided by previous theoretical research undertaken by Freeman and others. Key framework factors comprised insights with respect to stakeholder identification, importance, engagement and assessment.

2. The thesis also makes a theoretical contribution to research for scholars and practitioners regarding the immediate impact of and likely stakeholder response to sudden future shock events of a similar nature and scale to the pandemic (and its various stages) on regional airports, stakeholder activities and relationships. Key differences and similarities were discerned, such as the effect of a rapidly evolving crisis event on stakeholder dynamics, performance and importance during the pandemic aftermath period.

3. This research has also contributed to stakeholder management research by highlighting the need for aviation organisations to become more multi-directional; for example, airports becoming more

proactive with respect to identifying trends and developments potentially affecting key stakeholders such as airlines, and responding to the increased importance of others, for example, employees as stakeholders. The desirability of collaboration and effective relationships amongst was also suggested, as the aviation industry and its stakeholders continued to manage the pandemic and other evolving effects affecting the aviation industry.

9.7.2 Strategic Theory and Practice

4. With a focus on airport organisations, this thesis contributes to the strategic management framework discourse, suggesting enhancement of a current framework which has the potential to help researchers, practitioners and policymakers identify factors which inform key decision-making processes for airports by reflecting and presenting an organisation's key features, strengths and challenges in a unified manner. The draft Integrated Airport Business Model Canvas, as developed, builds on Osterwalder's Business Model Canvas and provides a comprehensive, multifaceted view of an airport's business landscape, containing a broad range of organisational components and informed by existing strategic tools. The framework also supports airport development of a structured assessment and engagement approach to stakeholder activity. It embraces other tools suggested by this research, including the VUCAIR and EURAIR/State aid assessment frameworks. Airports can use such an integrated airport business model canvas to inform critical decision-making processes.

9.7.3 Other Contributions to Research

Airport diversification. A contribution to assessing positive and negative factors for a regional airport model with diversified activity and income streams beyond aviation revenue. Also, an assessment of the value of an airport's focus on innovation/entrepreneurship

Comparison of airport activity in adjoining jurisdictions. A contribution to the assessment of differences between the UK and Irish airport systems, one of which is overwhelmingly private, the other almost entirely State-owned. Alignment of regulatory frameworks when both jurisdictions are part of a Common Travel Area, but operate in different economic systems, since Brexit, was also considered.

Though airport-focused, the research approach has potential relevance and application to other parts of the aviation industry, such as airlines and Air Navigation Service Providers. This research, and the strategic and assessment frameworks presented in this paper, can also be applied outside aviation towards different industries with similar characteristics, for example commodity organisations that have a strong social role, are partly liberalised and highly regulated, e.g. hospitals, energy and telecommunications sectors.

9.8 Research Limitations and Areas Recommended for Further Research

Recognising limitations inherent in any research methodology is essential to ensuring that challenges associated with gathering primary and secondary research are understood and that steps are taken to mitigate the adverse impact of such limitations. This approach will likely support a more transparent approach to assessing key airport and stakeholder research topics. A number of potential limitations affecting this research are considered in Section 9.8.1. Topics for future research have been identified (Section 9.8.2) where further investigation could provide additional insights into regional airports' economic impact and management. These include airline power, longitudinal studies, definitions/classification and identification of core and secondary success factors for regional airports.

9.8.1 Potential Research Limitations of This Dissertation

Was geographic concentration a concern? Most of the primary research was conducted into Irish airports and stakeholders.

The concentration of interview activity on Irish airport managers and stakeholders may produce outcomes that are difficult to extrapolate beyond the region or to the continent. This limitation can be balanced against the fact that a considerable number of interviews were conducted with each stakeholder type. In addition, almost all airline stakeholders, for example, European or Ireland/UK country managers, dealt with airports in multiple jurisdictions so that some geographic factors could be explored.

Many respondents, for example, airlines, emphasised that their comments about Irish airport engagement reflected similar observations in other countries they serve. Airport size was considered a more significant predictor of differences, e.g. formal versus informal stakeholder processes. This concern is also mitigated by the exceptionally high standardisation of airport activities across jurisdictions through ICAO Annexes and EASA Guidelines.

This research was carried out when events were changing and unfolding constantly; how representative can these findings be?

While much of the author's research period encompassed the pandemic and subsequent geopolitical uncertainties, the interview and analysis sections of the thesis and papers explicitly featured pre-pandemic research while also focusing on factors associated with a more volatile future environment in recognition of likely increased levels of volatility and the more frequent occurrence of significant events. Suggested future research topics include the possibility of improving the resilience of airports through greater focus on and response to such volatile conditions,.

How robust is your assessment of airport performance, given your focus on passenger activity rather than airport financial performance?

The robustness of airport passenger performance assessment is strengthened by the timely and standardised nature of airport passenger information, which is available on an airport-by-airport basis shortly after each reporting period. Unfortunately, many airports do not publicly provide detailed financial information, for example because they are privately owned or part of an airport group. This limitation was partly mitigated by the use of cost and revenue per passenger data, aggregated by airport band, provided by Airports Council International (ACI). This approach provides a broader understanding of financial trends within the industry, despite the lack of information by airport. Future research, incorporating key financial benchmarking measures by airport passenger band could significantly enhance the analysis. This would allow for a more nuanced understanding of airport performance, particularly in the post-pandemic era, where financial stability and efficiency are critical. By combining already available passenger data with such information, a more complete assessment of airport performance, including links between operational activity and financial performance, may be possible.

The number of responses to the expert airport manager survey was low; how relevant are the findings?

The number of fully completed responses to this survey was disappointing. Much care went into the preparation of the survey, but at an estimated 20 minutes, it was likely too long for busy airport managers to complete it in one session at a time when many airports were dealing with significant operational challenges. The narrative information provided was, however, extremely enlightening regarding stakeholder observations and opinions with respect to post pandemic events, including the impact of a more rapid than expected ‘return to the air’ than that expected by airports and other stakeholders.

9.8.2 Areas for Further Research

Core stakeholder interviews — Introduction of a longitudinal element to research — Re-interview selected 2021 interviewees

New interviews with a meaningful proportion of the stakeholders interviewed in 2020 and 2021, together with new interviewees in similar airport manager and stakeholder roles, would provide an opportunity for updated and diversified perspectives on key stakeholder, business and pandemic topics, providing an opportunity to compare and contrast critical feedback from different stages, including interview perspectives on how factors affecting their organisation unfolded relative to observations expressed previously, and further perspectives on contemporary issues, in particular uncertainty and volatility, affecting airports and their stakeholders.

Further development of Integrated Airport Business Model Canvas and associated strategic airport frameworks through engagement with airport management and leadership

Further develop and disseminate the Integrated Airport Business Model Canvas *Flightpath* (Figure 8-1), including incorporation of the suggested VUCAIR and EURAIR strategic frameworks. This figure contains the overall framework for the new canvas, and to demonstrate likely airport content, each section of the framework has been completed for Shannon Airport (Appendix B). Future research would include an assessment of *Flightpath*'s application to different airport types. Furthermore, how decisions are informed can be tested, for example through the effect on the model of (1) a change in exogenous or endogenous circumstances adjusting one component, (2) the impact on the overall model of an adjustment to any specific component, and/or (3) its contribution to informing an airport's response to other crises. The model's potential application to other airport stakeholders, such as airlines, could also be evaluated. This further research activity might form the basis for a journal article and might also interest practitioners and policymakers.

Single-airline dependency in European regional airports — A critical airport vulnerability?

A core success factor for a smaller airport is likely to be a long-term commercial airport charges agreement with a base carrier, as this will help to underpin route activity and airport performance on a multi-year basis. The negotiating power of major airlines when negotiating such airport charge deals, combined with a desire by airports to offset lost aeronautical revenue with increased non-aeronautical revenue, can however lead to an airport's over-dependence on one airline, bringing associated financial risks. A loss of this business would be catastrophic for these airports. Further research covering airports across Europe, e.g., those with less than five million passengers per annum, would identify market share concentrations of the largest (and top two) airlines in each airport to assess the extent of any such single-airline dependence across the European regional airport estate.

Airport definitions — A matrix approach for practitioners, policymakers and researchers

No agreed definition exists for 'regional airports', with current definitions mostly focusing on passenger levels (less than three or five million passengers per annum) and route types served (e.g. short to medium, point to point).

Two factors suggest that there is an opportunity to review airport definitions. For regional airports, especially in European Union nations, State support is likely to come under greater future scrutiny. Furthermore, a more nuanced view of what an airport is might be beneficial to leadership and stakeholders during increasingly challenging times. By considering airport taxonomy on a matrix basis, factors other than passenger numbers and routes could also be considered, such as the specific role of a given airport and the size of the national market. Such a classification might provide a better basis for researchers, practitioners and policymakers to assess key actions, supports, and other factors. A matrix approach to this topic could support a more precise and relevant definition using passenger number *and* airport activity assessments on a matrix basis. Further research would seek to identify characteristics associated with each matrix category, potentially improving decision-making information available to practitioners and policymakers.

Identification of core and secondary success factors for regional airports

Research seeking to identify factors likely to influence airport performance and resilience should be considered. A template which seeks to identify core and secondary success factors for regional airports could be developed. This would be likely to be of interest to researchers, policymakers and airports themselves. Such an assessment would be informed by further primary and secondary research and could provide fresh insights into perceived regional airport success factors, including identification of both fixed characteristics and those characteristics that are sensitive to airport size, ownership, and activity mix.

Regional Airport Performance Assessment: A Benchmarking Approach?

Future research, incorporating key financial Airports Council International (ACI) benchmarking measures by airport passenger band, could significantly enhance the analysis presented in this thesis. This would allow for a more nuanced understanding of airport performance, particularly in the post-pandemic era, where financial stability and efficiency are critical. By combining already available passenger data with such information, a more complete assessment of airport performance, including links between operational activity and financial performance, may be possible.

Overview of EU approved State aid by geography and category, 2014–2024

The European Union currently has no dedicated information source containing a complete, accurate and systematic overview of State aid provided to European airports, even though more succinct summaries of such aid provided during the pandemic period are available. Development of a comprehensive database which would provide such information by category and geography over (say) the past 15 years is likely to be of interest and benefit to researchers and policymakers.

Business Contingency — Use interview feedback to assess the crisis management element of aviation responses to pandemic

The semi-structured interview process (2020/2021) gathered valuable insights from 64 airport managers and stakeholders regarding reactions, actions and perspectives associated with the initial and sudden emergence of the COVID-19 pandemic. Interviewees provided information regarding how, where and when they first heard about the COVID-19 pandemic, describing some of the immediate reactions and actions taken by them and their teams. There is potential to categorise and assess these perspectives and responses from an emergency management perspective, identifying key trends and lessons for future similar events. Dublin City University's (DCU) Business School offers an Emergency Management Master's programme, a key feature of which is to develop 'the ability to prepare for, respond to, recover after and learn from an emergency or crisis situation'. Consideration of the interview information available on this specific element of the pandemic, in collaboration with Emergency Management researchers at DCU, has the potential to contribute to existing knowledge in this area.

9.9 Concluding Remarks

This thesis has found that European regional airports are acknowledged as essential to the regions they serve and have faced high levels of competition and fragile financial circumstances. Many of these challenges were exacerbated by the impact of the COVID-19 pandemic. Practitioners and policymakers have continually raised questions regarding the future direction of these airports. Indeed, regional airports faced a particularly challenging set of headwinds in the spring of 2024, including intense competition, increased single-airline dominance, dealing with the pandemic aftermath and subsequent geopolitical uncertainties, and a more uncertain future State aid regime.

Many familiar and some new regional airport themes arose during the course of this research. These included, for example, the increasingly fragile operating environment combined with intense cost and revenue pressures and the need for new investment during a time when airport capital may not be as plentiful as before, due for example, to profit-sapping airline charges deals which increases in non-aeronautical revenue will not be able to fully offset. The future allocation of operating aid to these airports may also be more uncertain after 2027.

Regional airports have remained crucial to Europe's transport network, providing air connectivity for economic and social benefit. These airports were core to post-pandemic tourism recovery across the continent, especially when long-haul markets such as the United States and Australia were still closed. Economic challenges persist, nonetheless, with poor economies of scale associated with infrastructure, regulation, sustainability and digitalisation investment costs relative to larger airports, as reported. Even before the pandemic, Thelle and Sonne (2018) highlighted the adverse impact of airlines' incessant cost focus on airport economics, giving rise to much greater airport competition. Such competition between airports remains strong, with 'less than a dozen major airlines / airline groups... [having] close to 800 European airports to choose from when looking at route development and business opportunities' (ACI, 2023). Smaller aircraft serving smaller airports may lead aviation towards substantial decarbonisation efforts (electric battery-powered airliners are initially likely to cater for smaller passenger loads). The timeframe for these developments remains uncertain, however, notwithstanding the expected roll-out of initiatives during the coming decade supporting the achievement of 'Net Zero' in aviation by 2050.

When considered alongside the above factors, future national and European airport support and aid policies are likely to have more significant implications for airports than previously. Does Europe have the right number of regional airports? Might certain regional airports be increasingly seen as unsustainable, given their long-term loss-making characteristics as described, and if so, what consequences might these changed perceptions have for their future viability? While it has been argued that many regional airports should never have been built or developed, it is likely to be particularly challenging, politically, to close a regional airport, irrespective of viability. Graham (2014) also highlighted the conflict associated with successfully balancing regional airport economic benefits on the one hand and the requirement of national governments and the European Union to protect airport competition and society on the other. Like politics, all regional airports are local, each with their own story. ACI, the airport representative body, continually emphasises that there should be no 'one size fits all' mindset when responding to these challenges (ACI, 2023).

Through the lens of stakeholder activity, research interview and survey feedback and a dedicated stakeholder management framework, this dissertation has confirmed the importance of regional airports to local/regional development and economic growth. It has provided a detailed review and assessment of airport stakeholder relationships and activities during normal and emergency times, considering prospects for smaller airports during and following periods of uncertainty and volatility. The thesis contributes to a more comprehensive understanding and management of these organisations and has highlighted the challenges they have faced for many years. A strategic framework prototype, *Flightpath*, has been developed to provide a holistic and comprehensive view of an airport's organisation and positioning. The framework considers airport strategy, resources, propositions, stakeholders and performance. Influenced by this thesis's research findings, its objective is to help airports better anticipate and respond to increasing uncertainty and volatility and

deliver improved business performance, while recognising the importance of stakeholder management and other key factors such as the increasingly uncertain future environment for airports.

The future landscape for airports, especially regional airports, will indeed continue to be uncertain, providing many demands and challenges for airport managers and lawmakers in a constantly changing global environment. The significant and fundamentally important role of regional airports, both locally and nationally, continues, however, to be recognised by their key stakeholders. The author hopes that this dissertation, with its discussion of key topics and proposed strategic frameworks, will be useful for researchers, practitioners and policymakers, and will help in developing an approach towards effective airport management during uncertain times.

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11 Table of Appendices

Appendix	Description
A	<u>EURAIR: State Aid Assessment Framework</u>
B	<u>Flightpath: Integrated Airport Business Model Canvas</u>
C	<u>Primary Research Activity: Plain Language, Consent Statements and Participant Communication</u>
D	<u>Primary Research Activity: Survey Questionnaire</u>
E	<u>Research Ethics Committee (REC) Approval Certificate</u>

Appendix A: EURAIR — State Support for Regional Airports: Post-2027 Assessment Factors for Policymakers

EURAIR: State Support for Regional Airports: Post-2027 Assessment Factors for Policymakers and Practitioners

NO.	FACTORS FOR CONSIDERATION	KEY SUPPORTING POINTS	KEY OPPOSING ARGUMENTS	IMPORTANCE (H/M/L)
1.	Maintain and Enhance Air Accessibility / Connectivity Connectivity and Accessibility	<ul style="list-style-type: none">• Recognises the key role of regional airports in providing air connectivity for remote, peripheral, less populated areas.• Promote and enable business and tourism activity.• Community access to essential services (e.g. health, education) on a more equal basis.• Regional airports can also increase passenger and airline options and traffic via airline networks and connections with larger/hub airports.	<ul style="list-style-type: none">• Provision of State Aid / route support to a number of airports in a similar geographic market (e.g. within 200km of each other) may affect connectivity as certain routes may never be feasible if more than one airport in such a zone is competing for similar connectivity.• Inefficient distribution of State Aid subsidies could give rise to surplus capacity and route oversupply, especially at more peripheral airports, giving rise to adverse financial and sustainability impacts.	HIGH
2.	Local/Regional Economic Development Tourism Activity	<ul style="list-style-type: none">• Regional airports contribute to increased employment, tourism and business volumes through direct, indirect, induced and catalytic/spillover impacts.• This effect encourages capital investment in the airport's hinterland, further increasing connectivity and economic activity and diversification by attracting new businesses and industries, reducing the risk of 'single industry' concentration.• Retaining regional connectivity is an important factor in retaining existing business and investment in the regional economies.• At the European level, regional airports facilitate social cohesion and cultural activity by connecting people with different parts of Europe.	<ul style="list-style-type: none">• Airport subsidies may favour those who can afford to fly regularly over less advantaged citizens, notwithstanding the use of State support for Public Service Obligation (PSO) routes.• Other groups who do not have this luxury might benefit more if subsidies are provided to public transport or other community services.• Economic benefits can be overstated (e.g. overlapping market areas considered for economic impact studies).• The full cost of State subsidies (taking 'opportunity cost' factors into account) is not given as much consideration as perhaps it should be.• In the case of constraints on public funding, State Aid for regional airports needs to be rationalised and well supported.	HIGH

EURAIR: State Support for Regional Airports: Post-2027 Assessment Factors for Policymakers and Practitioners

NO.	FACTORS FOR CONSIDERATION	KEY SUPPORTING POINTS	KEY OPPOSING ARGUMENTS	IMPORTANCE (H/M/L)
2. (ctd.)	Local/Regional Economic Development Tourism Activity	<ul style="list-style-type: none">Many areas have distinct local identities and regional airports can help preserve and enhance these.Many European regional airports are located in tourist locations and areas of historical/cultural interest and/or natural beauty.For this reason, regional airports can contribute sustainability benefits as inbound international visitors have direct access to key tourist destinations and their hinterlands reducing CO2 emissions associated with journeys times from main airport.Regional airports are major drivers of tourism activity, provide inbound access to these areas, enhancing local hospitality credentials and generating additional income for the region.		HIGH
3.	Employment and Fiscal Support Balanced National Development	<ul style="list-style-type: none">Airports are major employers, taxpayers and ratepayers in their hinterland.This contribution is enhanced by airport stakeholder activity and employment in the airport itself and its surrounding area.Airport activity provides for increased employment in other key local sectors including tourism and hospitality, small business activity and transportation (e.g. public and private passenger transport).	<ul style="list-style-type: none">When public funds are limited, provision of State Aid to smaller airports may not prove to be the best use of such resources in terms of economic viability.Other infrastructural areas may deliver a greater business case for funds, such as critical health or land-based public transport initiatives.	HIGH

EURAIR: State Support for Regional Airports: Post-2027 Assessment Factors for Policymakers and Practitioners

NO.	FACTORS FOR CONSIDERATION	KEY SUPPORTING POINTS	KEY OPPOSING ARGUMENTS	IMPORTANCE (H/M/L)
3. (ctd.)	Employment and Fiscal Support Balanced National Development	<ul style="list-style-type: none"> Smaller airports are key enablers of growth in the regions they serve, their presence is a strong support for balanced economic development in these areas This provides a national counterbalance to an overconcentration of economic activity in large cities/urban areas Reduces national reliance on main airport and avoids “single point of failure” in the event of disruption to services in the main airport. 	<ul style="list-style-type: none"> If smaller airports as seen as a ‘special case’ qualifying for State support, other sectors, especially those perceived to have been adversely affected by the pandemic, may also make a case for special treatment, even though there might be no similar EU Framework in place for their sector. 	HIGH
4.	Environmental Sustainability Innovation	<ul style="list-style-type: none"> Regional airport support can contribute to sustainability benefits by reducing passenger travel length/time in getting to an airport Many sustainability-focused aviation developments, e.g. electric aircraft, will likely affect smaller airports initially These airports are most likely to take less time to operationalise green practices than larger ones Operating aid can also enable speedier transition of airport operations (airside, landside, ramp and runway) to sustainable models – resulting in reduced emissions (‘greening’ of airport operations). 	<ul style="list-style-type: none"> Any subsidies in support of air transport will give rise to increased travel and emissions, increasing the national carbon footprint at a time where a significant reduction in national emissions is targeted. Increase in regional air transport (flight and passenger volumes) could threaten ecosystems located in these areas. 	MEDIUM

EURAIR: State Support for Regional Airports: Post-2027 Assessment Factors for Policymakers and Practitioners

NO.	FACTORS FOR CONSIDERATION	KEY SUPPORTING POINTS	KEY OPPOSING ARGUMENTS	IMPORTANCE (H/M/L)
4. (ctd.)	Environmental Sustainability Innovation	<ul style="list-style-type: none">• New airport technologies and innovations supporting airport activity (e.g. operations, safety and security) enhance the regional airport passenger experience.• Provision of State Aid helps ensure investment in the latest airport technologies.		MEDIUM
5.	A competitive and efficient aviation market	<ul style="list-style-type: none">• Investment in regional airports can help to balance air traffic loads at the national level. Overall capacity can be optimised, reducing congestion and delays at major airports by better aligning airport passenger volumes with hinterland populations.• Support can also provide for achievement of an appropriate balance of commercial and military aviation activity (and the infrastructure that supports it).• Such balance also provides for better system resilience in the event of an adverse impact on a specific location.	<ul style="list-style-type: none">• Competition could be distorted and barriers to entry might result. Efficient airports not receiving Aid will find it more difficult to compete fairly with those (efficient or inefficient) receiving it.• Inefficient allocation of Aid could give rise to overcapacity in certain areas, giving rise to a less than optimum return on funds granted.• Continued reliance on State Aid may reduce the innovation and efficiency mindsets desirable for effective airport operations.	HIGH

EURAIR: State Support for Regional Airports: Post-2027 Assessment Factors for Policymakers and Practitioners

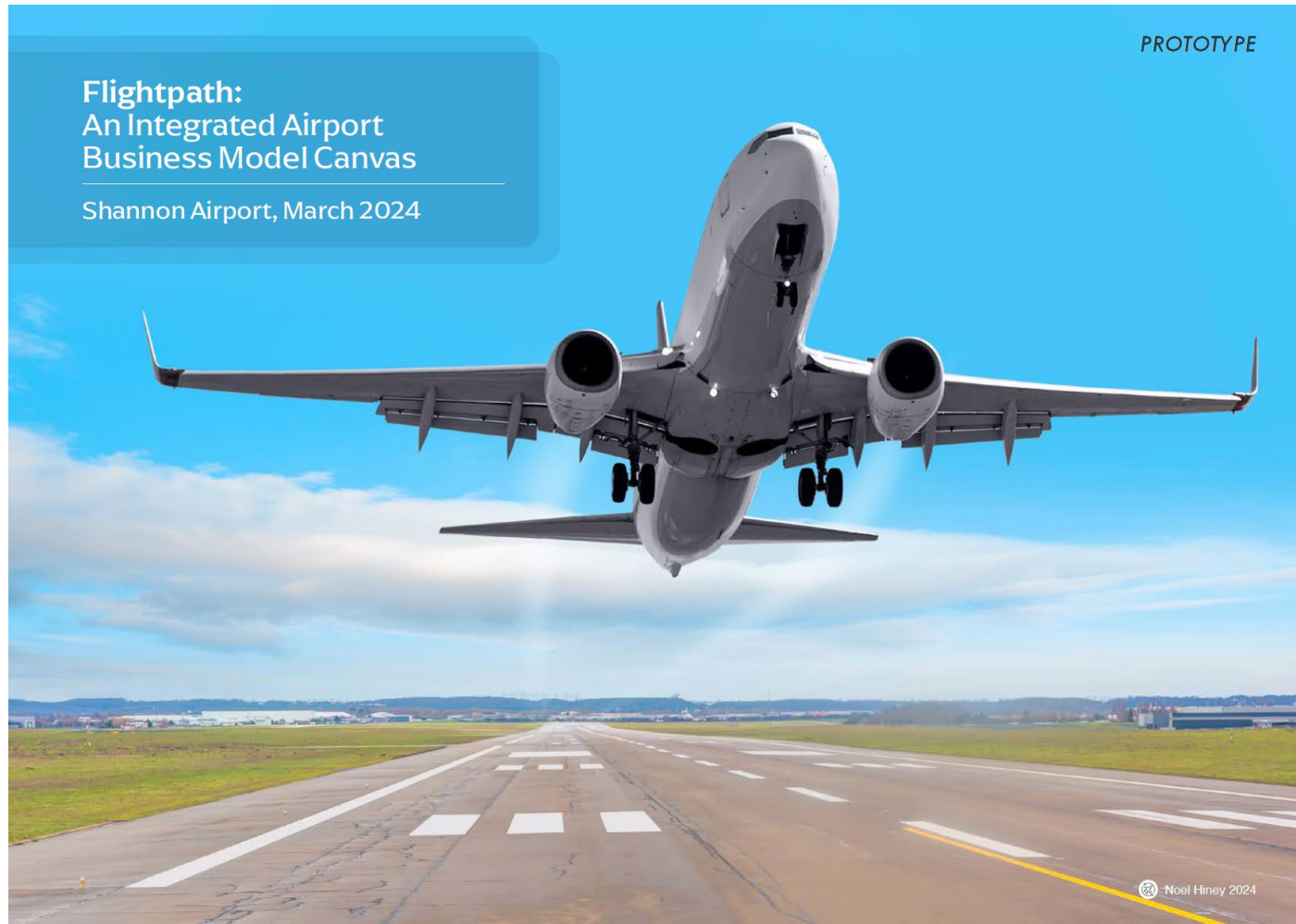
NO.	FACTORS FOR CONSIDERATION	KEY SUPPORTING POINTS	KEY OPPOSING ARGUMENTS	IMPORTANCE (H/M/L)
6.	Strategic Infrastructure – Inter-modal transport enablement	<ul style="list-style-type: none">• National Security. Airports are critical national strategic assets, with their resilience and responsiveness critical during uncertain times.• National strategy supporting regional airports can support integrated intermodal travel, e.g. bus connections to major cities and linkage to national rail networks.• Other transport initiatives can provide for enhanced cycle connectivity and 'last line' drone connectivity (passengers and cargo).• Balanced airport system = Resilient airport system when dealing with security, national defence and emergency issues (adverse disruption impact reduced by this balance).• Regional airports can be key hubs for emergency and disaster response activity, providing rapid access and supply of resources and equipment to affected areas, during times of crisis.	<ul style="list-style-type: none">• Other transport modes (e.g., rail, maritime) have similar strategic importance and face similar investment challenges.• State Aid may make airports more complacent about the need for and benefits of inter-modal connectivity.• State Aid might be better allocated to municipal authorities so that they can consider and develop inter-modal initiatives in a more holistic manner.	HIGH
7.	Airport Prospects Competition Pandemic Recovery	<ul style="list-style-type: none">• Effective and targeted allocation of operating aid can provide 'balance' by improving the competitiveness and efficiency of smaller airports.• The provision of state support on a specific basis will help establish the long-term feasibility of an airport.	<ul style="list-style-type: none">• Provision of State Aid to certain airports (privately or publicly owned) may have a market-distorting effect. Though most likely to occur at the national market level, it could also arise if a specific State provides unfair airport support on a national basis.	MEDIUM

EURAIR: State Support for Regional Airports: Post-2027 Assessment Factors for Policymakers and Practitioners

NO.	FACTORS FOR CONSIDERATION	KEY SUPPORTING POINTS	KEY OPPOSING ARGUMENTS	IMPORTANCE (H/M/L)
7. (ctd.)	Airport Prospects Competition Pandemic Recovery	<ul style="list-style-type: none"> This greater financial independence will remove the need for recurring aid. Appropriate allocation of aid at this time can help smaller airports deal with residual pandemic impacts, as the full effect of recent events will take some years to emerge. 	<ul style="list-style-type: none"> This factor makes it more difficult for more efficient airports and/or those not in receipt of State supports to compete for (keenly contested) airline route business. Continued State support for smaller airports may give rise to a perception that it is a 'third revenue line', in addition to aeronautical and non-aeronautical revenue. This factor will likely reduce the efficiency of these airports, as there is less intense pressure to address costs and to innovate w.r.t. passenger services. If airports cannot be proven to be (financially) sustainable on an ongoing basis without these subsidies, should public funds continue to be used to support them, given the financial cost to the State? Should European States support airports with overlapping catchment areas? Might this leave countries with too many regional airports competing for limited market share and undermining each other's long-term viability? 	MEDIUM
8.	Geo-political developments, generally and specifically Aid related	<ul style="list-style-type: none"> European Union actions in response to increasing willingness of major trading economies, in particular US and China to provide aid to domestic organisations in a more explicit manner. 	<ul style="list-style-type: none"> Conditions potentially attaching to State Aid, e.g. sustainability investments, may restrict the financial agility of the airport if it needs to respond to external events in a timely manner. 	MEDIUM

[Source: Developed by Author, Influenced by Primary and Secondary Research Findings; ACI (2017, 2023); European Commission (2014, 2022, 2023)]

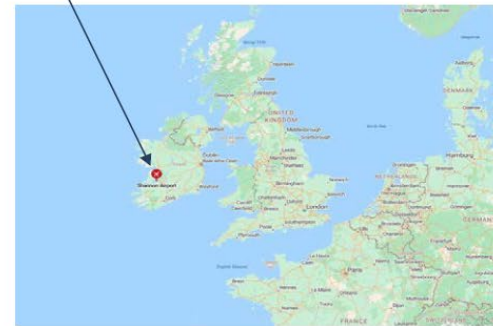
Appendix B: Flightpath — Integrated Airport Business Model Canvas (Flightpath)



Flightpath: Shannon Airport, 2024

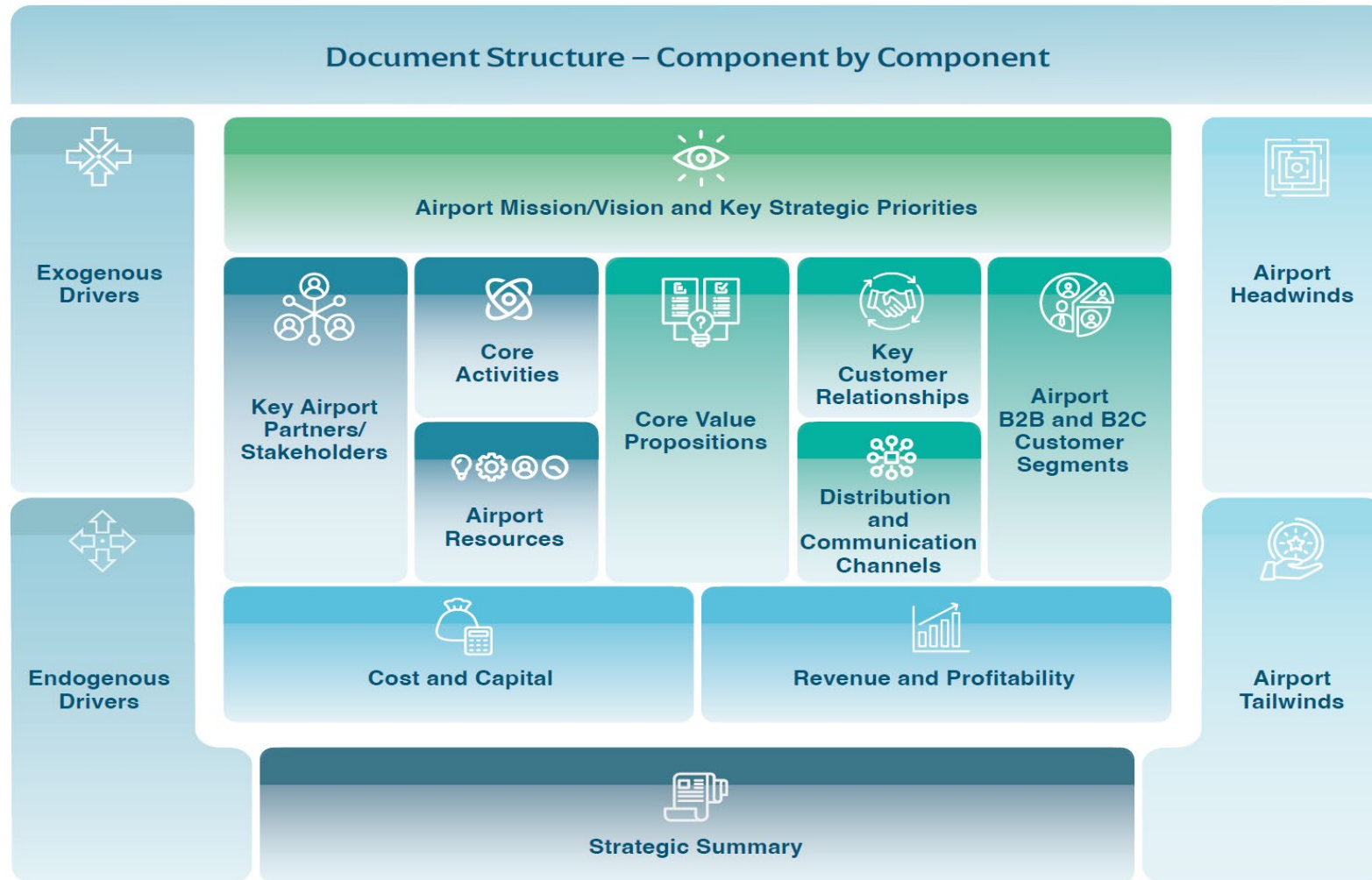


Shannon Airport, County Clare, Republic of Ireland



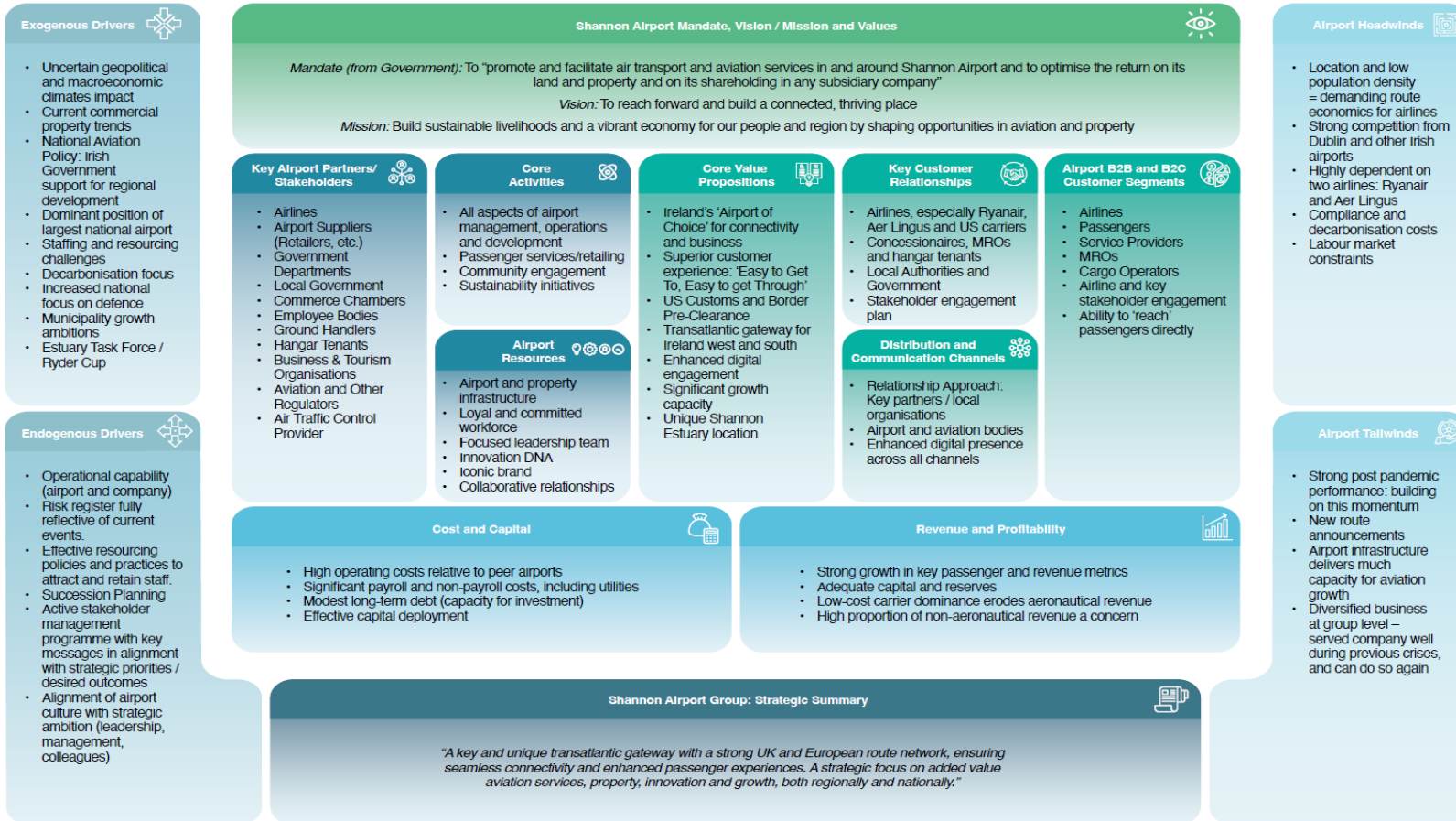
Shannon Campus: From the Air

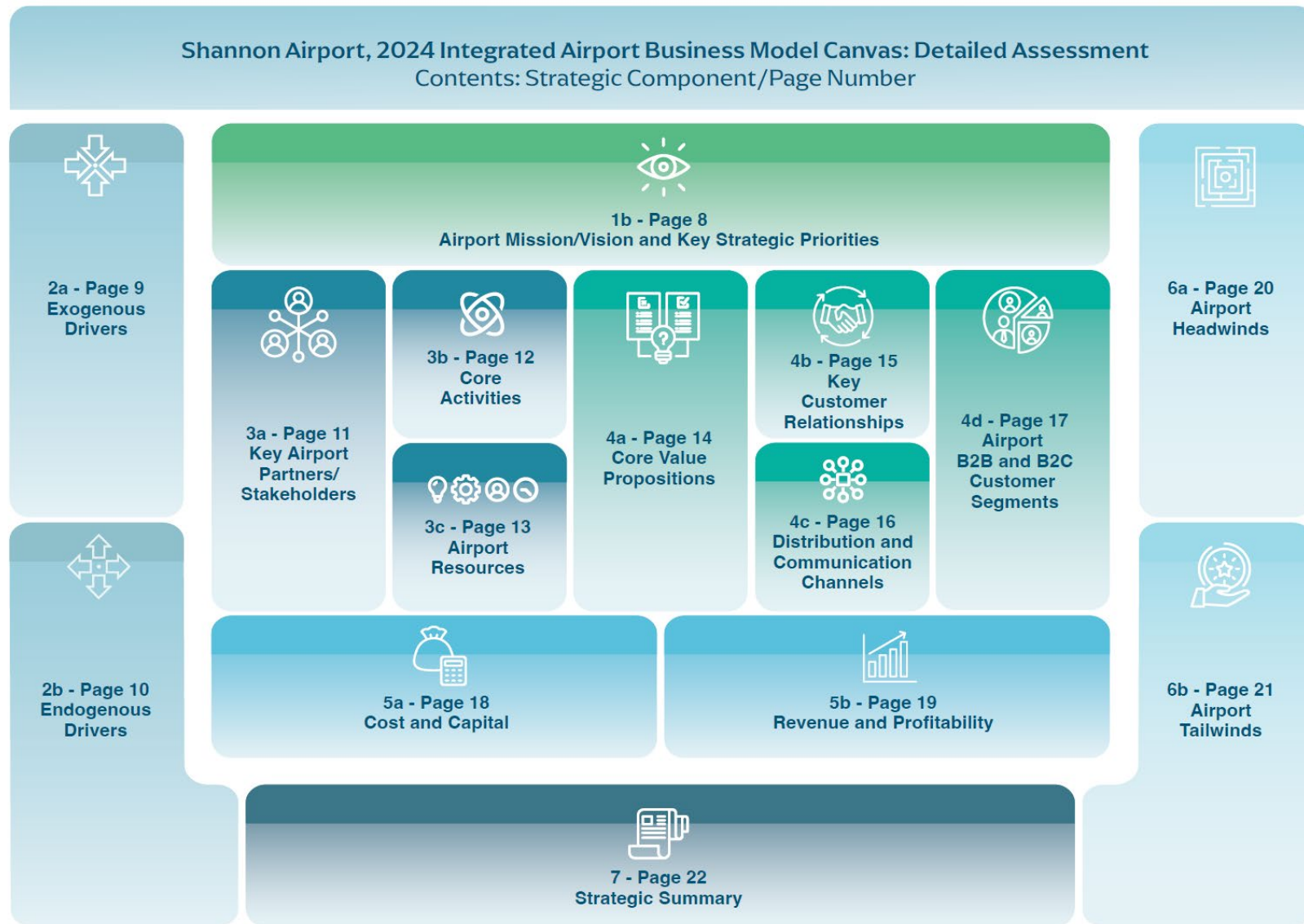




Business Model Canvas by Component (Highlights)

Shannon Airport, March 2024

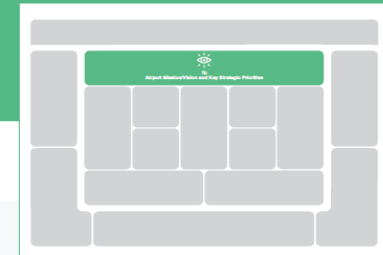






1b Airport Mission / Vision and Key Strategic Priorities

Description of the airport's current mission/vision and its key strategic priorities



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Based on airport's current strategic statements
- Mission
- Vision
- Key strategic objectives
- Key enablers
- Values
- Others

Airport Details

Shannon Airport Group – Strategic Details

Mandate (from Government): To “promote and facilitate air transport and aviation services in and around Shannon Airport and to optimise the return on its land and property and on its shareholding in any subsidiary company”

Vision: To reach forward and build a connected, thriving place

Mission: Build sustainable livelihoods and a vibrant economy for our people and region, by shaping opportunities in aviation and property

Values: People, Partnership, Pride, Perseverance

Strategic Priorities:

Grow Connectivity
Sustained Profitability
Success Through People
Operational, Regulatory and Safety Excellence
Optimise Property Portfolio
Deliver Sustainability Initiatives
Foster Innovation

Assessment @ March 2024

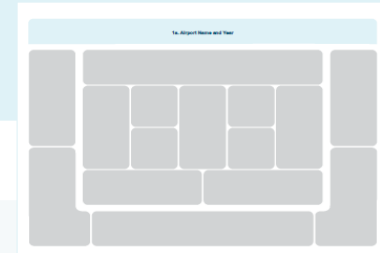
Questions for periodic consideration:

Are key elements still valid, current areas of emphasis, when is the next major review?

Are there any 'corporate level' options/opportunities worth exploring/contemplating?

1a Airport Name and Year: Shannon Airport, 2024

Identify name by which airport is most commonly known, and the year covered by this Canvas.
Provide overview of key airport characteristics



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Clear identification of airport being reviewed, and year identifies currency of integrated canvas
- All airport brands and sub brands
- Ownership – individual or part of Group; public, private or mixed ownership
- Other relevant organisational/corporate factors
- NOTE – Focus of Canvas is The Shannon Airport Group's airport business, i.e. Shannon Airport.



Airport Details

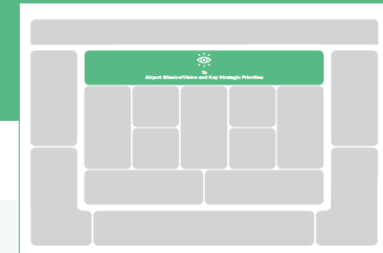
- *"Shannon Airport is a key part of Shannon Airport Group. This group, which owns and operates Shannon Airport as well as a substantial commercial property business, is focused on delivering a vibrant, thriving economy in the mid-western part of Ireland (and beyond) by providing vital international connectivity for trade and tourism and an attractive location for businesses to develop and grow."*
- *Shannon Airport is the group's leading B2C brand, with Shannon Airport Group used for most B2B engagement.*
- *Shannon Airport is the largest airport on the West Coast of Ireland and serves destinations in the US, UK and Europe, as well as providing full US Pre Clearance for transatlantic passengers. In 2023, 1.95 million passengers passed through the airport. The group's property portfolio comprises 3,300 acres and 3.5 million sq. feet of space. Shannon Airport Group has in place a world-class airport infrastructure with uncongested operations both on the ground and in the air for carriers.*
- *The group's property portfolio includes the largest business park outside of Dublin, with 180 companies in sectors such as Aviation, MedTech and CAV technologies. Comprehensive commercial property solutions are offered, ranging from leasing, developing, and managing industrial, business and office parks together with fully serviced development sites.*
- *The group's home, Shannon Campus, is the location of Ireland's first testbed for Future Mobility, focused on the development of new, autonomous and sustainable transport options, on land and in the air.*
- *The Shannon Airport Group contributes significantly to the entire Irish economy and supports thousands of jobs. The group plays a critical role in shaping the future development of the region and country, through the provision of with ground-breaking yet practical facilities and by attracting new or more frequent international connections, all of which are vital to development and growth of a balanced national economy."*

Provided by Airport Source: <https://www.snnairportgroup.ie/about-us> [Accessed 24 January 2024]



1b Airport Mission / Vision and Key Strategic Priorities

Description of the airport's current mission/vision and its key strategic priorities



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Based on airport's current strategic statements
- Mission
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- Key strategic objectives
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Success Through People
Operational, Regulatory and Safety Excellence
Optimise Property Portfolio
Deliver Sustainability Initiatives
Foster Innovation

Assessment @ March 2024

Questions for periodic consideration:

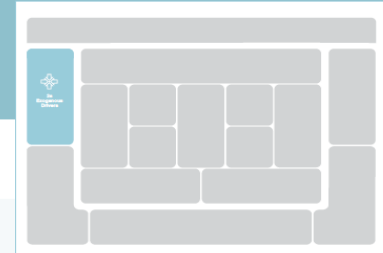
Are key elements still valid, current areas of emphasis, when is the next major review?

Are there any ‘corporate level’ options/opportunities worth exploring/contemplating?



2a Exogenous Drivers

Key variables/external and macro factors external to the airport and over which airport it has little/no control (see examples provided)



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Regulatory environment (operations, national/ external planning, safety, security, economic)
- Macroeconomic Environment
- Geopolitical Environment
- Increasingly restrictive State Aid arrangements, and greater conditionality attaching to same
- Technology (e.g. digitalisation, AI, Big Data, Sustainability and Climate Change)
- Disrupters (shift in patterns due to social, technological or economic disrupters)
- Impact of current topics/events

Airport Details

Shannon Airport

Key external factors likely to affect Shannon Airport:

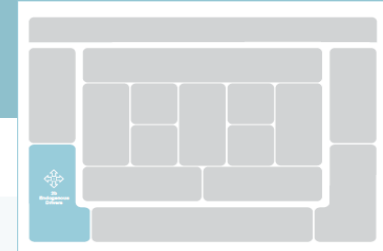
- Uncertain geopolitical and macroeconomic climates/airport impact
- Changes to airline strategy; power, concentration
- Increased competitor airport activity and dominance of capital city airport (86% share of national market)
- Inward investment strategies
- Changes in property market outlook
- Irish Government support or otherwise for balanced regional development, including spatial planning and development policies
- National Aviation Policy; Future landscape of airport state aid
- Transport developments and improvements to land transport; rail and road connectivity, multi-modal nodes
- Greater staffing and resourcing challenges
- Aviation trends, e.g., the evolution of regional aircraft and their impact on regional airport economics
- Sustainability and decarbonisation – 'quick' wins (SAF), airline/engine developments
- Initiative-reducing carbon emissions can drive energy policies as well as investments (linked to Shannon Estuary taskforce)
- Increased national focus on defence activity, in particular investment in national defence capability
- Step change activity in the unmanned aviation sector
- Second airport for capital city (Dublin)
- Digital engagement
- Growth ambitions of key municipalities
- Shannon Estuary task force: Opportunity for sustainable economic growth based close to Shannon Airport, and development of a clean energy hub for Europe
- Ryder Cup in 2027 – The largest golf tournament in the world, to be held 41km away from the airport

Assessment @ March 2024



2b Endogenous Drivers

Key variables/internal factors specifically affecting the airport and immediate environment (see examples provided)



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Airport infrastructure
- Group Culture
- Support for Innovation
- Achieving Resilience
- Leadership and management capability
- On the ground relationship with the airport campus
- Stakeholders
- Relationship with local community
- Impact of current topics/events

Airport Details

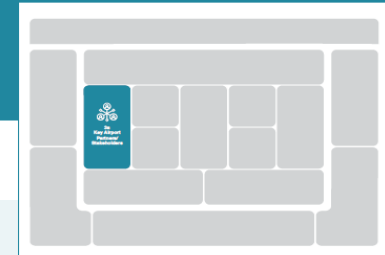
- Key Airport and Campus Features (w.r.t. impact on airport activity, e.g. development capacity for additional non-commercial activity)
- Operational capability (airport and company)
- Risk register fully reflective of current events
- Effective resourcing policies and practices to attract and retain staff
- Active stakeholder management programme with key messages in alignment with strategic priorities / desired outcomes
- Community engagement programme
- Succession Planning
- Alignment of airport culture with strategic ambition (leadership, management, colleagues)
- Local Stakeholder group(s)

Assessment @ March 2024



3a Key Airport Partners/Stakeholders

Key partners and stakeholders whose association and involvement with the airport contribute significantly to the effectiveness and success of the airport's activities and business outcomes



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Who are our most important airport partners?
- Does our business strategy reflect this assessment in terms of value, opportunity and risk?
- In what way might we be able to assist them?
- What might they be able to do to help us?
 - Airlines
 - Outsource Partners (e.g. ground handling)
 - Retailers
 - Joint Ventures/Partnerships
 - Air Traffic Control
 - Airport Regulators
 - Government / Municipalities
 - MRO / Cargo Operators
 - Government Agencies
 - Local Business and Tourism Organisations
 - Airport Access Organisations (e.g. all Public
 - Transport, Taxi, Private Chauffeur)
 - Others
- Are you missing anybody? Do we manage the most important relationships the way we need to? What new ones should we pursue based on our plans and objectives?
- Are you too reliant on a small number of key customers? If so, how do we ameliorate this risk?

Shannon Airport: Key Stakeholders *

Airlines: Ryanair, Aer Lingus, ASL Airlines, United Airlines, Omni Air
Retail Partners: JJ Ruddies, WH Smith,

Ground Handling/FBOs: Swissport, Sky Handling Partner, Signature, Universal, US Alliance, Lightning Aviation

MROs: International Aerospace Coating (IAC), Atlantic Aviation, Westair; Other 'Hangar' Tenants
Employee Groups: Employee Representative Bodies, Consultation Groups

Local Government: Clare County Council, Limerick City and County Council, Galway City Council

Business Groups: IBEC, Limerick, Shannon, Ennis and Galway Chambers of Commerce
National Development Agencies: Industrial Development Authority, Enterprise Ireland

Irish Government: Department of Transport, NewEra

Regulators: Irish Aviation Authority, AirNav Ireland

Destination Management Organisations: Tourism Ireland, Bord Failte, Irish Tourism Industry Confederation

Others: Future Mobility Campus Ireland, Bus Eireann, Educational Institutions, Financial Institutions, Local Media.

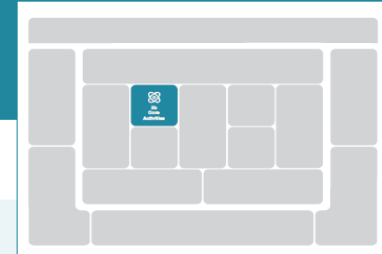
* Not an exhaustive list

Assessment @ March 2024



3b Core Activities

These are the key activities essential for the efficient, safe, and smooth operation of any airport, including airport functionality and user/passenger experience.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- How effective and efficient are our day-to-day airport operations?
- Have we the right balance between aeronautical and non-aeronautical activity?
- How have we organised to deliver and communicate our sustainability strategy?
- How must our airport respond to constant industry change and volatility?
 - Normal airport operations
 - Commercial Services (On airport property; landside & terminal; airside & ramp)
 - Business and General Aviation Activity (including flight training)
 - Military Aviation
 - Cargo
 - Maintenance, Repair and Overhaul (MRO)
 - Aeronautical and non-aeronautical revenues
 - Safety and Security
 - Health measures?
 - Sustainability (internal and external)
 - Adaptation to changing climate and environment (e.g. defence against future impact changing weather patterns on airport)
 - Management of relationship with key stakeholders
 - Airport 'Lab'?
 - Others

Airport Details

Key Activities:

- Airport Management and Development
- Passenger Services
- Retailing: Food & Beverage; Duty-Free Shopping; Car Parking
- Airport Operations
- Safety and Security
- Maintenance, Repair & Overhaul (MRO) and Cargo activity enablement
- Airport marketing and communications
- Infrastructure Maintenance: upkeep of airport infrastructure runways, taxiways, etc.
- Security and safety
- Community Engagement
- Sustainable operations: 'Greening' of key airport activities; energy efficiency, digital
- Stakeholder Engagement and participation in local business and community groups

Questions for periodic consideration:

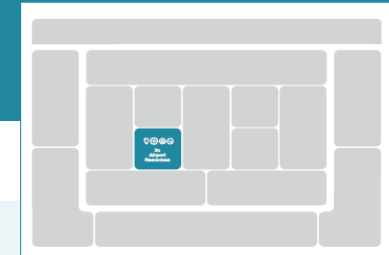
- How well do we deliver our core activities, especially those with future growth potential, those likely to affect or be more affected by sustainability
- As a critical activity, how do we manage/measure relationships with core stakeholders?
- Do our core activities reflect the current strategy and future opportunity/potential, e.g. strategic discussions with potential partners to reflect any future change

Assessment @ March 2024



3c Airport Resources

These are the main resources deployed by airports to successfully deliver its overall proposition. Such resources comprise physical, intangible and financial assets.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- How do we assess and compare the use of and return from our assets?
- Are we an attractive and competitive employer in the 'War for Talent'?
- What difficult future decisions may need to be taken?
- What new opportunities might we consider?
 - o Physical Assets (e.g. terminals, runways, hangars, land, technology-hardware; systems-software,)
 - o Intangible Assets (e.g. leadership, management and staff, strength of key stakeholder relationships)
 - o Financial Assets (e.g. Balance Sheet, Capital, Reserves)

Airport Details

- Airport Infrastructure with unrestricted growth capacity: Airport landbank; Apron, Runways, Taxiways, Ramp
- Terminal and associated buildings, some unused
- Car Parks
- Hotel and other on-site facilities
- Public Transport (Bus, Taxi and Chauffeur)
- Shannon Airport Group activities and synergies, e.g. Shannon Campus, commercial property, future mobility
- Focused leadership team
- Skilled and loyal workforce
- Innovation Track Record
- Iconic aviation brand
- Collaborative stakeholder relationships

Questions for periodic consideration:

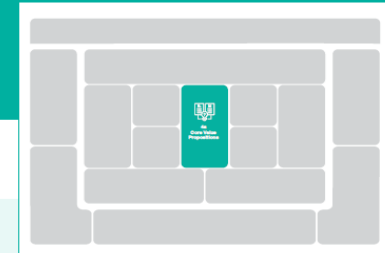
- In terms of physical resources, is our Capital adequately deployed, and do we have enough (or other sources) for future development?
- How strong is our people focus and what are our plans to attract key aviation, property and innovation talent to SNNGroup?

Assessment @ March 2024



4a Core Airport Value Propositions

These are the key airport value propositions to its main stakeholders, primarily (but not exclusively) airports, concessionaires and passengers.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- How clear and relevant are our B2C (passenger), and B2B (e.g. airline) propositions?
- How do we deliver value on these promises?
- What elements will we need to pay attention to in this volatile environment?
- Where might we need to refocus to ensure future success?
 - What is the passenger experience from start to finish (important to other stakeholders also)
 - Routes / destinations
 - Airport access
 - Flow from landside to airside
 - Retail experience
 - Airline 'offer' (terms)
 - Relationship with surrounding region
 - Other airport services, e.g. Cargo, MRO
 - Others...conference/meeting spaces; museum; other non-passenger experiences

Airport Details

- Ireland's Airport of Choice for Connectivity and Business*
- Customer USP: 'Making it Easy'
- "Easy to get to, Easy to get through"
- UK, mainland Europe and holiday destinations
- Transatlantic gateway for Ireland West and South
- US Customs and Border Pre-Clearance (CBP)
- Strong Passenger Experience; one of Europe's first airports with enhanced 3D security screening and TSA-approved processes
- Excellent surface access (road) to SNN from over half of Ireland via a relatively new motorway network
- Unique location on the Shannon Estuary
- Ireland's premier business park adjacent to airport
- Car Parking (short and long-term) access adjacent to the airport
- One-stop transatlantic business aviation service westwards: US CBP*, Refuelling, Catering completed within 45 mins.
- Sustainable Practices and focus: Delivering 2030 Targets and Government Policy
- Ideal location for MRO activity, including regular maintenance and aircraft painting, together with end- of-lease transition activity
- Significant expansion capacity across all assets and activities

* Business aircraft clearing CBP can land at up to 300 US airports versus less than 20 locations if CBP has not been cleared in advance of arrival

Questions for periodic consideration:

- When did we last review our core B2B propositions (airlines, MROs, tenants, etc.)?
- What more can we do to enhance our B2C propositions, in terms of getting to, being at and flying from the airport?
- Are there any non-aviation activities for which the airport would be an acceptable/attractive/compelling location?

Assessment @ March 2024



4b Customer / Stakeholder Relationships

How day to day and strategic relationships are managed, assessed and nurtured with key airport stakeholder groups.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- How do we define and assess key airport stakeholder relationships?
- Who is responsible for this activity, and how are relationships currently being managed?
- What should effective stakeholder management look like for our airport, and how are we doing?
- How might current events and the future landscape affect this area?
 - Airlines
 - Concessionaires
 - Service Partners
 - Passengers
 - Local Business Groups
 - Others

Airport Details

Strong and active stakeholder engagement plan

- *The Director of Public Affairs coordinates stakeholder activity on a Shannon Airport Group basis on behalf of the Group CEO and Leadership Team.*
- *Most stakeholder relationships are currently managed on a frequent if informal, basis.*
- *Airport stakeholders have more structured engagement*
- *Airport leadership represented on Boards and Committees of local representative organisations*
- *Key Customer Relationships:*
 - *Airlines:* Ryanair, Aer Lingus, ASL Airlines, United Airlines, American Airlines, Omni Air
 - *Retail Partners:* JJ Ruddles, WH Smith,
 - *Ground Handling/FBOs:* Swissport, Sky Handling Partner, Signature, Universal, US Alliance, Lightning Aviation
 - *MROs:* International Aerospace Coating (IAC), Atlantic Aviation, Westair
 - *Other Hangar Tenants*
 - *Municipalities:* Clare County Council, Limerick City and County Council, Galway City Council
 - *Business Groups:* Limerick, Shannon, Ennis and Galway Chambers of Commerce
 - *National Development Agencies:* Industrial Development Authority, Enterprise Ireland
 - *Irish Government:* Department of Transport, NewEra
 - *Regulators:* Irish Aviation Authority, AirNav Ireland
 - *Destination Management Organisations:* Tourism Ireland, Bord Failte, Irish Tourism Industry Confederation
 - *Others:* Future Mobility Campus Ireland, Bus Eireann

Opportunities to partner in the region on shared goals (low carbon and emerging technologies)

Questions for periodic consideration:

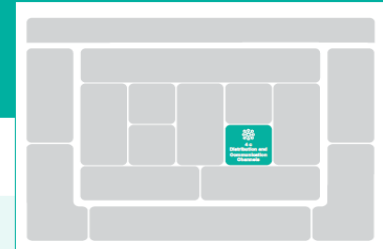
- *When did we last review our stakeholder activity plan to test alignment with strategy and future objectives?*
- *What are our key stakeholder messages, and how consistently are we delivering them?*
- *Are we well-represented across various regional and national forums?*
- *Any benefit in a short-term dedicated group, even an under-the-radar one??*

Assessment @ March 2024



4c Distribution and Communication Channels

The key physical and digital distribution and communication channels used by the airport to promote and manage its business.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Are we clear what delivery channels we use to manage our business?
- Which are the most important physical and digital channels right now?
- How effectively have we used these since 2020?
- How well prepared are these channels for future change?
 - o Key Partners and Local Organisations (Airlines, Tourism and Business Organisations)
 - o Company specific engagement
 - o Digital (B2B – company portal and B2C – company website and social media)
 - o Company Website
 - o Dedicated Portal
 - o Aggregator Website
 - o Social Media (LinkedIn, X, Facebook, Instagram, TikTok, Threads, other)
 - o Others

Airport Details

- External Communications managed in-house
- Proactive relationship with local media (press, local radio) and strong, if less frequent, engagement with nationals
- Strong flow of 'push' communications
- Relationship Approach with Key Partners and Local Organisations
- Marketing approach focuses on 'making it easy' message
- Extensive use of physical and digital channels
- Core and extended market catchment areas defined
- Digital presence across all social media platforms, with geolocation messaging a key feature
- A comprehensive approach to route development from planning and engagement perspectives
- Presence at route conferences and intense airline engagement

Questions for periodic consideration:

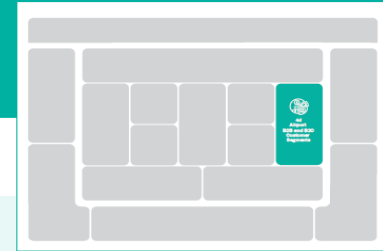
- How are our channels aligned with the delivery of services in a manner that communicates our core and our essence??
- B2B ones – need to review/refresh?
- Are we reaching the right customers?
- External events (nationally and internationally) – are we getting *bang for the buck*?

Assessment @ March 2024



4d Airport B2B and B2C Customer Segments

The main customer segments identified by the airport and how initiatives and activities affecting these segments are managed.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Are our customer segments clear?
- Which ones have been most affected in the aftermath of the pandemic and geopolitical uncertainty?
- Does this reflect how we manage key airport activities?
- What key risks and opportunities should we pay attention to?
 - Airlines (short haul; medium haul; long haul)
 - Passengers (Leisure, Business Class, VFR, Business Aviation, Other, e.g. experiential)
 - Service Provider (Aeronautical vs non-Aeronautical, other)
 - Non-Passenger (Cargo, MRO, General Aviation, Training, other)

Airport Details

Brand Architecture supports clear focus on business-to-consumer (B2C) and business-to-business (B2B) segments:

Shannon Airport: B2C Brand
The Shannon Airport Group: B2B Brand

High-level categorisation:

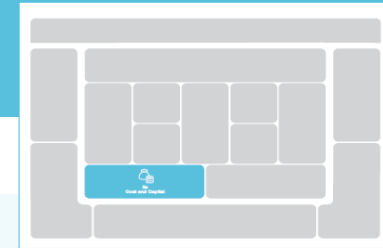
- B2C: Passengers; Visitors; Community; Decision Makers
- B2B: Airlines; Concessionaires; Service Providers; MROs; Cargo Operators; Representative Organisations

Assessment @ March 2024



5a Costs and Capital

A description of each category of and aggregated costs incurred by the airport when operating its business.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Which are our key fixed (Capex) and variable (Opex) cost lines (80:20 rule)?
- What steps do we need to take to improve our cost footprint (activity, efficiency, etc.)
- Cost scenario planning – what does it tell us?
- How is our airport's overall profitability / viability affected by the current environment?
 - Capital Costs
 - Personnel Expenses
 - Contracted Services
 - Safety and Security
 - Utilities
 - Maintenance Expenditure
 - Lease/Rental
 - Indirect Costs
 - Others

Airport Details

- High operating costs: Staff (Payroll/non payroll), Infrastructure, Utilities
- High costs per passenger
- High costs per Employee
- Cost ratios have improved since pandemic
- Modest, long-term debt (2017 runway overlay)
- Balance Sheet structure now 'cleaner', especially post-Shannon Heritage asset disposals
- Future investment funding – sustainability and airport-related property

Questions for periodic consideration:

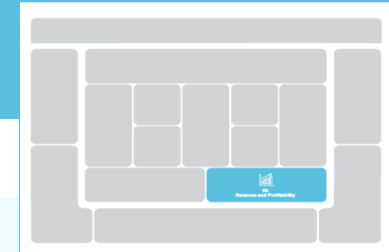
- How tightly do we manage our costs (i.e. fat vs muscle!)?
- Key variable measures?
- What is our cost per passenger and how does this benchmark with ACI 2023 report?
- Do we need to consider innovative ways to share future capital costs focused on new growth activity?
- Do we use digitalisation (airport and company procedures) in an efficient manner?
- What big investments are coming up?

Assessment @ March 2024



5b Revenue and Profitability

A description of each category of and aggregated income generated by the airport when operating its business.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- What is our current revenue breakdown (aeronautical, non-aeronautical, non-Operating)?
- What revenue lines are likely to come under most pressure? Airport charges?
- How might airline incentives lead to increased activity/ revenue?
- What additional income sources may continue to be required (e.g. State Aid)?
 - Aeronautical Revenue
 - Non-Aeronautical Revenue
 - Non-Operating Revenue

Airport Details

- Increasing Airport Revenue: Strong growth in key passenger and revenue metrics
- Adequate capital and reserves
- Low cost carrier dominance – impact on aeronautical revenue
- High proportion of non-aeronautical revenue a concern.
- Keenly negotiated airport charges deals with two largest airlines likely to depress aeronautical revenue
- While no breakdown of aeronautical vs non-aeronautical revenue available, non-aeronautical likely to be > 60%
- In receipt of State support 2020-2023 via Irish Government Regional Airports Programme (RAP)
- Diversified income options at group level
- Management focus on both income types evident, i.e. route development; investment in non-aeronautical facilities such as premium retailing focus and dynamic car park pricing capability

Questions for periodic consideration:

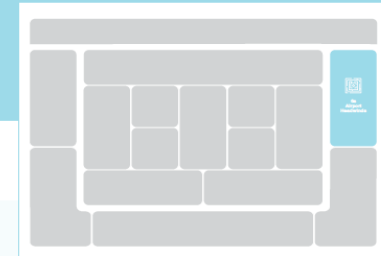
- What is the aero vs non aero revenue mix (airport and group level)
- What is the mix when adding in non-aviation income?
- What is the annual revenue per passenger for (1) aero and (2) non aero revenue, and what is the ratio of 1 to 2 (airport revenue only)?
- What revenue lines are most at risk?
- Where is the greatest scope for improvement in revenue/income ratios?
- Any opportunities for new non-operating/non-aviation revenue?

Assessment @ March 2024



6a Airport Headwinds

A distillation of the primary challenges (adverse factors) faced by the airport, based on an overall assessment of strategic and other statements



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Judgement can be derived from / informed by management knowledge, assessment of potentially adverse exogenous and endogenous drivers, 'weaknesses and threats' identified during SWOT analysis.
- Other influences include identification of competitive forces (Porter model) and environmental analyses such as Social, Technological, Economic, Environmental, Political, Legal, Ethical, Demographics (STEEPLED model).

Airport Details

- Strong post-pandemic performance: building momentum, new route announcements
- Airport infrastructure delivers much capacity for aviation growth
- Diversified business at group level – served the company well during previous crises and can do so again
- Regional stakeholders broadly supportive of Group / Airport approach and objectives
- Well-located for innovation and experimentation, i.e., unmanned/sustainable air travel

Questions for periodic consideration:

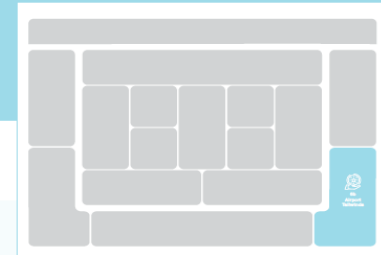
- Airport Headwinds should be reviewed annually, as part of strategic plan review

Assessment @ March 2024:



6b Airport Tailwinds

A distillation of the primary positive characteristics benefiting the airport, based on an overall assessment of strategic and other statements.



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- Judgement can be derived from / informed by management knowledge, assessment of positive exogenous and endogenous drivers, 'strengths and opportunities' identified during SWOT analysis.
- Other influences include overcoming competitive forces (per Porter model) and positive aspects of environmental analyses such as Social, Technological, Economic, Environmental, Political, Legal, Ethical, Demographics (STEEPLED model).

Airport Details

- Strong and sustained competition from Dublin and other Irish airports
- Location and low population density = demanding route economics for airlines
- Highly dependent on two airlines, Ryanair and Aer Lingus. Single-airline risk has increased
- Challenging (and rising) cost base
- Constraints in the labour and housing markets
- Cost of compliance with carbon reduction targets
- Uncertain macro environment: unknown impact of geopolitical events on region and airport
- Aero vs. non-aero revenue trend
- Technological developments automation, AI, digitalisation.

Questions for periodic consideration:

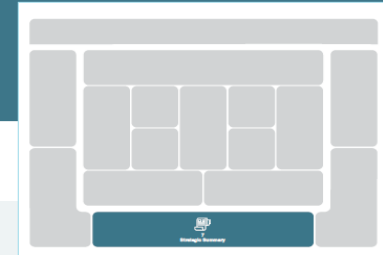
- Airport Tailwinds should be reviewed annually, as part of strategic plan review

Assessment @ March 2024



7 Strategic Summary

A summary of the airport's 'essence' and current positioning (20/30 words)



Typical Questions to Answer / Details to Include

Consider the following when inputting your airport's details:

- o This section of the model is an opportunity for an airport to craft and communicate its 'core' to all stakeholders in summary form.
- o It concisely summarises the airport's existing position, unique feature(s) and growth prospects in an assured, confident manner.

Shannon Airport – Strategic Summary – March 2024

"Shannon Airport: A key and unique transatlantic gateway with a strong UK and European route network, ensuring seamless connectivity and enhanced passenger experiences. A strategic focus on property, innovation and growth, both regionally and nationally."

Assessment @ March 2024

Supporting Information – Other Strategic and Management Frameworks

- A selection of supporting strategic frameworks are shown on the following pages. These are designed to help an airport to identify, assess and respond to its strategic positioning.
- These frameworks can enhance the airport's analysis through additional external and internal assessments, supplementing a core component of this integrated Airport Business Model Canvas, the *Business Model Canvas* (Osterwalder, 2005).
- They inform and contribute to the completion of the Airport Canvas by suggesting exogenous and endogenous factors and assisting in the identification of airport tailwinds and headwinds. There is some overlap between these frameworks. Scenario Analysis activity is also supported
- Elements of and guidance in other frameworks should also be considered, for example airport strategic, financial and operating plans, risk registers, sustainability audits and the EURAIR and VUCAIR frameworks presented in this research.

STEEPLED Analysis for Shannon Airport

Eight Macro-environmental Factors:

Social; Technological; Economic; Environmental; Political; Legal; Ethical; Demographics



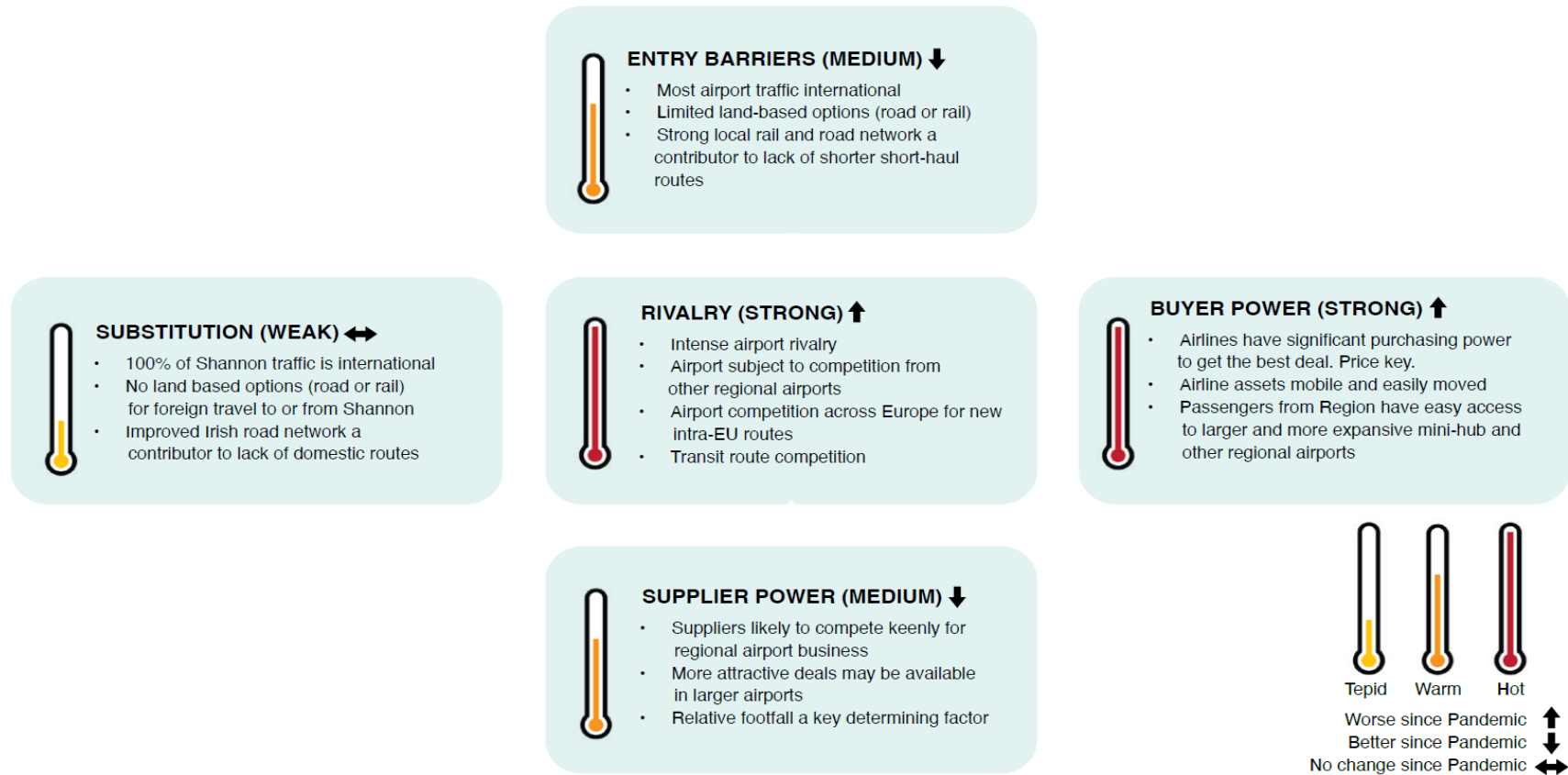
SOCIAL	TECHNOLOGICAL	ECONOMIC	ENVIRONMENTAL
<ul style="list-style-type: none"> Higher than previous expenditure of discretionary income on travel – enduring? Future sustainability actions and opinions → less flying Locations served – do they reflect user profile social characteristics? 	<ul style="list-style-type: none"> More and more routine airport process (including customer facing ones) digitised Digital channels pervasive Data Analytics – unlocking airport customer and passenger information? Role of AI – how will it affect airports? Risks? 	<ul style="list-style-type: none"> Will airport economics change in coming years, and if so, how? National economic growth trends, and how these are influenced by global events? National Development policies – will balanced growth be achieved? 	<ul style="list-style-type: none"> Airport sustainability a key reportable component of the Group's business All utility processes 'greened' as soon as possible Small steps... SAF fuel depot (for BGA and TA) Bigger ones – new aircraft (Inc. unmanned)
POLITICAL	LEGAL	ETHICAL	DEMOGRAPHICS
<ul style="list-style-type: none"> Relative stable political environment Geopolitical climate fragile Local politicians not well represented nationally 	<ul style="list-style-type: none"> A very regulated sector Safety and Security key drivers All aspects of airport activity affected, with 'zero tolerance' prominent Cost of compliance high, but not overly burdensome 	<ul style="list-style-type: none"> Due to sector, most processes are very formal, reducing potential for unethical intervention No short cuts in aviation Vigilance key Risk register coverage? 	<ul style="list-style-type: none"> Understanding demographics of airport users, age, distance from airport, other Is average population age increasing or declining Travel propensity of different age classes Engagement approach by age key

Consider typical elements for each STEELED factor, with a focus on how this assessment impacts your airport *:

Social:	Social factors including current / changing cultural, lifestyle and other key nationally impacting trends
Technological:	Key current and emerging technology trends, including digitalisation and AI
Economic:	Macroeconomic and Microeconomic trends, economic and market growth, inflation, etc.
Environmental:	Climate change, decarbonisation sustainability and other ecological factors
Political:	Government policies affecting aviation/airports; political landscape and likely future directions
Legal:	Legal and regulatory environment and trends at national, European and international level
Ethical:	Behavioural expectations at the societal level, ethical sensitivities guiding activities and operations
Demographics:	Likely effect of key demographic changes, especially with respect to age distribution and population growth

Five Competitive Forces

Shannon Airport, 2023



Source: Porter, Michael E. "The Five Competitive Forces That Shape Strategy." *Special Issue on HBS Centennial. Harvard Business Review* 86, no. 1 (January 2008): 78–93. Adapted by Author

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

Shannon Airport, 2023

INTERNAL - STRENGTHS

- Comprehensive, unrestricted aviation infrastructure
- Strong passenger experience (3D security, speedy processing, US Customs and Border Preclearance facilities)
- Located between 3rd and 4th largest Irish cities
- Ideal west coast tourism base (Wild Atlantic Way)
- Cargo and Maintenance operations busier since pandemic
- Innovation focus – e.g., unmanned air transport

INTERNAL - WEAKNESSES

- Challenging route economics: peripheral location, west of Ireland / west of Europe
- Higher than average cost base
- Modest route network
- Limited non-passenger aeronautical activities
- Poor public transport connections
- All above weaknesses exacerbated by effect of pandemic on smaller airports

EXTERNAL - OPPORTUNITIES

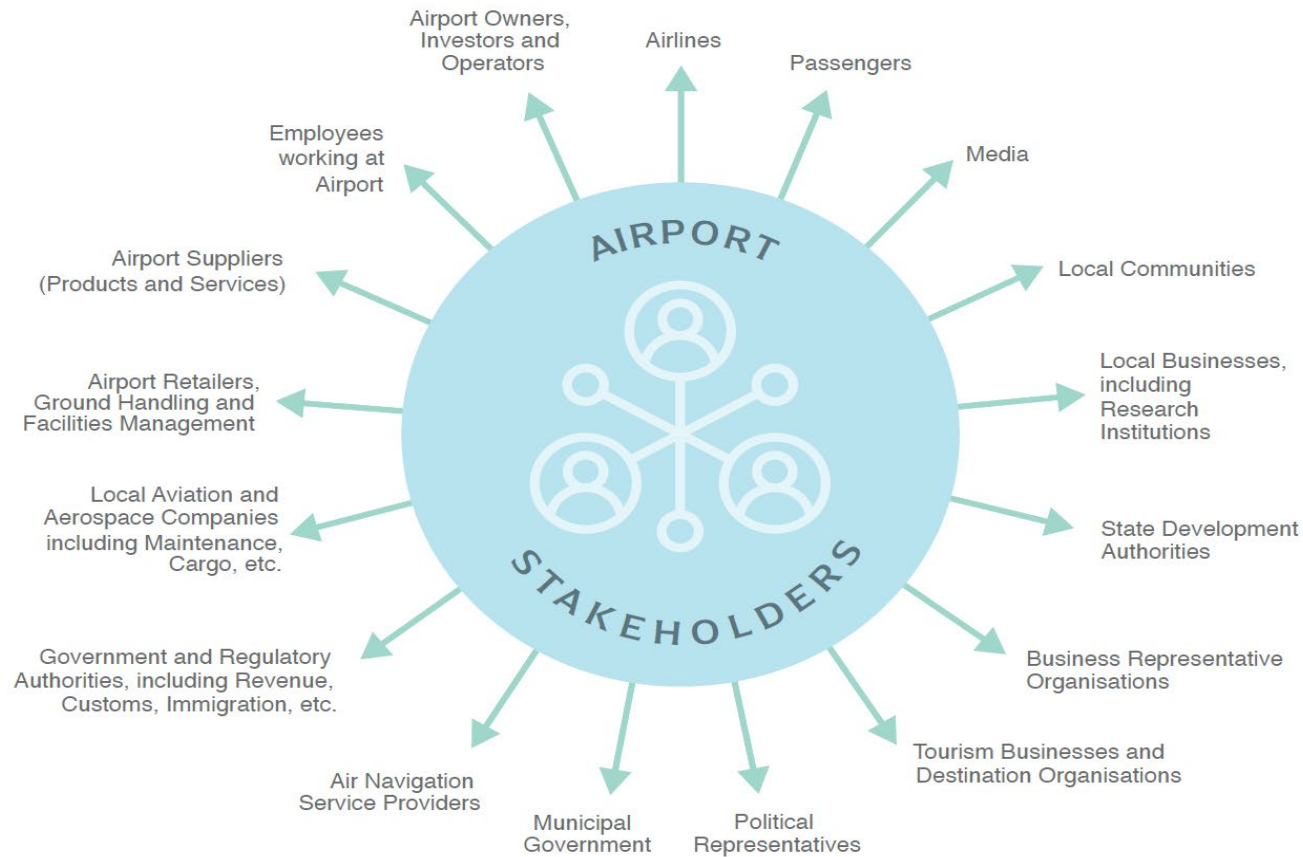
- Policy approaches favouring effective (balanced) economic and aviation development
- Positive economic growth projections
- Emerging regional jet families (c. 100/120 pax) and longer-range narrow bodies
- Growing Business and General Aviation activity
- New funding models / partnerships
- Sustainability focus - e.g., energy and unmanned

EXTERNAL - THREATS

- Intensifying airport competition and increased LCC dominance (66% of total traffic)
- Fragile geopolitical climate
- Reducing use of Boeing 757 by US airlines
- Discontinuation of Airport State Aid
- Continued economic growth in greater Dublin at the expense of Irish regions, including Mid West

Source: Original SWOT analysis, called the SOFT approach (Stewart et al., 1965a, p. 16), was designed as a tool in one of the earliest strategic planning frameworks, named the System of Plans (Stewart, 1963). In Puyt et. al (2023).

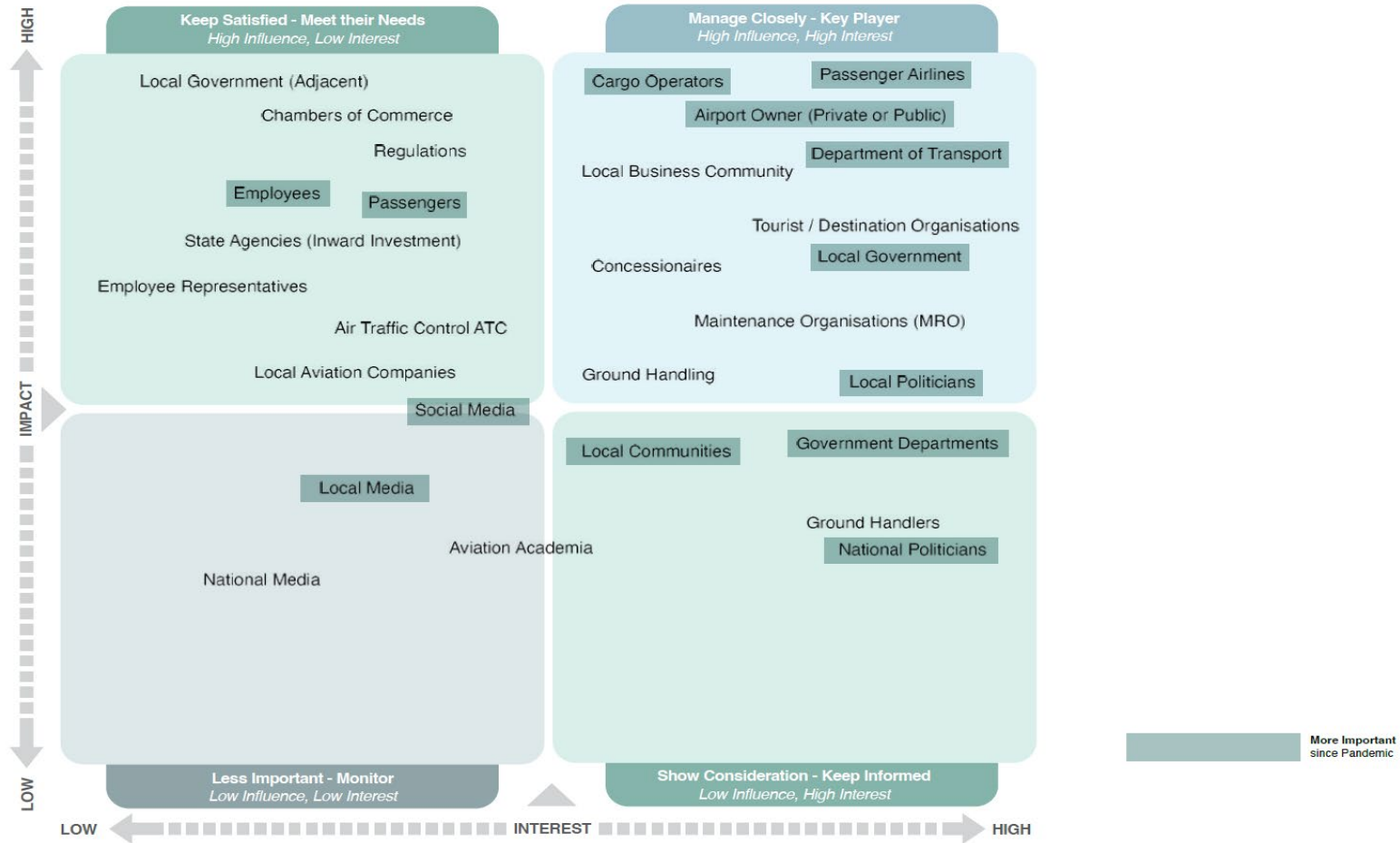
Airport Stakeholders*



"Stakeholders are groups and individuals that have a valid interest in the activities and outcomes of a firm, and on whom the firm relies to achieve its objectives."

(Freeman, 1984) * Developed by author

Airport Stakeholder Analysis



(Bates and Flynn 2014, Adapted by Author)

Current <airport> Interactions with Key Stakeholders: 202x

AIRPORT DEPARTMENT / CONTACT PERSON(S)	TOPIC / SUBJECT OF INTERACTION	ONCE-OFF / REGULAR MEETING SCHEDULE?	NAME AND TYPE OF AIRPORT STAKEHOLDER	AIRPORT STAKEHOLDER CONTACT PERSON

Indicative Airport Stakeholder Contact Framework Document

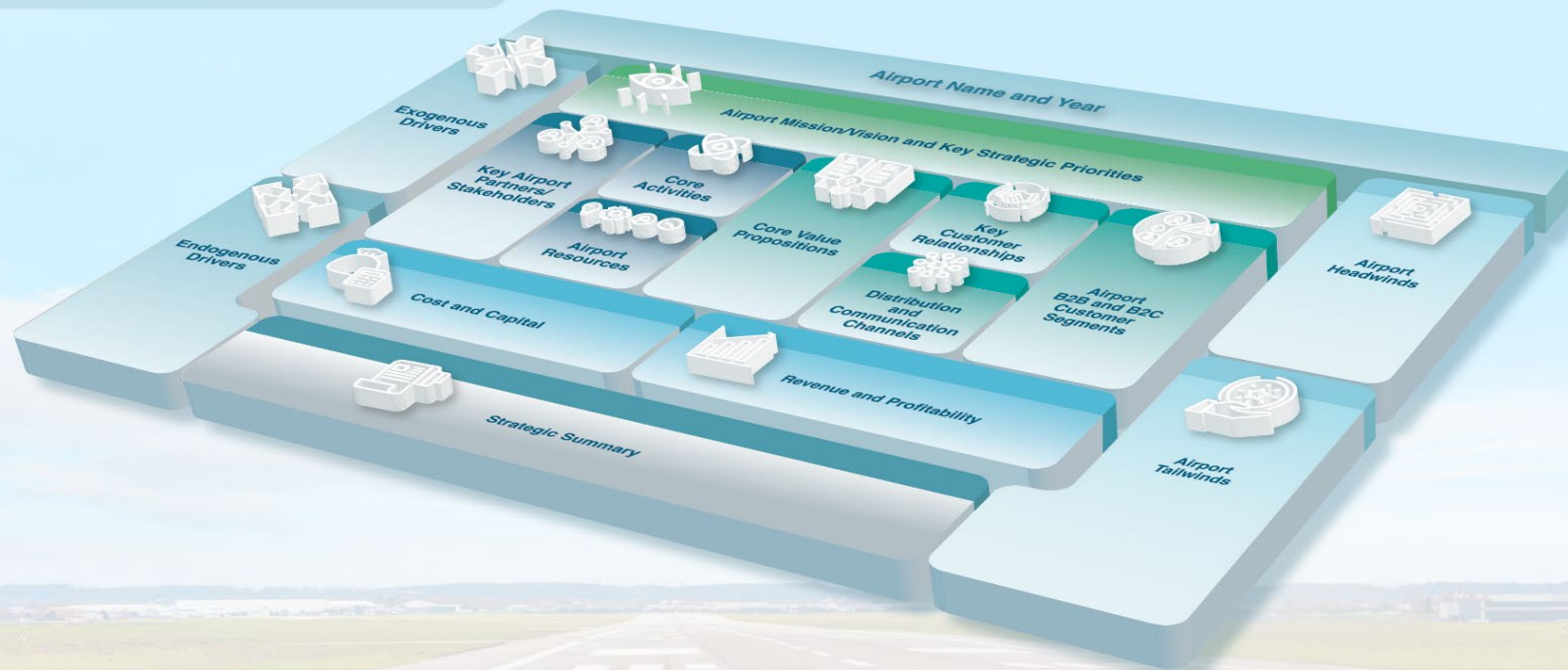
VUCAIR Framework 1a: Airport Assessment Options (Indicative, 2024)

COMPONENT	VOLATILITY	UNCERTAINTY	COMPLEXITY	AMBIGUITY
Description	Oceans of Change; The Perfect Storm	'Known and Unknown Knowns'	Changing and Connected Nature of Events and Factors	Not all Black and White – Shades of Grey; 'Unknown Unknowns'
Component Characteristics (HBR 2014, Adapted)	Volative <i>"Challenge unexpected or unstable, may be of unknown duration."</i> <i>Not necessarily hard to understand; knowledge is often available."</i>	Uncertain <i>"Despite a lack of other information, event's basic cause and effect are known."</i> <i>Change is possible, but not a given."</i>	Complex <i>"The situation has many interconnected parts and variables."</i> <i>Some information is available or can be predicted, but the volume or nature of it can be overwhelming to process."</i>	Ambiguous <i>"Causal relationships are completely unclear. No precedents exist; you face 'unknown unknowns'"</i>
Airport Examples of Assessment Component [Indicative]	<ul style="list-style-type: none"> • Current economic and geopolitical elements emerging and evolving at increased levels of intensity. • For airports, airlines are increasingly demanding and less committed. • Others 	<ul style="list-style-type: none"> • Low predictability / certainty regarding the impact of unclear political and future geopolitical environments. • Better and wider passenger choice (and more demanding passengers). • Aircraft supply chains not now as predictable or reliable, affecting supply and route certainty. • Others 	<ul style="list-style-type: none"> • Aviation is a complex and interconnected industry dealing with enormous volumes of activity along the industry value chain. • An airport's role in this activity requires effective management multi-faceted stakeholder relationships covering a broad range of people, operational and commercial functions. • Others 	<ul style="list-style-type: none"> • Comprehension of situation Unclear link between macro trends and airport-by-airport economics. • Need to manage activities and make decisions in ambiguous environments, sometimes with imperfect information. • Major events (pandemic, war, 9/11, Financial Crisis) brought uncertain and ambiguous environments to the fore for airports. • Others

VUCAIR Framework 1b: Airport Assessment Options (Indicative, 2024)

COMPONENT	VOLATILITY	UNCERTAINTY	COMPLEXITY	AMBIGUITY
Description	Oceans of Change; The Perfect Storm	'Known and Unknown Knowns'	Changing and Connected Nature of Events and Factors	Not all Black and White – Shades of Grey; 'Unknown Unknowns'
Component Characteristics (Reminder)	Volative <i>"Challenge unexpected or unstable, may be of unknown duration."</i> <i>Not necessarily hard to understand; knowledge is often available."</i>	Uncertain <i>"Despite a lack of other information, event's basic cause and effect are known."</i> <i>Change is possible, but not a given."</i>	Complex <i>"The situation has many interconnected parts and variables."</i> <i>Some information is available or can be predicted, but the volume or nature of it can be overwhelming to process."</i>	Ambiguous <i>"Causal relationships are completely unclear. No precedents exist; you face 'unknown unknowns'"</i>
Airport Actions and/or positioning in Response to Challenges [Indicative]	<ul style="list-style-type: none"> • Responsive strategic mindset • Flexible resource allocation • Agile infrastructure • Talent – Right people in key roles to deal with VUCA challenges • Increased organisational defenses, e.g. response to ever more regular weather events • Others 	<ul style="list-style-type: none"> • Planning processes should reflect uncertainty and convey agility and assurance for short & medium term • Scenario and Contingency Planning, e.g., build financial resilience, especially capital and cash • Risk Management activities and Mitigation Factors and Actions • Develop and share key information suite with stakeholders • Others 	<ul style="list-style-type: none"> • Solution and anticipation mindset • Focused on ensuring complex issues and challenges are dealt with and resourced effectively • Well-developed airport stakeholder management framework • Designed to deliver effective collaboration amongst key groups in time of crisis • Others 	<ul style="list-style-type: none"> • Comprehension of situation and what it means to all aspects of airport activity and business • Proactive and Supportive Communication key – what is known, and what is not known? • Stakeholder Flexibility • Test identified contingency scenarios • Others

Flightpath: An Integrated Airport Business Model Canvas



Shannon Airport, March 2024

Appendix C: Primary Research Activity: Plain Language and Consent Statements; Participant Communication (Interviews and Survey)

(1) Airport Stakeholder Survey: Plain Language Statement

My name is Noel Hiney. I am a PhD student at Dublin City University in Ireland, undertaking a study into the economic relationship between airports and their surrounding areas. This study will consider how airport engagement with key stakeholders might contribute to increased levels of regional airport and local economic activity, including focus on activities associated with recovering from the impact and aftermath of Covid 19. For the purposes of this research, 'Stakeholders' are defined as 'groups and individuals that have a valid interest in the activities and outcomes of an airport, and on whom the airport relies to achieve its objectives'. You are invited to complete this questionnaire because of your experience as an airport manager. The procedure involves filling a confidential online survey that will take approximately 20 minutes. No identifying personal details such as your name or email address shall be collected, and information will remain confidential within the legal limitations of law.

Overall research findings and recommendations will be available on my LinkedIn page <https://www.linkedin.com/in/noelhiney/> or you may request a copy by sending an email to noel.phdstudies@gmail.com following completion of the survey. As part of my PhD programme, I am a current recipient of sponsorship from Shannon Group plc, owner of Shannon Airport.

The nature and objectives of his research have been reviewed and approved by Dublin City University's Research Ethics Committee. Should you have any comments or questions regarding any aspect of this survey or research, please feel free to contact me (noel.hiney2@mail.dcu.ie) or either of my PhD supervisors, Professor Edgar Morgenroth (edgar.morgenroth@dcu.ie) or Dr. Marina Efthymiou (marina.efthymiou@dcu.ie)

If you have any concern about this study and wish to get in touch with an independent person, please contact: The Secretary, Dublin City University Research Ethics Committee, c/o Research and Innovation Support, Dublin City University, Dublin 9. Tel 01-7008000, e-mail rec@dcu.ie. Participation in this research study is voluntary, and you may withdraw from the survey at any point.

I am most conscious of your busy work schedule and many business priorities, particularly in these particularly challenging circumstances for airports. I shall be most grateful, however, if you can allocate some of your valuable time to complete this survey on this important topic.

With best wishes, and many thanks for your support.

Noel Hiney.

(2) Airport Stakeholder Survey: Informed Consent Form

Thank you for considering participation in this airport stakeholder research project being undertaken by Mr. Noel Hiney, PhD Student in Dublin City University. This study will consider how airport engagement with key stakeholders might contribute to increased levels of regional airport and local economic activity, including business recovery activities associated with dealing with the impact and aftermath of Covid 19.

Should you choose to complete this survey, you will be asked a number of questions relating to your airport's dimensions and stakeholder activity, and your views on these matters and current events.

You must be over the age of 18 to complete this survey. Participation is completely voluntary, and there is no obligation to contribute. All information you provide will be confidential and protected within the limitations of the law. Your anonymity will be protected throughout the study.

You maintain the right to withdraw from the survey at any stage up to the point of data submission. When this point is reached, your data will be collated with that of other participants and can no longer be retracted. The anonymous data collected from this survey will be stored until the completion of the author's research and will then be subsequently deleted.

If you have any queries about this research, you can contact the author, Noel Hiney (noel.hiney2@mail.dcu.ie) or either of his PhD supervisors, Professor Edgar Morgenroth (edgar.morgenroth@dcu.ie) or Dr. Marina Efthymiou (marina.efthymiou@dcu.ie).

If you agree to take part in this research study, please read the statements below and provide your consent by clicking on each statement:

- ☐ I have read the Plain Language Statement (on the previous page) (4)
- ☐ I understand the information provided (5)
- ☐ I have been provided with contact details if I have questions about the study (7)
- ☐ I understand the information provided in relation to Data Protection (8)

- ☐ I understand I may withdraw from the study at any point by closing my browser (9)
- ☐ I have read and understand the arrangements to be made to protect confidentiality of data — including that confidentiality of information provided is subject to legal limitations (10)
- ☐ I consent to participate in this research study (11)

(3) Dublin City University Research Project: Semi-Structured Interviewee Participant Information

'How do relationships and engagements between stakeholders and Irish airports contribute to activities undertaken in response to the impact of and recovery from the COVID-19 Pandemic?'

My name is Noel Hiney. I am a PhD student at Dublin City University in Ireland, undertaking a study into the economic relationship between airports and their surrounding areas. This study will consider how airport engagement with key stakeholders might contribute to increased levels of regional airport and local economic activity, with a focus on activities associated with dealing with and recovering from the impact and aftermath of COVID-19.

For the purposes of this research, 'Stakeholders' are defined as 'groups and individuals that have a valid interest in the activities and outcomes of an airport, and on whom the airport relies to achieve its objectives'.

You are invited to participate in this research because of your organisation's relationship with Irish airports. The procedure involves a semi-structured interview that is expected to take 60 minutes to complete, conducted by agreement either (1) through use of an online conferencing platform such as Zoom/Teams/Webex, or (2) on-site in a COVID-19 compliant manner. The interview will be recorded and conducted on a private and confidential basis within the limitations of the law, and your name or other identifying information will not be disclosed or published in any research output.

Interview transcripts will be available only to my supervisors and myself and will be safely and securely disposed of following conclusion of my PhD studies. To facilitate data analysis, it will be essential to draw on the support of a professional transcription of the interviews but this party, once recruited, will be bound by the confidentiality processes set out in this application. A confidentiality agreement will be drawn up with an experienced transcriber who regularly

undertakes such work for DCU researchers. The researcher will ensure that the data is protected and that the confidentiality of individual participants is maintained at all times.

Overall research findings and recommendations will be available on my LinkedIn page (<https://www.linkedin.com/in/noelhiney/>), or by confirming such interest at the end of the interview. As part of my PhD programme, I am a current recipient of sponsorship from Shannon Group plc, owner of Shannon Airport.

The nature and objectives of his research have been reviewed and approved by Dublin City University's Research Ethics Committee. Should you have any comments or questions regarding any aspect of this survey or research, please feel free to contact me (noel.hiney2@mail.dcu.ie) or either of my PhD supervisors, Professor Edgar Morgenroth (edgar.morgenroth@dcu.ie) or Dr. Marina Efthymiou (marina.efthymiou@dcu.ie).

If you have any concern about this study and wish to get in touch with an independent person, please contact: The Secretary, Dublin City University Research Ethics Committee, c/o Research and Innovation Support, Dublin City University, Dublin 9. Tel 01-7008000, e-mail rec@dcu.ie. Participation in this research study is voluntary, and you may withdraw from the interview at any point.

Very many thanks for your support.

Noel Hiney.

(4) Dublin City University Research Project: Informed Interview Consent Form

Thank you for considering participation in this airport stakeholder research project being undertaken by Mr. Noel Hiney, PhD Student in Dublin City University.

Research Study Title

How do relationships and engagements between stakeholders and Irish airports contribute to activities undertaken in response to the impact of and recovery from the COVID-19 Pandemic?

Purpose of this research

Through a focus on stakeholder relationships with Irish Airports, this study will consider how airport engagement with key stakeholders might contribute to increased levels of regional airport and local economic activity, with a focus on business recovery activities associated with dealing with the impact and aftermath of COVID-19.

Participation in this interview

Should you choose to participate in this interview, you will be asked a number of questions relating to your organisation's dimensions and airport stakeholder activity, and your views on these matters, current events and factors affecting or affected by the impact of the COVID-19 Pandemic.

This interview is expected to take 60 minutes to complete and is being conducted, subject to your agreement, using a virtual conferencing platform. Interview audio will be recorded.

You must be over the age of 18 to complete this survey. Participation is completely voluntary, and there is no obligation to participate. All information you provide will be confidential and protected within the limitations of the law, and your anonymity will be protected throughout the study.

Interview transcripts will be available only to my supervisors and myself and will be safely and securely disposed of following conclusion of my PhD studies.

You maintain the right to withdraw from the interview at any stage. If you have any queries about this research, you can contact the author, Noel Hiney (noel.hiney2@mail.dcu.ie) or either of his PhD supervisors, Professor Edgar Morgenroth (edgar.morgenroth@dcu.ie) or Dr. Marina Efthymiou (marina.efthymiou@dcu.ie).

Confirmation

If you agree to take part in this research study, please agree to the consent questions below. If you do not wish to proceed with the interview, you may decline to participate by selecting 'Yes' at the bottom of this section.

Participant — please agree to the following (Confirm Yes or No for each question, when asked to do so by researcher at beginning of interview)

Statement	Yes/No
I have read the Plain Language Statement (or had it read to me via phone/screen)	Yes/No
I understand the information provided	Yes/No
I understand the information provided in relation to data protection	Yes/No
I have had an opportunity to ask questions and discuss this study	Yes/No
I have received satisfactory answers to all my questions	Yes/No
I am aware that my interview will be recorded	Yes/No
I would like to receive a summary of research findings and recommendations	Yes/No
I confirm that I am over the age of 18	Yes/No
I understand that my involvement in this Airport Stakeholder Research Study is voluntary, i.e. that I may withdraw from the interview at any point.	Yes/No
I confirm that I have read and understand the information sheet for the above study and have been given the opportunity to ask questions regarding same.	Yes/No
I agree to take part in this interview	Yes/No

If no to last question:

I decline to participate in this interview.

Yes

-

Confirmation [Please acknowledge the following statement now and send confirmation to noel.hiney2@mail.dcu.ie]:

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this airport stakeholder research project.

Participant Name _____

Date: _____

(5) Interviewee Communication (anonymised)

Dear <name>

Good morning and very many thanks again for supporting my aviation research through the interview scheduled for <date> at <time>. Our conversation will explore how relationships and engagements between stakeholders and Irish airports contribute to activities undertaken in response to the impact of and recovery from the COVID-19 pandemic.

In headline terms, the interview will take no more than one hour and will cover:

1. Key airport stakeholder relationships (nature, structure, effectiveness) in the pre-COVID-19 world.
2. Emergence of COVID-19 <organisation> events from this stakeholder perspective
3. Current state of such stakeholder relationships and <organisation> view on how they might be affected by present and future COVID-19 developments

An indicative 'topic set' is appended below, which goes into further detail.

I have attached an information page and an interview consent form for approval, which I will go through with you prior to the commencement of our conversation. The interview is confidential, and audio (only) will be recorded. The transcript will be available only to my supervisors and myself and will be safely and securely disposed of following the conclusion of my PhD studies.

Thank you very much again, <name>, and I look forward to our conversation next <day>.

Best wishes,

Noel.

Noel Hiney

+ 353 87 256 8159

noel.hiney2@mail.dcu.ie

Indicative Semi-Structured Interview Question Areas:

- *<organisation> overview, and description of your specific role as <title>?*
- *How does <organisation> manage ongoing relationships with key airport stakeholders (e.g. who are they, importance, key account management versus less formal approach, responsibility, frequency of engagement, etc.)?*
- *How is the effectiveness of these stakeholder relationships measured? What typically defines a successful/effective relationship and what are the key areas (if any) of 'tension'?*
- *<Typical> stakeholder engagement processes in your organisation*
- *Emergence of Covid 19 as an issue earlier this year — how did <organisation> respond generally, and specifically with respect to airport stakeholders (especially airlines, central/local government, ground operators and concessionaires)?*
- *How has Covid 19 affected the nature and frequency of stakeholder activity and engagement with key <organisation> stakeholders (e.g. Virtual or physical? Level of collaboration — higher or lower than pre-Covid?)*
- *How long do you think it will take before normal levels of air transport activity will return (a question asked of all interviewees)?*
- *Your view on the single biggest threat to recovery from a <organisation> perspective?*
- *Are there any other relevant topics I may have missed?*

Appendix D: Primary Research Activity: Survey Questionnaire

Name*

*Please be assured that airport name will remain strictly confidential to researcher and is used to collect publicly available information only.

How many passengers went through your airport in 2019 (millions)?

Airport Type (select the category which best describes your airport's passenger activity)?

- ☐ International, major hub activity
- ☐ International, point to point and/or some hub activity
- ☐ Regional, primarily short-haul international routes
- ☐ Regional, domestic and international routes
- ☐ Local, primarily domestic and neighbouring country routes

Your Airport Role/Responsibility. Which of the following most accurately describes your current airport management role?

- ☐ Planning and/or Strategy Management
- ☐ Commercial/Retail Activities
- ☐ Airport Operations (Landside)
- ☐ Airport Operations (Airside/Airfield)
- ☐ Marketing and/or Communications
- ☐ Digital Activity (including social media)
- ☐ Other Role/Responsibility (please specify in the box below)
- ☐ Regulation and/or Compliance
- ☐ Central Function [e.g. Finance, Human Resources (HR), Information Technology (IT)]

Approximately how far is your competitor Airport from your own Airport (in km)? Please enter the distance (km) in the box below in digits/numbers only.

- ☐ No. of Kilometers

Length of Your Experience to date. How many years have you spent (a) in your current role and (b) in aviation overall?

- ☐ No. of Years (a)
- ☐ No. of Years (b)

What other aviation related activities take place at your airport (e.g. Cargo, Maintenance, Repair and Overhaul)? [Note: This definition does not include terminal activity such as retailing and food & drink, or car parking].

Select the level of Activity: Major, Medium, Modest/None

- Cargo
- Maintenance, Repair and Overhaul (MRO)
- Commercial Property
- Business Aviation
- Other aviation-related activity (please specify)

Do you know if your airport benefits/has benefited from any of the state support/govt funding schemes mentioned. (1) Today (2) Ten Years Ago

- Air Route subsidy fund/grant
- Air Route promotion fund/grant
- Airport improvement fund/grant (e.g. Capital and/or Operating expenditure)
- COVID-19 support payment
- Support provided to airline(s) serving my airport
- Other state support scheme (please specify in the box below)

Please review and assess the following list of typical airport stakeholders, assessing their importance on a scale of 1 (not important) to 3 (very important).

- Airlines
- Passengers
- Tourism Organisations — Government and Trade Associations
- Tourist Activities — Hotels, Tour Operators, etc.
- Local Community
- Local Government
- State Government
- Airport Shareholders / Owners
- Aviation Regulators
- Companies in region of airport
- Airport Employees
- Outsourcing Partners
- Concession Operators in Airport (Food, Duty-Free, Shopping, etc.)
- Ground Handlers
- Fire, Police and Other Statutory Services
- Maintenance, Repair and Overhaul Companies
- Chamber(s) of Commerce
- Freight/Cargo Companies
- Military / Defence Forces

Regional Airports at the Crossroads (Again)

- Government Agencies
- Politicians
- Media
- Other airport stakeholders (Please specify)

Has the relative importance of your airport stakeholders changed because of COVID-19?

Please select the suitable option where 1 = No Change and 3 = Significant Change

- Airlines
- Passengers
- Tourism Organisations — Government and Trade Associations
- Tourist Activities — Hotels, Tour Operators, etc.
- Local Community
- Local Government
- State Government
- Airport Shareholders / Owners
- Aviation Regulators
- Companies in region of airport
- Airport Employees
- Outsourcing Partners
- Concession Operators in Airport (Food, Duty-Free, Shopping, etc.)
- Ground Handlers
- Fire, Police and Other Statutory Services
- Maintenance, Repair and Overhaul Companies
- Chamber(s) of Commerce
- Freight/Cargo Companies
- Military / Defence Forces
- Government Agencies
- Politicians
- Media
- Other airport stakeholders (Please specify)

Frequency of stakeholder engagements/meetings (post COVID-19)

- Lower
- No Change
- Higher

Structure of stakeholder engagements/meetings (post COVID-19)

- More Ad-hoc
- No Change
- More Structured

Method of stakeholder engagements/meetings (post COVID-19)

- More face to face
- More Remote/Virtual than face to face
- Mainly Remote/Virtual

With respect to each stakeholder category below, please identify the level of stakeholder engagement activity.

Please select from the options below where 1 = Lowest Level, 3 = Highest Level

- Internal Airport Stakeholders
- With other aviation stakeholders, e.g. airlines, ground handling organisations
- With regional (non-aviation) stakeholders e.g. tourist organisations, business groups
- With Government, State Agencies and regulators
- Other airport stakeholders (please specify)

To what extent has the impact of COVID-19 influenced your view on the ranking of stakeholder engagement benefits?

- No Influence
- Some Influence
- Major Influence

How is responsibility for Stakeholder Engagement in your Airport organised?

- Single airport manager, with overall responsibility for undertaking stakeholder management activity
- Single airport manager co-ordinates stakeholder activity. Other managers are responsible for designated stakeholder relationships
- No overall responsibility, airport responsibility depends on the specific stakeholder relationship
- Other (please specify below)
- I do not know

How is stakeholder engagement activity in your airport primarily managed?

- Formal / Structured (e.g. scheduled meetings, formal notes, follow up actions)
- Informal / Unstructured (e.g. event-driven, irregular meetings, etc.)

Please identify the frequency of selected stakeholder activities undertaken by your airport, if known (e.g. community outreach, government engagement (national/local), business networking, route conferences, etc.)

Frequency Options: Monthly or more frequently; Quarterly; Bi-annually; Annually

- Airport Operator Groups
- Local Community
- Business Networking

Regional Airports at the Crossroads (Again)

- Route Conferences
- Local and National Government Representatives
- Political Representatives
- Media
- Others (please specify in the box below)

Is the effectiveness of your Airport's Stakeholder Activity subject to review/assessment?

- Yes
- No

If yes, how frequently is the effectiveness of your airports stakeholder relationship activities reviewed/assessed?

- At least annually
- Every 1/3 years
- Less frequently/never

Please assess the importance of the following stakeholder activities for your airport.

Options: Not Important; Moderately Important; Very Important

- Airport Operator Groups
- Local Community
- Business Networking
- Route Conferences
- Local and National Government Representatives
- Political Representatives
- Media
- Other (please specify)

Airport Stakeholder Groups These types of dedicated stakeholder groups are often established for a fixed period of time, and their main objective is normally to promote traffic and activity in an airport and its region. Has your airport had one or more dedicated Stakeholder Groups in last 10 years?

- Yes
- No
- Don't know

Benefits associated with successful Stakeholder Engagement are listed below. In your opinion, which three of the stakeholder activities listed above are most important for your airport?

- Better airport strategies

- Better anticipation of future problems
- Better financial performance
- Effective Government and Regulator relationship
- Good relationships with airport ‘community’
- More routes/increased passenger numbers
- Solve stakeholder relationship challenges
- Stronger local business relationships

What influence has the pandemic had on this assessment?

- No Influence
- Some Influence
- Major Influence

How does your airport manage its sustainability stakeholder activities?

- Sustainability is a strategic priority, with an organisation-level sustainability stakeholder strategy in place, including Board / Director level oversight
- The Head of Sustainability in the airport is the only person responsible for these activities
- Responsibility for sustainability activity depends on the area
- Very little sustainability activity takes place
- I do not know

Does your airport collaborate/cooperate with outside organisations on sustainability activities?

- Yes, with other local stakeholders
- Yes, with other aviation stakeholders (including other airports)
- Yes, with a combination of the above
- Yes, with other stakeholders I don’t compete with!
- No, most sustainability activity is undertaken within my organisation
- I do not know

What is the greatest single threat to business recovery post COVID-19, and what do you believe is the greatest opportunity for your airport?

- Greatest Threat (Please write in the box provided)
- Greatest Opportunity post COVID-19 (Please write in the box provided)

Airport Stakeholder Engagement — Your Further Observations. Please use this space if you wish to share any further observations with respect to airport stakeholder management and the impact of COVID-19 on this activity.

- This can include your view on key success factors, challenges, how you might define success and recommendations to help improve effectiveness (c. 100 words).

Appendix E: Research Ethics Committee (REC) Approval Certificate

Ollscoil Chathair Bhaile Átha Cliath
Dublin City University



Mr. Noel Hiney
DCU Business School

Dr. Marina Efthymiou
DCU Business School

Prof. Edgar Morgenroth
DCU Business School

6th April 2020

REC Reference: DCUREC/2020/064

Proposal Title: The Impact of Stakeholder Engagement on Regional Airport Performance

Applicant(s): Mr. Noel Hiney, Dr. Marina Efthymiou and Prof. Edgar Morgenroth

Dear Colleagues,

This research proposal qualifies under our Notification Procedure, as a low risk social research project. Therefore, the DCU Research Ethics Committee approves this project.

Materials used to recruit participants should state that ethical approval for this project has been obtained from the Dublin City University Research Ethics Committee.

Should substantial modifications to the research protocol be required at a later stage, a further amendment submission should be made to the REC.

Yours sincerely,

A handwritten signature in cursive script, reading 'Geraldine Scanlon'.

Dr Geraldine Scanlon
Chairperson
DCU Research Ethics Committee

