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“ESG and Financial Performance in the Aviation Sector: A comparative analysis between Aegean Airlines and Ryanair”

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''To my husband and my children''

Abstract

Corporations are increasingly focusing on Environmental, Social and Governance (ESG) strategies for a sustainable environment which have impacted business models across organizations including aviation. This thesis studies the relationship between the ESG strategies and financial performance of Aegean Airlines and Ryanair. Aegean Airlines, a legacy carrier, and Ryanair, a low-cost airline, present two different options on how to implement ESG, showing how both strategies work with different business models. The study design of them is a comparative case study. The research will utilize the secondary data from sustainability reports, corporate disclosures, and financial statements. The analysis examines the airlines' environmental actions, social responsibility programs and governance frameworks, focusing on their effect on financial performance along with regulatory compliance and stakeholder engagement. The fleet modernization, carbon reductions schemes, employee welfare programs, and governance transparency are key ESG strategies.

The findings suggest that implementing ESG will be increasingly important for long-term financial sustainability and competitiveness in the aviation sector. Essentially, Aegean focuses on the regulations and Ryanair focuses on cost. The study shows that while ESG has the potential to enhance profits, especially with a long-tail approach, a balance is required to prevent the sacrifice of short-term gains. This study is aimed at adding to the evidence on the growing literature concerned with the importance of ESG in aviation concerning the ecosystem as well as financially. The comparative analysis of the research provides input for participants especially the investors, policy makers and other market players that sustainability is not only a moral responsibility but also a financial opportunity. The research highlights the need of standardized ESG reporting frameworks to increase transparency and comparability across the industry.

Keywords

ESG, financial performance, aviation industry, Aegean Airlines, Ryanair, sustainability, corporate governance

Περίληψη

Οι επιχειρήσεις επικεντρώνονται όλο και περισσότερο στις στρατηγικές Περιβάλλοντος, Κοινωνικής Ευθύνης και Διακυβέρνησης (ESG) για ένα βιώσιμο μέλλον, γεγονός που έχει επηρεάσει σημαντικά τα επιχειρηματικά μοντέλα σε διάφορους κλάδους, συμπεριλαμβανομένης της αεροπορίας. Η παρούσα διατριβή εξετάζει τη σχέση μεταξύ των ESG στρατηγικών και της οικονομικής απόδοσης των Aegean Airlines και Ryanair. Η Aegean Airlines, ως αερομεταφορέας κανονικού κόστους, και η Ryanair, ως αεροπορική εταιρεία χαμηλού κόστους, αντιπροσωπεύουν δύο διαφορετικές προσεγγίσεις στην εφαρμογή των ESG, δείχνοντας πώς οι στρατηγικές βιωσιμότητας ευθυγραμμίζονται με διαφορετικά επιχειρηματικά μοντέλα. Η μελέτη υιοθετεί ένα συγκριτικό μοντέλο ανάλυσης περίπτωσης, αξιοποιώντας δευτερογενή δεδομένα από εκθέσεις βιωσιμότητας, εταιρικές γνωστοποιήσεις και οικονομικές καταστάσεις. Η ανάλυση διερευνά τις περιβαλλοντικές πρωτοβουλίες, τα προγράμματα κοινωνικής ευθύνης και τα πλαίσια διακυβέρνησης των αεροπορικών εταιρειών, εστιάζοντας στην επίδρασή τους στην οικονομική απόδοση, τη συμμόρφωση με τους κανονισμούς και τη δέσμευση των ενδιαφερόμενων μερών. Βασικές ESG στρατηγικές που εξετάζονται περιλαμβάνουν τον εκσυγχρονισμό του στόλου, τα προγράμματα μείωσης του άνθρακα, τις πρωτοβουλίες για την ευημερία των εργαζομένων και τη διαφάνεια στη διακυβέρνηση.

Τα ευρήματα δείχνουν ότι η εφαρμογή ESG καθίσταται ολοένα και πιο σημαντική για τη μακροπρόθεσμη οικονομική βιωσιμότητα και την ανταγωνιστικότητα στον αεροπορικό τομέα. Η Aegean Airlines επικεντρώνεται κυρίως στη συμμόρφωση με τους κανονισμούς, ενώ η Ryanair δίνει έμφαση στην αποδοτικότητα κόστους. Η μελέτη αναδεικνύει ότι, παρόλο που οι ESG στρατηγικές μπορούν να ενισχύσουν την κερδοφορία, ειδικά με μια μακροπρόθεσμη προοπτική, απαιτείται ισορροπημένη προσέγγιση ώστε να μην θυσιάζονται τα βραχυπρόθεσμα οικονομικά οφέλη. Η έρευνα αυτή συμβάλλει στην αναπτυσσόμενη βιβλιογραφία για την ESG στον αεροπορικό τομέα, καλύπτοντας τόσο τις περιβαλλοντικές όσο και τις οικονομικές επιπτώσεις. Η συγκριτική ανάλυση παρέχει πολύτιμες πληροφορίες σε επενδυτές, υπεύθυνους χάραξης πολιτικής και παράγοντες της αγοράς, ενισχύοντας την ιδέα ότι η βιωσιμότητα δεν αποτελεί μόνο ηθική υποχρέωση αλλά και οικονομική ευκαιρία. Η μελέτη υπογραμμίζει την ανάγκη για τυποποιημένα πλαίσια αναφοράς στο πλαίσιο του ESG ώστε να βελτιωθεί η διαφάνεια και η συγκρισιμότητα στον κλάδο.

Λέξεις – Κλειδιά

Στρατηγικές ESG, οικονομική απόδοση, αεροπορική βιομηχανία, Aegean Airlines, Ryanair, βιωσιμότητα, εταιρική διακυβέρνηση.

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1. Introduction

Modern-day businesses now have sustainability at the forefront if they want to remain competitive and respond to the demands of a changing world (Li et al., 2021). In the aviation industry, which faces great challenges and demands on its environmental and social fronts, adopting ESG (Environment, Social, Governance) strategies proves to be decisive. Research on the relationship of ESG strategies with financial performance is of significant importance as it assists the companies to attain profits and sustainability (Henisz et al., 2019).

This dissertation study aims to examine this relationship through the Aegean Airlines, a leading company in the aviation sector in Europe. Aegean Airlines is a commendable example in the realm of sustainability. Aegean Airlines adopts practices that lessen the airline's footprint and improve its social responsibility. The selected organization represents the wish of the desire to study an innovative yet sustainable organization (Cao et al., 2024). The introduction of this dissertation outlines the relationship between companies' ESG strategies and financial performance. The section further details the aims, the research questions, and the structure of the thesis, laying out a clear plan to aid understanding. This research seeks to explain that through the sustainability of the airlines industry, added value may be generated.

1.1 Purpose of research

The goal of this research is to study the impact of ESG (Environment, Social Responsibility, Corporate Governance) strategies on the ESG and financial performance of companies, particularly in the aviation sector. In a sector with high environmental burden and social demands, ESG strategies are a crucial factor behind the businesses' long-term sustainability (Yildiz et al., 2024). The goal of the study is to show how the implementation of these strategies can be a game changer to increase competitiveness and sustainability apart from the moral duty. The research focuses on Aegean Airlines, one of the most popular airlines in Europe. Aegean Airlines is committed to sustainability, as it reduces the environmental footprint, socially supports everyone in the wider community and upholds high standards of corporate governance (Cao et al., 2024). The case study of Aegean Airlines helps comprehend ESG strategies in an industry that is under immense environmental regulations and at the same time demanding social responsibility.

In this context, the study seeks to grapple with fundamental issues regarding the implementation and performance of ESG strategies. To start with, it studies how Aegean Airlines designs and implements its ESG strategies, taking into consideration its internal resources and external market pressures. The researcher assesses the extent to which these strategies were successful in terms of ESG performance and examines their indicative impact on the company's financial indicators, without conducting a causal statistical analysis. Also, it sees Aegean Airlines' initiatives in comparison with other companies' actions in the sector. The choice of this specific topic is not accidental. Climate change and sustainability issues are most developed in the aviation sector. At the same time, cost-cutting pressure at airlines is constant while heightening the customer experience and strengthening their position. In this context, ESG strategies are emerging as a key success factor (Cregan et al., 2024). This study intends to provide findings and recommendations about the ways in which companies in the industry could incorporate ESG in their strategy with the help of Aegean Airlines analysis.

At the same time, the study aims to bridge the gap between theory and practice. While the theoretical approaches to ESG strategies are quite well established, there is a lack of empirical data demonstrating their impact on financial performance, especially in the aviation industry. The absence of such data makes this research all the timelier and more relevant, as it provides empirical evidence of the correspondence between sustainability and financial performance. This study does not only examine Aegean Airlines' performance in particular. This will also emphasize how ESG strategies can form the basis for the development of the industry as a whole. By giving practical recommendations and strategic directions, the study aims to impact academics and professionals engaged in aviation management.

1.2 Objectives and research questions

The objectives of this research are:

- ✓ To analyze the main ESG strategies implemented by Aegean Airlines and Ryanair and their performance, evaluating their alignment with environmental, social, and governance requirements and their contribution to the company's broader strategic approach.

- ✓ To examine the evolution of ESG strategies and practices in Aegean Airlines and Ryanair alongside the trends in their financial performance, while identifying the associated costs, benefits, and challenges.
- ✓ To compare and contrast Aegean Airlines and Ryanair ESG initiatives, evaluating their strategic positioning and providing insights into the long-term viability and practical application of ESG strategies in aviation.

The research questions of this dissertation are:

1. What are the main ESG strategies implemented by Aegean Airlines and Ryanair, and how do they align with environmental, social, and governance requirements?
2. How do ESG strategies affect Aegean Airlines and Ryanair ESG and financial performance?
3. How does Aegean Airlines' approach to ESG as a legacy airline compared to Ryanair as low-cost airline?
4. What are the key success factors and challenges in implementing ESG strategies in Aegean Airlines and Ryanair?

1.3 Significance of the study

The research will help better understand and practice the implementation of ESG in aviation. At first sustainability was a "nice-to-have" business choice. But it has become a core driver of business development and operations strategy. A comparative case study of an airline with legacy status (Aegean Airlines) and low-cost airline (Ryanair) presents an uncommon opportunity in one of the most environmentally sensitive sectors to examine ESG principles. The aviation industry is under tremendous pressure to reduce its carbon footprint thus making a good case to study how such industries adapt to sustainability (Abdi et al., 2022).

The study will incorporate various dimensions to showcase the importance of ESG strategies in the context of airlines. From a strategic point of view, the research will be valuable into how sustainable practices integration can enhance the competitiveness of legacy and low-cost carriers. The use of ESG strategies is not only to comply with the law but to use it as a differentiation lever that creates extra value for customers and stakeholders. Aegean Airlines and Ryanair sustainability approaches help examine the different business models in the industry. It shall shed light on how sustainability is integrated into operations. By deciphering such strategic actions, other companies in the same or related sectors can benefit (Caraveo et al., 2023).

An important part of this research investigates the influence of ESG practices on profitability. Through consideration of both Aegean Airlines and Ryanair, the study aims to evaluate the impact of sustainability-oriented strategies on financial indicators of different airline business models. Through this comparative analysis, shareholders and investors will be equipped with useful knowledge for their decision-making regarding financing and strategic development in the aviation industry. Also, it strengthens the viewpoint that sustainability is not only a moral responsibility but also an economic opportunity (Cregan et al., 2024).

The research adds to the existing literature with empirical proofs sourced from a unique industry. There has been limited study of ESG practices in the Greek aviation sector and the comparison of legacy versus low-cost carriers even less so. As a result, this dissertation is a useful academic resource. The information and results collected from the two airlines, Aegean and Ryanair, enriched the larger literature on the ESG applications in aviation on how airline models behave in relation to ESG. This allows for a follow-up and for other academia to expand on this research into a different sector or comparable findings.

The findings provide basis for actionable recommendations that can be utilized by businesses. The study shows how legacy and low-cost carriers incorporate sustainability into their business model without compromising on cost efficiency. This provides companies with strategies to comply with increasingly stringent regulations, adhere to sustainable customer preferences, and remain viable. This study becomes more important in terms of what industry is doing. Airlines are subjected to increasing environmental regulations and customers increasingly demanding responsibility from companies in their actions. In this environment, ESG policies are necessary for long-term financial sustainability. By comparing Aegean Airlines and Ryanair, this study fully assesses the opportunities and constraints that can arise from ESG implementation for different airline business models.

1.4 Structure of the dissertation

The dissertation has five main chapters, each one looking at other dimensions of the research. The chapters are built upon each other. The first chapter, the Introduction, sets the context of the study outlining the purpose, objectives, and research questions. It provides an overview of the importance of ESG strategies in aviation and sets the basis for the analysis that follows. The literature review chapter will examine the relevant theoretical frameworks as well as existing research studies that cover ESG strategies and the aviation sector. This section contributes to the understanding of the research framework and the critical issues that concern relevant literature. The methodology chapter explains in detail the research procedure, collection of data, and the criteria for the evaluation of data. The results and discussion chapter presents and analyses the findings. Comparison is done with other findings in the literature. Finally, the last chapter of this dissertation is the conclusions chapter that summarizes the research findings. Also, theoretical, and practical implications, limitations and future research suggestions will be discussed. This structure allows for a deeper understanding of the relationship between ESG and financial performance in aviation.

2. Literature review

2.1 Introduction

This chapter seeks to understand the meaning, origin and significance of Environmental, Social and Governance (ESG). The use of ESG in strategic and operational decisions is now being adopted by many industries to greatly benefit from it. The ESG framework has become an invaluable tool through which organizations can access a systematic way to evaluate their efforts concerning environmental, social, and governance-related issues. This chapter tries to explain the basics of ESG, its historical roots, and the factors driving its widespread adoption in contemporary business environments.

To achieve these purposes the chapter has been designed in five main sections. The first section defines the ESG framework along with the environmental, social and governance components of an organization and their importance in measuring performance of an organization. This part also highlights the qualitative and quantitative criteria that fall in every dimension and how they lead to sustainable development and ethical accountability. The second section goes through the history and evolution of ESG framework. By tracing its origins to the socially responsible investment (SRI) movement of the 1960s and 1970s, this section examines the gradual transition from exclusionary practices to integrative approaches that emphasize materiality and performance enhancement. Important events such as the creation of the UN Principles for Responsible Investment and the increase of global reporting frameworks like the Global Reporting Initiative are outlined to highlight the maturity and increased impact of the framework.

Further sections focus on why ESG is important today in business, why it is required to mitigate risks, enhance financial performance and engage stakeholders. According to the analysis, the incorporation of ESG leads to enhancement of resilience, promotion of trust and a contribution to long-term value creation by the corporation. The critique and obstacles linked with ESG implementation are also looked at in this chapter, including standardization, greenwashing, and resource constraints. The final section discusses the future of ESG, trends and initiatives will enhance outcomes credibility and effectiveness while upscaling global applicability. Through this structured exploration, the chapter provides a holistic understanding of the ESG framework and its strategic significance in the evolving business landscape.

2.2 Definition and importance of the ESG framework

Organizations globally are using ESG framework in their strategic and operational decisions and more importantly in their investment decisions. This framework assesses an entity's environmental management, social stewardship and governance practices with a view to align business goals with sustainable development and ethical accountability (Kölbel et al., 2020). Increasingly, stakeholders, including investors, regulators, and consumers, are recognizing ESG as integral to corporate resilience and long-term value creation (Clark et al., 2015).

2.2.1 Defining the ESG framework

At its core, the ESG framework is a set of non-financial criteria used to measure an organization's impact on society and the environment, alongside the quality of its governance structures. These criteria are often categorized as follows:

1. **Environmental (E):** This dimension assesses how an organization interacts with the natural environment. Metrics include carbon emissions, energy efficiency, water usage, waste management, and biodiversity conservation (Gössling & Scott, 2021).
2. **Social (S):** This facet evaluates an organization's relationships with its workforce, customers, and communities. It encompasses labor practices, diversity and inclusion, human rights, and customer satisfaction (Eccles et al., 2020).
3. **Governance (G):** This component examines the company's leadership, ethics, and governance practices. Metrics include board diversity, executive compensation, transparency, and anti-corruption measures (Friede et al., 2015).

The ESG framework transcends traditional financial metrics by focusing on the broader, qualitative dimensions of corporate performance. It allows organizations to address risks and opportunities that might not be apparent through conventional financial analysis.

2.2.2 Historical context and evolution

The roots of the ESG framework can be traced back to the Socially Responsible Investment (SRI) movement of the 1960s and 1970s. In this time frame, investors started to exclude companies from their portfolios that were involved in unethical activities such as tobacco production, arms manufacturing, and apartheid in South Africa (Sparkes & Cowton, 2004). Nonetheless, in the 21st century, we saw a move away from exclusion from unethical companies towards an integrative ESG approach focused on materiality and performance enhancement. Significant milestones encompass the inception of United Nations Principles for Responsible Investment (UNPRI) in 2006 which urged institutional investors to integrate ESG factors into investment decisions (UNPRI, 2021). Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB) laid out frameworks which standardzed the ESG reporting making it comparable (Khan et al. 2016).

2.2.3 Importance of the ESG framework

The growing prominence of ESG is driven by its perceived benefits in risk management, financial performance, and societal impact. Key aspects of its importance are discussed below:

- **Risk mitigation**

Using ESG is useful to identify and stay away from risk. When operations and profitability are heavily impacted, they can be as dramatic as climatic changes or penalties. Social risks like dispute and reputation damage can harm stakeholder trust. Governance failures may also lead to scandals, legal liabilities, and loss of confidence in investors (Flammer, 2021). There are studies that show companies with good ESG performance and those that have implemented various sustainable practices have been able to manage better during the coronavirus crisis (Garel & Petit-Romec, 2021).

- **Financial performance**

There is a considerable amount of evidence that shows a positive link between ESG performance and financial performance. Friede et al. (2015) performed a meta-analysis of greater than 2,000 studies. They found that about 90% of studies had a non-negative ESG-corporate financial performance relation while most had a positive relation. Enhanced operational efficiency, low cost of capital, and high investor confidence can explain it. Also, market valuations tend to be higher for ESG-aligned companies as investors focus more on sustainability. The 2021 Global Client Sustainable Investing Survey from BlackRock showed that 76% of respondents will increase sustainable investing over the next five years. This reiterates the financial importance of ESG (BlackRock, 2021).

- **Stakeholder engagement and trust**

The ESG framework fosters trust and collaboration among stakeholders, including employees, customers, investors, and communities. Organizations that prioritize ESG principles are more likely to attract and retain talent, enhance customer loyalty, and secure social license to operate (Freeman et al., 2020). For example, Patagonia's commitment to environmental sustainability and ethical practices has bolstered its reputation and customer base (Chouinard & Stanley, 2020).

- **Regulatory compliance and policy alignment**

Governments and regulatory bodies worldwide are increasingly mandating ESG disclosures and practices. The European Union's Corporate Sustainability Reporting Directive (CSRD) and the U.S. Securities and Exchange Commission's proposed climate risk disclosure rules exemplify this trend (EU Commission, 2022). By adopting ESG principles, organizations can proactively align with evolving regulations and avoid potential penalties.

- **Societal impact and moral imperative**

Beyond financial and operational advantages, the ESG framework embodies a moral imperative to address global challenges such as climate change, inequality, and corruption. By integrating ESG principles, organizations contribute to the United Nations Sustainable Development Goals (SDGs) and demonstrate their commitment to ethical responsibility (van Zanten & van Tulder, 2018).

2.2.4 Criticisms and challenges

Although the ESG framework has many advantages, it is not exempt from criticism. Critics say that shortcomings of ESG metrics include the lack of standards that result in inconsistency and greenwashing (Delmas & Burbano, 2011). The subjective nature of ESG ratings makes things even more difficult to compare and reliable (Berg et al., 2022). In addition, the challenges of integrating ESG principles include resource constraints, data collection issues, and trade-offs between short-term profits and long-term sustainability. SMEs face challenges in adopting robust ESG strategies on account of limited capacities (Perego & Kolk, 2012).

2.2.5 Future directions

In response to these situations, several initiatives have been taken to improve ESG framework. One significant initiative is the formation of the International Sustainability Standards Board (ISSB) by the International Financial Reporting Standards Foundation

(IFRS). The plan of the ISSB is to create a global framework for sustainability standards (IFRS Foundation, 2021). Developments in artificial intelligence and blockchain technology are also enhancing the quality and traceability of data in ESG. Furthermore, the ESG landscape is evolving due to a growing preference for impact investing. Investors are now focused on the real impact of the operational projects which include reduced carbon footprint or improving the well-being of communities (Brest & Born, 2013).

To conclude, organizations are changing the ways they view sustainability, responsibility, and governance, which are what ESG helps with. The ESG framework is universally understood to encompass activities that align with sustainability and are responsible, and the governance structure of an organization. In spite of the critiques and the challenges contained in the ESG framework, the continuing developments and standardization will enhance the framework. While the entire world is suffering from many challenges, the ESG framework sets a gold path towards a sustainable and equal future (Lagerkvist et al., 2022).

2.3 The ESG framework as a strategic choice

The ESG framework has become a key strategic choice for organizations across sectors, over time and due to growing need. In our days, auditing an organization's Environmental, Social, and Governance (ESG) framework has become imperative to conduct business. The following section discusses the rationale for adopting the ESG framework as a strategic choice along with its benefits and challenges.

Historically, ESG principles were associated with regulatory compliance and corporate social responsibility (CSR) initiatives (Gillan et al., 2021). However, today, ESG is seen as a tool for differentiation and a source for advantage. Firms that undertake ESG frameworks are likely to see themselves ahead of others and in line with stakeholder expectations (Bai et al., 2023). For instance, companies that invest in renewable energy do not only comply with regulations. They also increase efficiency and enhance the brand (Grewatsch 2022). ESG is important because it relates to sustainability in a business's core function and operation.

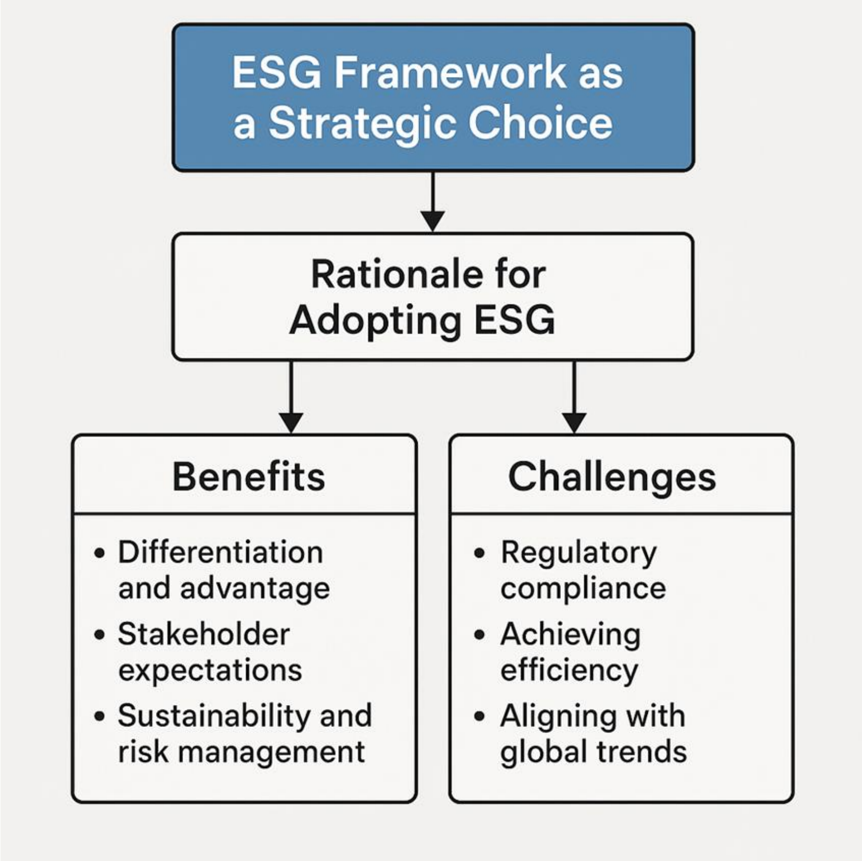

Figure 1: ESG as a strategic choice (author's own elaboration)

Unlike CSR, which is all about charity, ESG fosters the integration of environmental, social, and governance considerations into business decisions (Nugroho et al., 2024). This change enables companies to bring their business models in line with global sustainability trends, like the United Nations Sustainable Development Goals (SDGs) (Garcia et al., 2021). Consequently, ESG has become a tool for risk management and innovation, giving organizations the skills to adjust to a complicated and uncertain situation.

2.3.1 ESG as a catalyst for innovation and value creation

One of the most compelling reasons for using ESG as a strategic choice is its power to increase innovation (Popescu et al., 2022). Firms investing in ESG choices will have to re-evaluate their business model and consequently bring about development in products, services, and processes. For example, the drive to decarbonize is leading to technologies for renewable energy, energy storage and carbon capture (Zhou et al., 2023). These innovations create fresh sources of income for businesses while also addressing environmental challenges. In addition, ESG efforts may enhance financial performance by increasing operational efficiencies and reducing costs. According to research by Serafeim et al. (2022), firms that have strong ESG strategies have lower capital costs and more confidence from the capital markets. Investors increasingly see a strong connection between ESG performance and greater value, as demonstrated by this trend.

2.3.2 Stakeholder expectations and competitive differentiation

The conscious capitalism trend has surged stakeholder expectations to have businesses act on environmental and social issues. Business profits should not be the only priority of any organization in today's business world. ESG frameworks offer systematic insights for achieving such expectations and thereby strengthening stakeholder trust and loyalty (Khamisu et al., 2024). ESG can act as a differentiating factor from a competitive perspective. Corporations that know how to leverage ESG concepts in their strategies will enjoy a boost of reputation, greater market share and improved customer retention (Kumar et al., 2023). Patagonia is an excellent example of a company that effectively uses its value to build its brand. The firm has made a commitment to environmental sustainability to assert itself as a market leader in outdoor clothing and has been successful in this venture (Dezi et al., 2022).

2.3.3 ESG and long-term resilience

The strategic adoption of ESG frameworks is linked to organizational resilience (Liang & Li, 2023). Organizations that embrace ESG principles can better forecast and mitigate emerging risks like climate change, regulatory shifts and social turmoil. To cite an example, firms with strong environmental strategies are less at risk of supply chain disruptions due to extreme weather events (Mansouri et al., 2023). Similarly, companies that have strong governance practices are better able to adapt to regulatory changes and maintain operational stability. Moreover, a company that focuses on ESG creates a good relationship with its stakeholders. The bonds formed during non-crisis times can be beneficial during crisis times as they assist the organization to get the needed help and resources (Zhang et al., 2023).

2.3.4 The future and challenges of ESG as a strategic choice

Incorporating ESG into an organization's strategy has lots of benefits but also comes with challenges. A major problem is the absence of standardized metrics and common framework with the ESG. Organizations like the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) have made headway, but the lack of consistency in ESG reporting makes it hard to assess and compare corporate performance (Rana et al., 2023). This variation in reporting can lead to confusion among investors and stakeholders, as it makes it harder to compare companies. Adopting ESG can be expensive, especially for smaller organizations, they may find it too challenging. To implement all these, a huge amount is needed to be invested in developing sustainable technologies, training employees and monitoring compliance and this may discourage full adoption and limit access to ESG's strategic benefits (Pereira et al., 2022).

Another significant issue is the danger of greenwashing, in which firms exaggerate or misrepresent their ESG initiatives to boost a brand image. Such practices reduce the credibility of ESG programs and expose companies to reputational and legal risks. To reduce these dangers, businesses need to guarantee that their ESG initiatives are open, verifiable, and depend on third-party audits and certificates (Chen et al., 2023). To successfully meet the needs of the stakeholders via ESG reporting, it must be authentic.

As global challenges disappear or become more complex and interconnected, ESG is on track to become more strategic. More and more organizations are recognizing the importance of sustainability, social responsibility, and ethical governance (Prodanova & Tarasova, 2024). A few important themes are now coming forward. Firstly, there is a growing transition to a low-carbon economy. In addition, social equality movements have a severe influence. Finally, the demand for ethical governance is also rising sharply. All of these themes are changing corporate strategies. In light of these developments, firms are reshuffling their priorities (Smith et al., 2022). Technologies like artificial intelligence and big data analytics are utilized in ESG reporting due to the previously mentioned changes. A few studies have discussed the impact of technology on ESG reporting. These technologies enable companies to improve the accuracy and reliability of their disclosures, enhancing stakeholder confidence in ESG initiatives (Lee & Kim, 2023).

In addition, regulatory frameworks are changing to promote greater transparency in ESG practices. The Corporate Sustainability Reporting Directive (CSRD) of the European Parliament and Council is an example of regulation to enforce rigorous ESG reporting (European Commission,2023). All of these developments suggest an evolving shift towards greater structure and integration of ESG and positioning sustainability as a core business strategy rather than secondary.To conclude, the ESG framework is a strategic choice that would help organizations in meeting the demands of the present-day business environment. By incorporating Environmental, Social, and Governance (ESG) factors into their operations, organizations can create value in a plethora of ways. To enjoy these benefits, however, companies must overcome serious obstacles, which are the absence of standardized measuring instruments, costs involved in implementation, and risks of greenwash. As companies become more aware of the usefulness of ESG, the role of the framework as a strategic enabler is set to grow. To leverage it to the fullest, organizations should take a proactive and integrated approach by using technology and regulatory developments to drive transparency and accountabilities. All in all, strategically adopting ESG is not just a reaction to external pressures but rather a choice that integrates business success with social progress.

2.4 ESG Reporting

ESG reporting has become a critical component of modern business practices, reflecting an organization's commitment to transparency, accountability, and sustainable development. As stakeholders increasingly demand reliable and consistent information on Environmental, Social, and Governance (ESG) performance, the practice of ESG reporting has evolved into a strategic imperative. This section critically examines the role, challenges, and future directions of ESG reporting, with a focus on its significance in fostering trust, driving performance, and meeting regulatory requirements (Khan et al., 2023).

At its core, ESG reporting involves the disclosure of information related to a company's environmental impact, social practices, and governance structures. The latter offers information to investors, employees, regulators, and other stakeholders about risks and opportunities related to sustainability. Aside from obeying rules, ESG reporting is a way to make a company look better, get more investment, and encourage better decisions (Arvidsson & Dumay, 2022). The latest trends point to the fact that ESG reporting has been transitioned to mandatory from voluntary at many places. For example, European Union's Corporate Sustainability Reporting Directive (CSRD) requires extensive ESG disclosures (European Commission, 2023). Likewise, initiatives like the U.S. SEC's climate risk disclosure proposals demonstrate the rising attention from regulators to transparency when it comes to ESG (SEC, 2023).

2.4.1 Key frameworks and standards

The proliferation of ESG reporting frameworks has been both an enabler and a challenge. Prominent frameworks include:

1. **Global Reporting Initiative (GRI):** The GRI provides comprehensive guidelines for reporting on economic, environmental, and social impacts. It emphasizes stakeholder inclusivity and materiality (GRI, 2022).
2. **Sustainability Accounting Standards Board (SASB):** SASB focuses on industry-specific ESG issues, enabling companies to disclose financially material information to investors (SASB, 2023).
3. **Task Force on Climate-related Financial Disclosures (TCFD):** TCFD offers recommendations for disclosing climate-related risks and opportunities, with a focus on governance, strategy, risk management, and metrics (TCFD, 2021).
4. **International Integrated Reporting Framework (IIRF):** The International Integrated Reporting Framework promotes a holistic approach by combining financial and non-financial information to demonstrate value creation over time (IIRC, 2021).

According to the above framework, Global Reporting Initiative (GRI) gives specific guidelines disclosing information on economic, environmental and social impacts of an organization. The GRI gave "Airport Operators Sector Supplement" in 2011 to report useful information according to the requirement of airport operators within the aviation sector. It includes such relevant indicators and topics related to airport management as noise nuisance, GHG emissions and impact on the local community. However, there has been no similar supplement made for airlines. Many airlines use the general GRI guidelines nevertheless for their sustainability reporting. The GRI introduced a Sector Program which aims to create sector specific standards for 40 sectors, starting with the ones having the most impact. So far, GRI has developed standards for oil and gas, coal, agriculture, aquaculture, fisheries, and mining. However, there is yet announcement of a specific standard for the aviation sector (Adams et al., 2022).

The GRI framework is built upon key reporting principles, which include the following in Figure 2.

Figure 2: The reporting principles (author's own elaboration)

Materiality is a central concept in GRI reporting. Materiality refers to identifying and reporting on those topics that have a significant economic, environmental or social impact, or substantially influence stakeholder assessment and decisions. In other words, organizations ought to report on the issues that are most relevant to their sustainability performance, taking stakeholder expectations into account (Jebe, 2019).

While these frameworks provide valuable guidance, their diversity has led to inconsistencies and a lack of comparability in ESG reporting. Stakeholders often struggle to interpret and compare reports from different organizations, highlighting the need for greater harmonization (Berg et al., 2022).

2.4.2 The importance of ESG reporting

The best ESG reporting is transparent and trustworthy, as beforementioned. By revealing information regarding ESG, organizations show the stakeholders their positive attitude toward accountability and ethical behavior. These fosters trust among stakeholders, improve relationships and enhance brand loyalty (Eccles et al., 2020). Unilever's thorough ESG reporting has established it as a key publisher of environmental, social and governance (ESG) data that drives sustainable investing (Krishnamoorthy, 2021). ESG reporting is important for investment attraction and risk mitigation. Investors are using ESG reports more and more to evaluate the long-term viability of firms. Studies show that firms with high-quality ESG disclosures secure more investment and incur cheaper capital costs (Friede et al., 2015). As time goes by, the materiality of environmental and social risks like climate change and labor disputes is accelerating (Flammer et al., 2021). Reporting on ESG also triggers performance enhancement internally. Analyzing and collecting ESG data often uncovers inefficiencies and helps companies move toward more sustainable practices. Monitoring greenhouse gas emissions and energy consumption helps companies spot areas where they can cut costs while also reducing their emissions. (Delmas & Pekovic, 2022)

However, there are challenges that surround ESG reporting which hamper its benefits. One major challenge with ESG reporting is the lack of standardization. The International Sustainability Standards Board (ISSB) has started various initiatives to harmonize these frameworks but not much headway has happened (IFRS Foundation, 2021). This inconsistency makes it difficult for stakeholders to compare and assess ESG reports (Kölbel et al., 2020). Data quality and availability has also become critical issue. Many organizations, particularly in the supply chain area, struggle to gather and verify information due to the complexity of these metrics. Accurate and reliable data is a key element of credible ESG reporting. Using estimates and proxies can diminish credibility and reduce the confidence of stakeholders (Kaplan & Ramanna, 2021).

Moreover, ESG reporting has increased the risk of companies being accused of greenwashing or exaggerating their ESG credentials. Greenwashing is the transmission of false, misleading (or, at least, unverified) information or impressions about the positive environmental impact (or degree of environmental impact) of a company's products. Greenwashing involves an unsubstantiated claim to deceive consumers into believing that a company's products are environmentally friendly (de Freitas Netto et al., 2020).

Alternatively, they have a greater positive environmental impact than they actually do. High-profile greenwashing cases have shown to the scientific community how misrepresentations can prove risky. This highlights the importance of audits and third-party verification (Delmas & Burbano, 2011). Finally, resource constraints pose a significant barrier, as implementation of solid ESG reporting systems requires a good deal of financial and human resources. On the whole, small and medium-sized enterprises (SMEs) fail to have the capacity needed to make substantive investments into ESG reporting, leaving behind a large gap between these entities and corporations (Pereira et al., 2022).

2.4.3 Emerging trends in ESG reporting

The future of ESG reporting is shaped by technological advancements and growing regulatory scrutiny and several important trends will influence it. There is the integration of technology, including artificial intelligence (AI), blockchain, and data analytics, which is revolutionizing ESG reporting by improving data accuracy, traceability, and real-time monitoring (Lagerkvist et al., 2022). AI tools or software assist in collecting data and compliance automation which decreases costs and increases efficiency. Another trend is the growing emphasis on impact metrics as stakeholders demand hard evidence of what they do rather than generic disclosures. The focus is shifting towards reporting of measurable impact, like the measurable carbon reduction or employee well-being improvement (Brest & Born, 2013). Consequently, the ESG reporting is going to be more about that. Furthermore, governments and regulatory bodies are introducing stricter ESG reporting mandates, including mandatory disclosure requirements, to ensure consistency, comparability and accountability for sustainability claims (European Commission, 2023).

The significance of ESG reporting has evolved into a major trend and reporting is getting integrated with financial reporting which shows its material significance. The IFRS Foundation – through a project to develop a global baseline – is contributing to this trend (IFRS Foundation, 2021). Steps are valuable to improve the effectiveness and reliability of ESG reporting. Initially, harmonized standards must be adopted. Organizations should actively support ongoing efforts aimed at harmonizing ESG reporting frameworks across sectors and entities. The second step is to invest in data quality. To ensure that ESG reports are credible, there was a need for enhanced data collection and verification processes. Data-related challenges should be tackled through the use of advanced technologies (Bose, 2020).

It is essential to conduct an independent audit so there is hardly any chance of greenwashing. A third-party verification adds credibility to reports. Moreover, focusing on the significance of the subject is important. ESG Reporting should focus on the most relevant issues for the stakeholders, so the disclosures are meaningful and matter (Chopra et al., 2024). Last but not least, it is necessary to promote capacity building for addressing disparity among organizations. Small and medium-sized enterprises (SMEs) and resource-constrained entities should be supported in ESG reporting development for a more level playing field. If organizations adopt these measures, they will successfully engage in ESG reporting while also developing trust and improving accountability as well as sustainable development (Darnall et al., 2022).

Considering the abovementioned, reporting on ESG issues is an important transparency, accountability, and sustainable development tool. The advantages of doing ESG reporting alone are extremely beneficial, including gaining the trust of various stakeholders, attracting investment and enhancing performance. However, standardization issues or lack of transparency and quality of data are some challenges. ESG reporting is to evolve with the development of regulatory frameworks and technology innovations, having more integration, credibility, and impact. If organizations allow the best practices to evolve and harmonize initiatives to take shape, they can use ESG reporting to create value.

2.5 The ESG framework and reporting in the aviation industry

In recent years, Environmental Social Governance (ESG) in the aviation industry has gained considerable recognition. There has been a growing demand for businesses to act responsibly and sustainably. The aviation sector is increasingly experiencing the development of operational and strategic priorities as ESG frameworks for the aviation sector help organizations disclose and address their environmental and social impacts and governance practices.

2.5.1 Environmental considerations

Aviation is often cited as a major greenhouse gas (GHG) contributor, contributing approximately 2-3% of global CO2 emissions (International Air Transport Association [IATA], 2023). The industry must adopt ESG-aligned practices in order to reduce its contributions to climate change. The primary areas of focus would be carbon reduction, Sustainable Aviation Fuels (SAFs), and energy efficiency.

The adoption of SAFs has emerged as a cornerstone of environmental sustainability efforts. Recent studies highlight that SAFs can cut lifecycle GHG emissions by up to 80 per cent relative to conventional jet fuels (Smith et al.,2023) However, barriers such as high production costs and limited availability hinder widespread adoption. Airlines such as Delta Air Lines and Lufthansa have begun SAF partnerships that signal a shift towards added accountability (Delta Air Lines, 2023). To cut down emissions from flights, it is imperative to enhance operational efficiency. Moreover, optimal flight paths and fleet upgrades do exactly the same. Advances in aircraft technology, including electric and hydrogen-powered planes, further illustrate new plans to achieve net-zero emissions by 2050 (Airbus, 2022).

2.5.2 Social considerations

The S dimension of ESG reporting of aviation involves labor practices, community engagement, and customer experience. Airlines are increasingly scrutinized for their treatment of employees, particularly in context to union relations, pay equity and workplace diversity. A 2022 report by the International Labour Organization (ILO) highlights the need to ensure fair working conditions in aviation in light of labor disputes and workforce reductions seen during the COVID-19 pandemic.

Community engagement initiatives have also become a focal point of social responsibility. Airports and airlines are implementing programs aimed at fostering positive relationships with local communities, such as noise reduction measures and contributions to regional economic development. For example, Heathrow Airport's "Fly Quiet and Green" program encourages airlines to alter their operations to reduce noise pollution and become more eco-friendly (Heathrow Airport, 2023). Moreover, passenger health and safety remain critical. The COVID-19 pandemic has highlighted the importance of good health systems and planning. The reporting frameworks related to ESG have now started to include the metrics related to passengers' safety to maintain the trust of the customers (World Health Organization [WHO], 2022).

2.5.3 Governance considerations

Effective ESG integration in aviation requires strong governance. This covers solid procedures to manage risk, clear processes of making decisions, and following ethical standards. Governance is particularly important for building investor confidence, especially as stakeholders ask for more accountability around ESG performance. Many airlines and aerospace companies have established dedicated ESG committees within their boards to oversee sustainability strategies and ensure compliance with regulatory requirements. For instance, Boeing's 2023 Sustainability Report highlights the company's efforts to enhance board oversight of climate-related risks and opportunities (Boeing, 2023). Similarly, transparency initiatives, such as aligning disclosures with globally recognized standards like the Global Reporting Initiative (GRI) and the Task Force on Climate-related Financial Disclosures (TCFD), have become increasingly prevalent.

2.5.4 Challenges and opportunities

Civil aviation has made considerable progress in aligning with ESG. Still, challenges abound. The absence of standardized reporting frameworks is a major concern. As per KPMG (2023), while SASB and CDP provide guidance, the lack of a global standard results in inconsistencies in ESG reporting. Another issue lies in balancing financial rewards with sustainability goals. Because aviation is capital intensive, green technology and infrastructure often get neglected. However, growing pressure from investors and regulatory bodies has spurred innovation and collaboration. For example, the European Union's "Fit for 55" package mandates stricter emissions targets, compelling airlines to adopt greener practices (European Commission, 2023). Industries can make use of digital technologies to improve their ESG performance. AI and big data process creation and operation of airlines is the best way of optimizing operations (Chen et al, 2023). Moreover, investments can be augmented through public-private partnerships for infrastructure development, such as charging stations for electric aircraft and air traffic management.

2.5.5 Recent developments

In recent years, there has been a noticeable increase in ESG-related initiatives in the aviation sector. In the year 2022, the International Civil Aviation Organization (ICAO), adopted the Long-Term Aspirational Goal (LTAG) which aims for international aviation to achieve net-zero by 2050. This historic decision shows a shared commitment of the aviation sector towards climate change and the significance of a global approach. (ICAO 2022). Big airlines also shared their grand plans for sustainability. An instance of sustainability announcement is United Airlines which stated to buy 1.5 billion gallons of SAF by 2030 (United Airlines, 2023). Finally, carbon offset programs that invest in nature-based climate solutions and direct air capture technology also offer potential options for the industry to decrease its emissions.

To conclude, the aviation industry's uptake of ESG frameworks signals an important change to more sustainable and responsible business practices. Although there are still some hurdles, such as the lack of regulations and limited funding, the industry's commitment to innovation and collaboration provides a path for the future. When the aviation sector adopts ESG principles, it not only builds resilience but also contributes to wider society's development and ecological goals.

2.6 Relationship between ESG and Financial Performance

There has been a growing interest in the connection between environmental social and governance performance and financial performance (FP) across industries including aviation. While ESG reporting is often framed to drive long-term value, its direct and indirect effects on financial performance drive a complex context of variable circumstances. This section discusses the relationship of ESG and FP in the aviation sector and uses other studies to support it. The critical examination reveals both convergences and divergences, highlighting industry-specific nuances and broader economic trends.

2.6.1 ESG performance as a strategic imperative

The traditional method of assessing corporate performance focused on value maximization and financial measures like Return On Investment (ROI) and others. The world is noticing that matters like Environmental, social and Governance (ESG) are getting more important since the corporate performance measure is no longer limited to it. Companies are now assessed for their performance not just on the basis of their financial performance but how sustainable and responsible are their governance policies and practices. The shift towards ESG factors is gaining popularity due to investor interest, regulatory standards, and consumer and employee calls for change. Research suggests that strong ESG performance can lower operational costs and risks and create a better brand image thus enhancing profits. In aviation and other industries with high environmental sensitivity, it has become a differentiator to develop corporate ESG strategies that lead to fuel-efficient innovation and carbon offset initiatives. As a result, ESG performance is seen as a necessity, rather than just a secondary issue, changing choices and impacts (McNeil & Esser, 2022).

A growing amount of research suggests that the strong ESG practices do improve financial performance through cost savings and risk reductions. In the airline sector, ESG integration is seen as a competitive differentiator particularly with regards to environmental sustainability (Gössling & Humpe, 2020). Airlines that put resources into fuel-efficient technologies, carbon offset systems, and sustainable aviation fuels (SAFs) have shown lower operating costs and better appeal to investors (IATA, 2023). Delta Airlines reported that its efforts on decarbonization improved investor confidence when ESG-aligned funds increased their buying in its stock. (Delta Sustainability Report, 2022). Similar trends can be seen in other industries such as manufacturing and energy. Research has found that energy companies with higher ESG ratings have lower capital costs and better returns for their shareholders as a result of this perceived risk reduction (Friede, Busch, & Bassen, 2015). The aviation sector relies heavily on fossil fuels, thus having limited choices for decarbonization. It is also largely influenced by changing regulations. As a result, the ESG-FP relationship is more complex in such sectors.

2.6.2 Environmental pillar: Costs versus value creation

The ESG environmental pillar is a particularly important issue in aviation, with its huge footprint. According to ICAO (2022), the innovation and cost reductions found in the aviation industry are often attributed to the efforts made by airlines to comply with frameworks like CORSIA. However, these measures are not without financial challenges. Switching to SAFs, for example, involves high capital costs, and fuel costs are likely to stay more expensive than conventional alternatives. Comparatively, industries like automotive have shown more tangible financial benefits from environmental initiatives. Manufacturers of electric vehicles (EVs), like Tesla, use their green credentials to utilize premium pricing, qualify for subsidies, and become more profitable (Subramanian, 2023). On the other hand, fierce rivalry in the airline industry, and a price-sensitive consumer base prevents the industry from reaping benefits for the environmental changes. Besides, ESG frameworks may promise long-term sustainability, though investors still care about short-term value. The ambitious decarbonization targets of Air France-KLM are proving costly and this is becoming a balancing act where the goal is to maintain profitability while achieving environmental goals (Air France-KLM Sustainability Report, 2023).

2.6.3 Social pillar: Employee and customer impact

The social aspect of ESG incorporates working conditions, community engagement, and customer satisfaction, which influences financial impact directly. Airlines exhibiting a high level of commitment to employees and diversity tend to report high productivity and relatively low turnover rates, contributing to financial stability (Rhoades et al., 2020). For instance, the solid financial performance of Southwest Airlines over the years, including downturns in the aviation sector, can be linked to higher employee engagement. A parallel can be drawn with retail, where firms like Costco, which is socially responsible, outperform competitors in terms of their wages and employee benefits (Edmans, 2020). However, the aviation industry is often affected externally by variable things like pandemic and geopolitical factors due to which there are many social risks involved. Thus, being able to perform socially is not easy.

From a customer perspective, airlines aligning with passengers' increasing desire for sustainable travel often experience improved brand loyalty and increased revenue. Studies in hospitality and tourism corroborate this trend, showing that consumers are willing to pay premiums for services with strong ESG credentials (Gössling et al., 2022). The financial impact is still geographically uneven; European carriers have included sustainability in their value proposition but low-cost carriers in emerging markets are finding it hard to balance ESG investments and affordability (Sorsa & Bona-Sánchez, 2024).

2.6.4 Governance pillar: Risk management and accountability

Strong governance underpins effective ESG performance by fostering transparency, ethical decision-making, and compliance. Governance best practices such as good oversight, diversity, and stakeholder engagement have been linked to better financial metrics for airlines that are publicly traded (Chang & Lin, 2021). Firms with higher governance scores get more institutional investors and have lower borrowing costs, as seen in aviation and in capital markets as a whole. Governance matters much with aviation relying on complex global supply chains. Strong oversight mechanisms can limit operational disruptions and reputational damage during crises. This is consistent with findings in the technology sector, where governance-focused firms like Microsoft have shown resilience during economic downturns due to their proactive risk management (Ioannou & Serafeim, 2019). The financial rewards of governance are not the same. Airlines with weak governance practices, such as Malaysia Airlines before its restructuring, have underperformed financially, suggesting that enhanced governance practices would be beneficial for managing risk and boosting investor confidence (Paino et al., 2023).

2.6.5 Comparative analysis of aviation versus other sectors

ESG factors impact financial performance in every sector. Industry-level factors matter in shaping the nature of this impact. In some industries like finance and real estate, one can directly measure the financial benefits of ESG on performance. For example, ESG metrics of these industries are closely linked to regulatory compliance and market trends. More specifically, green bonds floated by the real estate sector have provided direct reductions in costs through lower interest rates (Robinson & McIntosh, 2022).

Conversely, aviation operates in a more constrained environment, with limited flexibility in altering its business model. The high capital intensity and dependency on non-renewable resources make ESG integration both critical and challenging. Despite these constraints, airlines have been able to maintain or even enhance their ESG credentials by using innovation and partnerships (Sorsa & Bona-Sánchez, 2024).

2.6.6 Challenges and critiques of ESG-FP integration

Some critics argue that the link between ESG strategies and financial performance is not always causal or consistent. This is particularly the case in certain industries, like aviation, with complex supply chains and high fixed costs. Experts are still at odds over whether ESG investments dilute shareholder value in the short term or create sustainable returns in the long run (Berg et al., 2022). In addition, sectors with a lot of environmentally harmful activities create a greenwash issue. Airlines that have been accused of exaggerating their sustainability credentials may end up suffering damaging financial consequences. Another challenge lies in the lack of standardized ESG metrics, which complicates cross-industry comparisons and investor decision making. While initiatives like the Task Force on Climate-Related Financial Disclosures (TCFD) aim to address these gaps, their adoption varies widely across regions and sectors, further exacerbating inconsistencies in the ESG-FP relationship (Rajgopal, 2022).

To sum up, there are many facets that show the correlation between ESG strategies and financial performance. In aviation, ESG efforts have great potential to enhance long-term value. However, these efforts typically deliver no financial benefits when scoped as per the needs of the business and stakeholders. To add more, the potential benefits depend on regulatory, market, and operational conditions. When compared to other industries, ESG in the aviation industry faced a range of opportunities and challenges, which also indicate the need for specialized industry-specific solutions.

3. Methodology

3.1 Introduction

This chapter details the methodology used to analyze the effects of Environmental, Social and Governance (ESG) strategies on the financial performance impact of Aegean Airlines and Ryanair. This chapter aims to present a coherent and logical account of research design and methods of data collection and analysis for achieving the study's objectives. With the detailed discussion on the research strategy, the study ensures transparency, reliability, and replicability of the research and to let the reader know how the research was conducted and how conclusions were drawn.

This chapter opens with an explanation of the overall research approach and the reason for choosing a comparative case study design. This approach allows for a thorough examination of the ESG strategies in the operations of both Aegean Airlines (which has a legacy air carrier business model) and Ryanair (which is a low-cost air carrier). The case study method is most appropriate for this research since it lends itself to relevant contextual analysis, for example, in the highly regulated and environmentally sensitive aviation sector.

Then, it elucidates the data collection instrument, mainly the secondary data, which is in the form of annual sustainability reports, corporate disclosure, industry reports, and regulatory filings. The choice to use secondary data arises from its availability, low cost, and suitability to assess trends over a longer time period. The chapter also explains how these data sources were selected and validated.

Later, the chapter discusses the techniques used to analyze the data, using qualitative and quantitative. Qualitative information is analyzed with thematic analysis for key themes and strategies. Quantitative indicators like carbon emissions, financial performance indicators, and ESG ratings are analyzed with descriptive statistical methods. The chapter also highlights the ethical concerns related to the study including data integrity, transparency, and academic integrity.

Lastly, the chapter wraps up with a conversation on the limits of the methodology you chose and the possible limitations that could incur due to the methodology. This systematic strategy guarantees a thorough comprehension of how the exploration took place while additionally supporting the credibility and dependability of the findings.

3.2. Research Approach – Strategy – Selection Criteria

This research uses a case study with secondary data to investigate the adoption of ESG strategies in the aviation industry. The comparative study is between Aegean Airlines as a legacy carrier and Ryanair as a low-cost carrier to examine how legacy and low-cost business models deploy sustainability strategies. Through the use of secondary data, such as annual ESG or sustainability reports and other industry publications, as well as regulatory disclosures, the current study will evaluate the ESG strategy of both airlines (Caraveo et al., 2023). The research utilizes secondary sources for data collection. This option helps with assessing structure without dealing with primary data hassles like time, money and legality (Abdi et al., 2022).

Utilizing secondary data is crucial to analyzing how Aegean airlines and Ryanair are dealing with environmental and social challenges, and their governance improvements. Access to such data from official company reports presents a significant opportunity for a detailed investigation into the companies' long-term strategies regarding emissions reduction, stakeholder engagement, and regulatory compliance (Cregan et al., 2024). Evaluating how the different business models of a legacy and a low-cost airline shape their ESG strategies can give us an insight into how differences in the airlines' sustainability strategies can be observed. Ryanair's reputation for cutting costs has led to criticism that it prioritizes profit over sustainability while Aegean Airlines has adopted ESG within its operations (Smith & Jones, 2021). Through this contrast, we can make sense of the challenges and opportunities with ESG implementation in aviation.

Selecting a case study is a proper method to study more in-depth as it narrows down the analysis of the two airlines. Aegean Airlines, a full-service carrier and Ryanair, a low-cost airline operate under different strategic imperatives, making them apt for comparison (Brown & Williams, 2020). The study shows how these airlines incorporate ESG initiatives in their operations based on their varied levels of investment, compliance and more. Focusing on two airlines ensures there is depth of analysis in the research that would otherwise not be the case in a broader multi-case study (Johnson et al, 2019).

Aegean Airlines was selected for its prominent role in ESG practices within the aviation industry, particularly in Greece and the broader European market. The airline has implemented significant sustainability initiatives, including the use of sustainable aviation fuels, optimization of flight routes to enhance energy efficiency, and waste reduction programs (Peterson & Clarke, 2022). Additionally, as a company operating within the European regulatory framework, Aegean Airlines must comply with strict environmental laws and stakeholder expectations, making it a valuable subject for understanding ESG integration under stringent regulations (Taylor, 2023).

Conversely, Ryanair presents an interesting contrast as a low-cost carrier with a different approach to ESG challenges. While Ryanair has made efforts to reduce emissions through fleet modernization and fuel-efficient practices, it has faced criticism for its labor policies and perceived reluctance to invest in broader ESG initiatives (Harrison & Lee, 2021). The airline's cost-driven strategy raises important questions about the trade-offs between sustainability and profitability, which this study seeks to explore in comparison with Aegean Airlines. The inclusion of Ryanair in the analysis provides a broader perspective on how airlines with different business models approach ESG, highlighting both the strengths and limitations of their respective strategies.

A crucial aspect of this research is examining how ESG practices impact financial performance. The study assesses how sustainability-driven strategies influence financial indicators such as profitability, cost-effectiveness, and shareholder value in both Aegean Airlines and Ryanair (Miller & Thompson, 2023). This financial analysis aims to provide valuable insights for investors and stakeholders who seek to understand the economic implications of ESG initiatives in the aviation sector. The comparison will illustrate whether ESG investments contribute to financial resilience and long-term growth or if they impose financial burdens that affect competitiveness.

Additionally, the study evaluates the ESG initiatives of Aegean Airlines and Ryanair against those of other major players in the industry, offering a comparative perspective that highlights best practices and areas for improvement (Anderson et al., 2022). This benchmarking approach enables a more comprehensive understanding of where these airlines stand in relation to industry standards. Moreover, the research investigates the challenges both airlines face in implementing ESG strategies, particularly in balancing sustainability costs with operational profitability. While Aegean Airlines has made progress in sustainability, it has encountered difficulties in maintaining cost-efficiency while meeting ESG goals. Ryanair, on the other hand, has faced reputational risks due to its perceived lack of commitment to ESG standards, despite its financial success (Wilson, 2023). Understanding these challenges can provide key takeaways for airlines aiming to integrate ESG without compromising financial performance.

In conclusion, this research adopts a structured approach to analyzing ESG strategies in the aviation sector through a comparative case study of Aegean Airlines and Ryanair. By utilizing secondary data and focusing on two distinct airline business models, the study provides critical insights into the role of ESG in shaping corporate strategy and financial outcomes. Aegean Airlines was chosen for its leadership in sustainability within the Greek aviation sector, while Ryanair was selected to offer a contrasting perspective from a low-cost airline model. The findings of this research will contribute to academic literature and provide practical recommendations for airline industry stakeholders seeking to enhance sustainability while maintaining economic viability.

3.3 Research Objectives and Questions

The objectives of this research are:

- ✓ To analyze the main ESG strategies implemented by Aegean Airlines and Ryanair, evaluating their alignment with environmental, social, and governance requirements and their contribution to the company's broader strategic approach.
- ✓ To assess the impact of ESG strategies on Aegean Airlines and Ryanair financial performance, while identifying the associated costs, benefits, and challenges.
- ✓ To compare and contrast Aegean Airlines and Ryanair ESG initiatives, evaluating their strategic positioning and providing insights into the long-term viability and practical application of ESG strategies in aviation.

The research questions of this dissertation are:

- What are the main ESG strategies implemented by Aegean Airlines and Ryanair, and how do they align with environmental, social, and governance requirements?
- How do ESG strategies affect Aegean Airlines and Ryanair financial performance?
- How does Aegean Airlines' approach to ESG as a legacy airline compared to Ryanair as low-cost airline?

- What are the key success factors and challenges in implementing ESG strategies in Aegean Airlines and Ryanair?

3.4 Data Collection Methods

This study employs secondary data collection methods, utilizing both qualitative and quantitative sources to examine the Environmental, Social, and Governance (ESG) strategies of Aegean Airlines and Ryanair. The decision to rely on secondary data is justified by the accessibility of high-quality, publicly available reports and industry documents, which provide a comprehensive overview of ESG implementation in the aviation sector (Bryman, 2020). Given that both airlines operate in a highly regulated and transparent industry, a wealth of sustainability reports, financial disclosures, and industry analyses exist to support a thorough investigation.

The qualitative data in this study primarily consists of sustainability reports, corporate social responsibility (CSR) disclosures, press releases, of the years 2021, 2022 and 2023. These sources offer rich insights into the ESG strategies adopted by both Aegean Airlines and Ryanair, including policies, commitments, and long-term sustainability objectives (Eisenhardt, 2021). The use of qualitative data enables an in-depth understanding of how each airline incorporates ESG principles within its business model, allowing for a comparative analysis of their approaches. For instance, Aegean Airlines, as a legacy carrier, tends to emphasize long-term sustainability initiatives that align global legacy airlines trends such as Lufthansa and British Airways, while Ryanair, as a low-cost airline, may focus on cost-effective ESG measures that ensure regulatory compliance while maintaining competitive pricing (Smith & Jones, 2021). Low-cost measures of ESG of Ryanair would be to increase fuel efficiency, reduce waste, and use energy-efficient technology. These steps help reduce costs and comply with regulations.

Furthermore, besides qualitative sources, there is also the use of secondary quantitative data covering a wide range of financial and sustainability data in this research for a comprehensive assessment of airline industry ESG strategies. Important data sources include financial performance, carbon emissions, passenger satisfaction and operational efficiency, which are all key metrics of the evidenced impact of ESG efforts (Bowen, 2019). Through the systematic analysis of sustainability performance indicators (the great reduction in carbon footprint and fuel efficiency as well as waste management efficiency), the study seeks to provide evidence of the efficiency of the ESG policies of the two aforementioned companies and their operational and financial efficiency (Bowen, 2019).

A further analysis of the financial statements of the two airlines will evaluate to what extent ESG efforts contribute to profitability, shareholder value, and long-term viability of business (Miller & Thompson, 2023). The financial disclosures will show revenue changes, operational savings based on sustainability efforts and more investor confidence because of ESG measures. Passenger satisfaction surveys also highlight how customer perceptions of an airline's ecological and social responsibility impact brand loyalty and market competitiveness. Using this multi-faceted methodology, the research seeks to connect the dots between ESG theory and practice for the airline industry.

The longitudinal analysis (3 years) of ESG trends using secondary data is one of the biggest benefits of using secondary data. Through evaluation of historical data drawn from sustainability and financial reports, the study will highlight the changes in ESG performance. Thus, revealing whether the airlines are genuinely improving their performance or merely green washing (Gerring, 2017). Besides, many secondary data sources, audited reports or industry-wide data sets, tend to be reliable and objective due to their compliance with international norms (Taylor, 2023).

Nevertheless, secondary data used was often subjected to audits or industry-wide data based on international norms. Reports on corporate sustainability often emphasize positive ESG results while downplaying negative ones. As a result, it is important to look across sources for confirmation (Denzin and Lincoln, 2018). Also, because the airline industry lacks worldwide transparency and standardized ESG reporting frameworks, it can be tricky to compare and interpret data.

In conclusion, this study employs a strong secondary data collection that brings together qualitative and quantitative data on ESG strategies in the aviation sector. The researcher is using sustainability reports, financial disclosures, and industry benchmarks to obtain both strategy and outcome measure of ESG initiatives of Aegean Airlines and Ryanair. Issues can come up in secondary data, however, this method is still the best practical way to investigate the rising role of ESG in the airline industry.

3.5 Data Analysis

This study adopts a structured data analysis approach that aims to evaluate the Environmental, Social and Governance (ESG) strategies of Aegean Airlines and Ryanair using secondary qualitative and quantitative data. The analysis method for this study allows for patterns, similarities, and differences as well as a critical evaluation of the effectiveness of the sustainability strategies (Yin, 2018).

The qualitative data that includes sustainability reports and corporate disclosers are thematically analyzed. The aforementioned method enables classification of various ESG-related initiatives under the same specific topics for each airline such as reduction of environmental impact, corporate governance structure, stakeholder engagement (Braun& Clarke, 2006). This analysis is suitable for the study as it is a method for identifying and interpreting texts and helps get deep insights into how Aegean Airlines and Ryanair express their commitment to ESG, because the way the airlines presented their data on their report is not universal. Also, this will help bring out nuances including the potential for greenwashing or inconsistencies between reported sustainability efforts and actual operations of the business (Bowen, 2019).

The analysis of descriptive information of sustainability metrics will include financial and operational sustainability metrics associated with carbon emissions reductions, fuel efficiency improvement, and ESG performance score by looking at long term data (Table 1). This research identifies trends in ESG performance and the financial impact of sustainability initiatives (Miller & Thompson, 2023).

Table 1: Sustainability metrics

Category	Indicator	Reason for inclusion
Financial Sustainability	Cost of Fuel per Revenue Passenger Kilometer (RPK)	Measures cost efficiency in relation to sustainability
	Investment in Green Technologies	Indicates commitment to sustainable operations
	Carbon Offset Program Expenditure	Reflects financial commitment to emission reductions

Operational Sustainability	Fuel Efficiency (Liters per 100 RPK)	Directly linked to carbon emissions and cost savings
	Fleet Modernization Rate	Evaluates investment in fuel-efficient aircraft
	Sustainable Aviation Fuel (SAF) Usage Percentage	Shows transition to lower-emission fuels
ESG Performance	Carbon Emissions per RPK	Key metric for environmental impact
	ESG Score	Overall sustainability rating based on multiple factors
	Employee Diversity and Inclusion	Measures social responsibility efforts

A comparative analysis of Aegean Airlines and Ryanair helps understand how different business models affect ESG and the trade-offs between cost-efficiency and sustainability (Smith & Jones, 2021).

This study uses data triangulation to substantiate its findings. It uses a number of sources such as corporate reports and data from independent third parties. This reduces the bias risk present in corporate sustainability disclosures, which tend to highlight successes while downplaying issues (Denzin & Lincoln, 2018). Moreover, convergence of findings with literature guidelines enhances validity which makes ESG assessments reliable (Taylor, 2023).

Despite these measures, limitations remain. Lack of uniformity in ESG reporting standards among airlines might affect the data and results (Gerring, 2017). In addition, although secondary data is good, it does not provide the depth primary data collection (e.g., interview or survey) provides to capture what managers do to implement ESG strategy. Regardless, the use of rigorous analytical techniques in this study demonstrates the robustness and credibility of the analysis.

3.5.1 Ethics of research

Research ethics plays a vital role in maintaining integrity, transparency, and respecting participants and data in the dissertation. In this paper, the relationship between the Environmental, Social, and Governance (ESG) strategies and financial performance of the aviation sector has been studied. Moreover, ethical considerations are important to ensure the validity and accountability aspect of the research as well as the use of material.

The study makes use of secondary data only, which includes sustainability reports, corporate disclosures, and other institutional data. This minimizes the chances of violating participant's confidentiality or data. This choice of method mitigates the issues that arise from not engaging with the participants thus nullifying any ethical involvement of getting informed consent and data protection (Bryman, 2020). Yet, it is important to accurately present and analyze the data. To achieve this, data triangulation is used to engage multiple data sources for minimal bias and reliability (Denzin & Lincoln, 2018).

Transparency is another key ethical consideration. The research gives the appropriate citations for all data used, ensuring academic integrity and preventing copyright infringement (Bowen, 2019). The corporate ESG reports are not always reliable, as companies may show an overly favorable impression of their parties' sustainability practices (Cregan et al., 2024). The research intends to provide a neutral and fair analysis. Also, the research follows honesty and accountability when giving their findings. The study reviews various scantiness that are likely applicable in the research such as differences in the reporting standards of ESG and if there are any missing data (Taylor, 2023). In general, this dissertation follows the best ethical practices as it ensures transparency, accuracy and respect for the data used to contribute to the academic knowledge exercise on ESG in aviation.

4. Results and Discussion

4.1 Introduction

Chapter 4 explores the findings of the study discussing the Implications to aviation ESG strategies. This chapter aimed to analyze the ESG initiatives of Aegean Airlines and Ryanair, assessing their effectiveness in enhancing financial performance, meeting regulatory requirements, and engaging with stakeholders. This analysis compares a full-service legacy carrier and a low-cost carrier to illustrate how airlines differ in their sustainability strategy shaped by the airline business model.

The chapter consists of different sections. The chapter starts with a short overview of the airline chosen and their business model to provide proper context for their ESG initiatives. This portion offers an account of the evolution, operation and business focus of each airline since it is relevant to ESG.

The ESG strategies of Aegean Airlines and Ryanair are analyzed next in further detail. The eco-friendly practices of each airline are assessed to decrease emissions, enhance fueling and improve utilizing green fuels. Following this, the analysis delves into the social responsibility practices of Aegean Airlines and Ryanair. It examines how the airlines manage their employees. Further, it delves into the lobbying efforts employed by airlines to achieve their goals. The governance structures of each airline are also assessed, emphasizing corporate transparency, ethical business conduct and risk management.

The chapter then compares the ESG strategies of the two airlines to identify similarities, differences, and the best practices in the industry. By comparing Aegean Airlines' approach with that of Ryanair, the research essay identifies key drivers and challenges that lie in the implementation of sustainability strategies across different airline models. By making this comparison, it gives a wider lens through which to understand the opportunities and constraints of ESG across aviation.

Lastly, the discussion relates the findings to existing literature and trends. This section will demonstrate how ESG initiatives will influence financial performance, competitive positioning as well as regulatory compliance. In addition, this discussion touches upon the forecast of ESG in aviation with regards to regulatory pressures, technology advancement and shifting consumer expectations.

By this structured framework, Chapter 4 seeks to offer a comprehensive understanding of the ESG practices in airline industry with the focus on sustainability's growing significance for corporate strategy and financial outcome.

4.2 History and Business Model of selected airlines

According to Osterwalder & Pigneur (2010), business models are core aspects of corporate strategy that define how firms create, deliver, and capture value. Business models in the aviation industry are developed by factors like operational costs, pricing, network of routes, and strategies regarding customer services (Doganis, 2019). Airlines have different business models which in broad terms can be classified under three categories. These categories are legacy airlines, Low-Cost Carriers (LCC's) and Hybrid.

Airlines such as Lufthansa and British Airways that offer premium services and business class options and operate through large hubs with an extensive network of flights are known full-service carriers (Morrell, 2018). These airlines provide high quality customer experience offering many things and network connection on intercontinental. Although linked to high operating costs, this airline model helps them create more brand visibility and customer loyalty.

Airlines such as Ryanair and easyJet employ low-cost model. These carriers cut on cost by offering reductions in service, flying direct and filling. Their business model is to enhance the efficiency of operations, build hubs at secondary airports and generate ancillary revenue. The low-cost carrier (LCC) model has made air travel affordable almost for all people. Nevertheless, the continual use of the aircraft and high seating capacity help them in making profits.

Some airlines like Aegean Airlines have taken a hybrid approach (Gillen & Lall, 2004). By using this approach, they can provide low prices with an adequate quality of service. Hybrid airlines try to attract more customers by balancing costs and customer experience to compete with both premium and budget airlines (Graham, 2005).

According to the Business Model Canvas (Osterwalder & Pigneur, 2010), there are nine building blocks of business. Scholars and practitioners analyze this through Value proposition, Customer segments, Channels, Customer relationship, Revenue streams, Key resources, Key activities, Key partners and Cost structure. In the airline industry, these components influence strategic decisions and competitive positioning (Mason & Morrison, 2008). Ryanair is cost-driven because the airline minimizes costs everywhere and operational efficiency is a priority. Everything about Ryanair must be cost-efficient, ticket price, staff salaries, airport fees, and others. In contrast, Aegean Airlines aim to be cost-efficient while also delivering a high-quality service (Dobruszkes, 2013). Looking at business models helps us to understand different strategies that airlines adopt and what challenges they are responding to. This analysis adds to the broader assessment of approaches by Aegean Airlines and Ryanair in the context of this study.

4.2.1 Aegean Airlines

Aegean Airlines founded in 1999, is now Greece's largest airline. It offers full-service premium quality flights on short and medium haul. In May 1999, the airline started operating flights with two Avro RJ100 aircraft, with a commercial flight from Athens to Heraklion and Thessaloniki. In December 1999, Aegean acquired Air Greece, expanding its domestic network (Aegean Airlines, 2023).

Aegean Airlines strengthened its position in Greece's crowded airline market in 2001 when it merged with Cronus Airlines. In recognition of Aegean's quality services, it was approved for membership in the Star Alliance network in 2009 and joined on June 30, 2010. In October 2013, Aegean Airlines bought Olympic Air with approval from the European Commission. The two carriers will operate under separate brands while drawing on a common resource and operational network. This strategy allowed the airline to expand its domestic and international networks and to provide more frequent flights together with better access to the islands of Greece including more isolated destinations (Aegean Airlines, 2023).

Aegean Airlines function as a full-service airline and aims to offer high-quality services to its customers at all stages of travel. The airline operates air services for the transport of passengers and cargoes on a scheduled and non-scheduled basis to short and medium-haul destinations. Aegean is additionally involved in leasing and offering ground handling and other activity related to the aircraft technical support. The company's mission is to constantly train employees, develop innovative ideas and implement new technologies for customer benefit. Aegean aims to provide a high-quality product and service that will continuously improve the travel experience. The airline is highly connected with many domestic and international flights (Aegean Airlines, 2023).

The airline's strategic investments include fleet modernization and network expansion. In 2018, Aegean announced an agreement with Airbus for the delivery of 30 A320neo aircraft, with options for an additional 12, aiming to enhance operational efficiency and passenger comfort. By 2023, Aegean's network served 180 destinations in 49 countries, operating a fleet of 77 aircraft, including the new Airbus A320neo family. Aegean's business model also emphasizes strategic partnerships and alliances. As a member of Star Alliance since 2010, the airline has enhanced its global connectivity, offering passengers access to a vast network of destinations worldwide. Furthermore, Aegean has established codeshare agreements with various international carriers, expanding its reach and providing seamless travel experiences for its customers (Aegean Airlines, 2023).

In summary, Aegean Airlines' history reflects a trajectory of strategic growth, mergers, and acquisitions, underpinned by a commitment to quality service and operational excellence. Its business model focuses on providing comprehensive air transport services, continuous innovation, and strategic partnerships, positioning it as a leading carrier in the European aviation industry.

4.2.2 Ryanair

Ryanair was founded in the year 1984 by three Irish entrepreneurs Tony Ryan, Christopher Ryan, and Liam Lonergan with a 15-seat Embraer Bandeirante to fly Waterford, Ireland, to London Gatwick. Through this initiative, the investors wanted to break the duopoly British Airways and Aer Lingus had on UK-Ireland routes. In 1986, Ryanair started flying to Dublin from London Luton with 82,000 passengers a year.

Ryanair's profits were so low that it almost went out of business in the early 1990s. Michael O'Leary became the CEO in 1994, after joining the company back in 1988 a few years earlier. O'Leary implemented a no-frills, low-cost business model based on Southwest Airlines' strategy, with cost cutting and efficiency. O'Leary methodology was to remove all frills, come with a common fleet of Boeing 737 only, and fly from secondary airports.

The 1997 liberalization of European aviation opened the door to Ryanair for a quick expansion. The airline took advantage of this by launching new routes throughout Europe, often to neglected secondary airports. This method reduced operational costs and created demand through lower prices. In 2003, Ryanair had 127 routes and a number of bases including Charleroi, Belgium, and Hahn, Germany.

Ryanair's business model that offers the ultra-low-cost structure. The airline achieves this through several key strategies:

1. **Fleet Standardization**: Operating a uniform fleet of Boeing 737 aircraft reduces maintenance costs, simplifies training, and enhances scheduling flexibility.
2. **Secondary Airports**: By choosing less congested secondary airports, Ryanair benefits from lower landing fees and quicker turnaround times, which increase aircraft utilization.
3. **Ancillary Revenue**: While offering low base fares, Ryanair generates significant income through ancillary services, including baggage fees, priority boarding, and in-flight sales.
4. **Direct Sales**: Emphasizing online bookings via its website reduces distribution costs associated with travel agents and third-party platforms.

This business model has made Ryanair one of the biggest airlines in Europe. The airline operates over 3600 flights daily and flies to over 235 airports in 37 countries with a total fleet of 584 as of 2024. By the year 2034, Ryanair plans to expand its fleet to 800 airplanes and 300 million people each year. To sum up, Ryanair's history shows remarkable strategy with vigorous meaning from a regional carrier to one of the biggest players in Europe. Ryanair has become one of Europe's largest carriers as its founding in 1984. The carrier continuously provided cost-effective services across a wide network in Europe.

4.3 ESG Strategies of Aegean Airlines

4.3.1 Analysis of Environmental Initiatives (Environmental)

Aegean Airlines has demonstrated strong commitment to environment through various measures that have made the airline sustain its environmental footprint in the long run and align it with global decarbonization aviation goal (Aegean Airlines, 2021). A major focus of Aegean's environmental strategy is Sustainable Aviation Fuel (SAF). During 2023, the airline strengthened efforts to promote the use of SAF, expanding cooperation with HelleniQ

Energy and doubling the amount of SAF used on flights from Thessaloniki. The airline also ensured the supply of SAF for international flights from the airports of Stockholm and Oslo, further enhancing the use of low-carbon fuels. SAF (Sustainable Aviation Fuel), mostly of the HEFA type and derived from renewable waste such as used cooking oil, can lead to a reduction of up to 80% in CO2 emissions compared to conventional jet fuel. Aegean Airlines is the first airline in Greece and the second one in Europe to use SAF for flight operations on water (Aegean Airlines, 2023).

Fleet modernization is yet another aspect of Aegean's environmental strategy. Aegean is steadily upgrading its fleet by acquiring new Airbus A320neo family aircraft featuring Pratt & Whitney GTF engines. Due to this fleet renewal, fuel consumption per flight is down by 16%, while CO2 emissions per seat 19-23% are lower and NOx (nitrogen oxide) emissions are down by up to 45% than previous-generation aircraft. Moreover, the new aircraft create noise that is up to 50% less, further reducing the airline's footprint (Aegean Airlines, 2022).

Aegean is also focusing on Operational efficiencies in its emissions reduction approach. Through optimized route and saves during critical flight phases, such as take-off and landing. To further improve operational efficiencies, Aegean continually seeks to reduce the weight of its aircraft and make use of modern digital tools. Aegean also aligns with the European Union's Fit for 55 package and the ReFuelEU Aviation initiative to increase SAF uptake and reduce emissions from the aviation sector (Aegean Airlines, 2021).

Circular economy and waste management principles further enhance Aegean's green activities. The airline has a strong recycling program to collect and dispose of hazardous and non-hazardous waste. To cut down on waste generation, In-flight services have been redesigned like using bamboo cutlery instead of single-use plastic ones. Aegean also encourages the upcycling of materials. For instance, worn-out seat covers and carpets are rehabilitated to create new products (Aegean Airlines, 2023).

With these initiatives, Aegean Airlines aims to contribute to the aviation industry's decarbonization efforts while also operating according to global sustainability standards. Aegean's policies cut down on their economic damage, and at the same time, allow for the growth of the airline's operation.

4.3.2 Social Practices and Social Responsibility (Social)

Aegean Airlines has displayed a strong commitment to social responsibility through its actions towards the employees, community, diversity, and inclusion of the airlines. An essential aspect of Aegean Airlines' social strategy is the attraction, development, and well-being of employees. The company uses state-of-the-art recruiting methods like using an Applicant Tracking System (ATS to streamline and optimize hiring process. Aegean has received over 22,424 applications only in 2023 as an employer brand. The airline company offers many training courses, helps in developing leaders and focuses on sills improvement. In 2023, Aegean focused on technical and soft skills training, providing 137,267 hours of employee training (Aegean Airlines, 2023).

The corporate culture of Aegean values diversity and inclusion. Since 2020, the carrier has taken part in the worldwide "25by2025" program, which engages in the enhancement of female participation in aviation (Aegean Airlines, 2021). In 2023, women represented 58.35% of the company's total staff, though only 8.27% are in managerial positions. This shows that we still have a long way to go before achieving gender balance. Aegean airlines have focused on hiring based on merit. The company does not discriminate based on age, nationality, and skills (Aegean Airlines, 2023).

Aegean Airlines also strongly believes in social contribution. Through the programme "Supporting the Youth" Aegean offers support to students coming from low-income families, giving away more than 55.000 tickets to 1.500 students in Greece and Cyprus. Aegean frequently supports many non-profit organizations with the assistance of its Miles + Bonus program. These include the SOS Children's Village and Doctors Without Borders. Through this program, customers can donate some miles away. In terms of engaging their stakeholders, Aegean communicates consistently and transparently with their internal and external stakeholders such as their employees, passengers, suppliers, and communities. The company ensures that stakeholder interests are integrated into its corporate strategy through the ongoing dialogue maintained through various channels, including internal platforms, social media, and public reports (Aegean Airlines, 2022).

Literature on the aviation industry and corporate social responsibility points out that organizations need to integrate social corporate responsibility into the core operations. Aegean's suggested practices resonate with these recommendations, particularly alongside the community and employee well-being. But one of the challenges that the organization is facing is diversity in leadership positions. Many scholarly articles have pointed out the issue. Concisely, Aegean is a socially responsible firm as proved from the above analysis.

4.3.3 Corporate Governance in Aegean Airlines (Governance)

Aegean Airlines has ensured that it performs its operations while staying within the provisions of Greek Law. The Company implements the Greek Corporate Governance Code and complies with national and European legislation on a strict basis (Aegean Airlines, 2022).

Aegean's governance structure is fundamentally that of its Board of Directors (the "BoD") whose role is to determine corporate strategy and monitor management performance. The BoD consists of 12 members and gives considerable weight to independent and non-executive directors who constitute 75% of the BoD and 33% of the independent non-executive members. The makeup of the board makes it effective and conflict-free. The company is taking diversity in the BoD into account. According to it, women hold 25% of board positions, which can be further improved (Aegean Airlines, 2021).

Aegean has strict anti-corruption policies in place because of its integrity. Aegean applies zero tolerance in relation to corruption and bribery as well as the company's Anti-Bribery and Anti-Corruption Policy and the Procurement Code of Ethics and Conduct. These policies set forth clear standards for interactions with suppliers and partners. They follow UN Global Compact and OECD Guidelines for Multinational Enterprises. In 2023, the company was not subject to any incident of corruption, bribery, or fraud (Aegean Airlines, 2023).

Risk management and compliance are parts of Aegean's governance. The company has subjected its suppliers and customers to various methods of monitoring in order to not associate it with money laundering or any similar crime. Moreover, Aegean aims to receive the accreditation of ISO 37001 (Anti-Bribery Management System) and ISO 37000 (Corporate Governance System) certificates (Aegean Airlines, 2022).

Aegean is also focusing on transparency and responsibility through regular board evaluations. Both internal and external assessment of the performance of BoD are conducted to ensure effectiveness and compliance with governance principles. In 2023, Ernst & Young performed an external evaluation of Aegean, confirming both the adequacy and effectiveness of its governance system. No material weaknesses were identified (Aegean Airlines, 2023).

Aegean's governance practices and the literature reviewing aviation sector governance reveal that Aegean is sound and adheres to best practices. Aegean's position relative to the literature review is particularly verified with respect to its initiative-taking stance on anti-corruption and risk management, and respect to the independence of the Board of Directors. Nonetheless, like many companies in the industry, Aegean continues to experience difficulties in improving board diversity and equal representation at the highest levels of governance.

4.4 ESG strategies of Ryanair

4.4.1 Analysis of Environmental Initiatives (Environmental)

Ryanair has taken a comprehensive approach to environmental sustainability, with a focus on mission-led initiatives to combat climate change, along with mitigation of emissions. One of the primary tactics of the airline is the use of Sustainable Aviation Fuel (SAF). Ryanair's sustainability aims to play a key role in SAF, which is currently costlier than conventional jet fuel. To help it achieve 12.5% SAF by 2030 which is in line with the EU requirements – Ryanair has signed up with major SAF suppliers including Shell, OMV, ENI, Repsol, and Neste. Greenhouse gas reductions from sustainable aviation fuels will be much more effective than compliance cost reductions from the EU Emission Trading System (ETS) and CORSIA (Ryanair, 2023).

Fleet renewal is another important part of Ryanair's environmental efforts. The airline is planning to remove old aircraft subsequently, using better ones. The introduction of Boeing 737-8200 "Gamechanger" aircraft will reduce 16% fuel consumption per seat. It will also lower noise levels to 50% less than previous Boeing 737s. To remain as Europe's most fuel-efficient airline, Ryanair must transition to different Boeing kingfishers. It also aims to lower its carbon footprint by 25% per passenger-kilometre by 2031 (Ryanair, 2021). Furthermore, Ryanair is lobbying for more efficient multilateral co-operation across aviation. They back the extension of the EU Emissions Trading Scheme (ETS) to all departing flights from European Economic Area (EEA) airports to achieve uniformity on pricing to curb carbon emissions. It has also been against the proposed intra-EU kerosene tax, which is said to encourage long-haul flights departing outside the EU, thus causing carbon leakage (Ryanair, 2022).

Ryanair has also poured substantial resources into R&D for long-term sustainability solutions. In partnership with Trinity College Dublin (TCD), the Ryanair Sustainable Aviation Research Centre established. The initiative focuses on developing new aircraft engines, improving certification process for SAF and understanding the non-CO_2 impacts of aviation such as contrails and NOx emissions. The goal of the research is to improve the viability of alternative fuels, while also investigating hydrogen and electric propulsion for the future (Ryanair, 2023).

Making operations more efficient is a key part of Ryanair's environmental measures. The firm employs single-engine taxiing and dynamic flight planning in the optimization of fuel. The incorporation of scimitar winglets throughout the fleet, coupled with the implementation of these measures, leads to progressively lower fuel burns and linked carbon emissions. Also, Ryanair is calling for reforms to European air traffic management under new "Single European Sky" rules. If this is done successfully, aviation emissions could drop 10% as a result of less air traffic and more efficient routing of flights.

4.4.2 Social Practices and Social Responsibility (Social)

Ryanair is dedicated to social practices and commitment to greater social responsibility, and it reflects in their efforts of enhancing employee welfare, diversity and inclusion, and labor relations and more. The organization encourages learning and supports employees as well as the local community for better experience (Ryanair, 2023).

One of the social responsibilities of Ryanair is the focus on gender, diversity, and inclusion. The Career Enhancement and Development Committee of the Association drives initiatives to promote a more inclusive workplace. This includes uniform policies that are gender-inclusive and celebrating events like the International Women's Day and Pride events (Ryanair, 2022).

Also, the company has a strict Non-Discrimination Policy that prohibits discrimination in all aspects of employment – recruitment, promotion, and benefits with regards to gender, age, disability, race, religion, and sexual orientation. The recruitment will be based on merit. Promotion will also be done based on merit. The company has an equality officer to report discrimination (Ryanair, 2021).

Ryanair acknowledges and endorses the rights of employees to associate freely and bargain collectively in labor relations. The right of employees to join trade unions and engage in collective negotiations is respected by the company. As of FY23, Ryanair has collective agreements in place for around 97% of its pilots and cabin crew. These agreements give protection of they job and clarity on pay and other working conditions to remove the risk of industrial action through a continuous dialogue with the representatives. Ryanair's Employee Relations Committees (ERCs) provide a forum for employees who choose self-representation rather than union representation to express their views and discuss issues with management (Ryanair, 2023).

Internally, through Ryanair platforms, communication and engagement are encouraged. Ryanair has Fleet Hub, which helps employees communicate easily with senior management. Employees also have a Q&A portal called "Ask Eddie" which enables them to ask a question of the Ryanair DAC CEO. The organization conducts webinars to update employees on operational matters and other relevant issues. The yearly Cabin Crew Awards likewise identify and reward top crew members, in turn bolstering recognition and motivation (Ryanair, 2022).

Ryanair uses its Engineering Training Academy to invest in the future workforce. In the fiscal year 2024, the academy increased its capacity to train 700 students and aims to reach 1000 students by 2025, which will be key to training the future aviation workforce. Apart from that, every employee is regularly assessed on their performance and given training to ensure safety and service standards. The onboarding process at Ryanair is being further enhanced by systems that automate certain parts (Ryanair, 2021).

Ryanair cooperates with various charities for corporate social responsibility (CSR) in other ways. Through its scratch card scheme, the company has collected around 2.5 million euros for charities in Europe. Some of the beneficiaries include the Make-a-Wish, Jack & Jill Children's Foundation, and other similar organizations. Furthermore, Ryanair teams up with the Trinity Centre for People with Intellectual Disabilities (TCPID) to offer work placements and support educational programs to assist in the inclusion of people with intellectual disabilities (Ryanair, 2023).

Ryanair follows its Code of Business Conduct & Ethics to ensure there is no forced or trafficked labour in the airline. Employees must be contractually based in jurisdictions that have a low risk of forced labor. In addition, Ryanair complies with national and European laws relating to remuneration and labour benefits (minimum wage, social benefits). The airline provides its workforce with the most stable rosters in the industry and planned time-off from work (Ryanair, 2023).

4.4.3 Corporate Governance in Ryanair (Governance)

Ryanair's corporate governance framework supports transparency, accountability, and ethical conduct. The governance structure is designed to provide strong oversight and efficient management throughout the organization, while conforming to regulatory standards and encouraging sustainable long-term growth (Ryanair, 2021).

The Board of Directors is the heart of Ryanair's governance model, which is accountable to set the corporate strategy, manage risks and oversee sustainability objectives. The board includes both an executive and a non-executive director as of July 2023. The new non-executive directors' appointments of Amber Rudd and Jinane Laghrari Laabi, help to improve the geographic, gender and ethnic balances of the Board, which is now 50:50 gender balanced. This tells us Ryainar wants to maintain a diverse governing body that has the competence to deal with complex operational and regulatory matters (Ryanair, 2023).

Ryanair has many specialized board committees which offer detailed scrutiny of key areas. The Audit Committee, Remuneration Committee and Nomination Committee are all aboard the Ryanair plan. Each committee has documented terms of reference and is chaired by board members with extensive relevant experience. For example, the Audit Committee is led by Geoff Doherty and responsible for financial reporting, internal controls, and regulatory compliance. The Remco takes care of executive remuneration and makes sure it is aligned with the long-term business strategies, whereas the Nomco looks after succession and appointment planning's of senior employees (Ryanair, 2022).

The corporate setup has the Sustainability Committee, which oversees sustainability governance. Each month, this executive-level committee meets, under the chairmanship of the Director of Sustainability. Representatives from Operations, Finance, Engineering, and other business functions are appointed to oversee sustainability-related risks and opportunities. The Sustainability Committee reports to the chief financial officer group and keeps the Board and Audit Committee informed. The governance structure allows constant monitoring and delivery of Ryanair's environmental, social and governance (ESG) initiatives (Ryanair, 2023).

Ryanair's Enterprise Risk Management (ERM) framework is instrumental in identifying operational and climate-related risks and their mitigations. The steps of the ERM process are reviewed at least twice a year and relevant key risks are assessed. Each relevant key risk is reported to the Audit Committee and the Board. The framework helps the company to quickly manage new risks like regulatory changes, operational disruptions, and sustainability challenges. By utilizing scenario analysis and horizon scanning, the Company can stay resilient to climate-related risks and keep up with events (Ryanair, 2022).

To maintain ethical standards, Ryanair has a Code of Business Conduct & Ethics. This policy outlines expectations for lawful and ethical behaviour from the organization's senior management levels to its first-line associates. The Code includes anti-bribery, anti-corruption, and whistleblower protection provisions. During FY23, a modification was made to the code to reflect recent changes in regulation about market abuse as well as ensure transparency in dealings with third parties. Workers in high-risk roles are trained annually on policies to create a company culture of integrity and compliance (Ryanair, 2023).

Every year the airline organizes the Ryanair Corporate Governance Forum which highlights the level of engagement the airline has with its stakeholders. Senior Independent Director meetings allow shareholders to learn of current governance and sustainability issues. Also, Ryanair's senior management participates in regular investor roadshows to provide updates on the progress of the Climate Transition Plan. The company's decision-making process is informed and reinforced by feedback from those engagements (Ryanair, 2023).

Another essential element of corporate governance at Ryanair is executive remuneration, which is linked to ESG performance. To ensure that Senior Management is incentivized to work towards achieving key environmental targets, their short- and long-term incentives are linked with performance related to achieving a CDP 'A' rating. This encourages the leadership team to achieve sustainable growth whilst keeping shareholders satisfied (Ryanair, 2022).

4.5 Analysis of ESG metrics and financial indicators

Aegean Airlines' 2023 financial results exceeded both 2019 pre-pandemic and 2022 levels. The consolidated revenue reached €1,693.1 million, representing a growth of 27% versus 2022 and 29% up versus 2019. Pre-tax profits improved, up 52% in 2022 and 101% on 2019 reflecting the successful implementation of the employment strategy, network expansion and cost management. Having a strong cash position of €709.3 million and lower borrowings show strong financials. According to Aegean Airlines, the results show the strength and resilience of the airline, which has not lost its competitive strength due to the adverse economic climate and volatility in the industry.

Table 2: Aegean Financial Performance (Aegean Airlines, 2023)

Indicator	2023 Value	Change from 2022	Change from 2019
Revenue (€ mil.)	1,693.1	+27%	+29%
Pre-tax Profit (€ mil.)	214.8	+52%	+101%
After-tax Profit (€ mil.)	168.7	+58%	+115%
Equity (€ mil.)	418.8	+20%	N/A
Borrowings (€ mil.)	220.3	-17.9%	N/A
Cash & Cash Equivalents (€ mil.)	709.3	+35%	N/A

Aegean Airlines focused on sustainability through fleet renewals and lower emissions. In 2023, the carrier cut CO_2 emissions per Available seat Kilometer (ASK) by 12% versus 2019 as a consequence of modern fleet induction and application of Sustainable Aviation Fuel (SAF) schemes. Aegean Airlines is focused on reducing its carbon footprint. Investments in Europe's first "Green Hangar," with 35,000 m² of solar panels generating 3MW of power have been made for that. These initiatives are aligned with the global goals for sustainability and are in line with Aegean's strategy to lead the Greek aviation sector towards sustainable and energy-efficient operations (Table 2).

Table 3: Aegean ESG Performance (author's own elaboration)

Category	Key ESG Metrics (2023)	Comparison/Impact
Environmental	CO_2 emissions per ASK reduced by 12% (compared to 2019)	Fleet renewal & Sustainable Aviation Fuel (SAF) implementation

	Use of SAF (Sustainable Aviation Fuel)	First test flights using SAF in 2021, further expansion in 2023
	Investment in "Green Hangar" with photovoltaic panels	35,000 m² of solar panels for 3MW power generation
Social	Total employees: 3,491 (58.35% women)	Strong workforce diversity and inclusion
	Passenger Growth: 15.7 million passengers	+3.2 million more than 2022
	New destinations added: 30+	Expansion enhances tourism and connectivity
Governance	Board structure: 12 members (mix of executive & non-executive)	Ensures strong corporate oversight
	Compliance with EU Taxonomy & ESG Reporting Standards	Enhances transparency and accountability

In 2023, Aegean Airlines contributed significantly to the social development of Greece by creating jobs, enhancing passenger services, and engaging with the community. The Aegean Airlines company employed 3491 employees of which 58.35% were women. The number of passengers increased by 3.2 million from 2022, which amounted to 15.7 million. The addition of over 30 destinations to the network enhances connectivity. Moreover, Aegean supported training activities, educational workshops, and similar programs. At the same time, the company supported tourism development activities in the African countries where it operates (Table 3).

Table 4: Key aspects achievements (author's own elaboration)

Aspect	Key Achievements
Fleet Modernization	50 Airbus A320neo aircraft ordered, 28 delivered

Digital Innovation	Digital ID for passengers, online check-in expansion
Social Contribution	Investments in education, tourism, and local communities
Governance & Ethics	Strengthened risk management & cybersecurity initiatives

Aegean Airlines' governance is ensured by a balanced board of directors consisting of 12 members, 3 executives, 6 non-executives and 3 independents. The Board of Directors maintains oversight and forms strategic decisions. In light of the EU Taxonomy and international ESG reporting regulations, the Company increased its transparency. Investments towards monitoring risk and cybersecurity further protect operations and customers. Aegean's governance approach demonstrates commitment to corporate responsibility, regulatory compliance, enhanced shareholder value creation, and overall realisation of an integrated approach by aligning with global best practices fostering sustainable business operations and ethical leadership (Table 4).

In the last three years, Ryanair's ESG ratings have improved significantly. The airline's rating was upgraded by MSCI from BBB to A. The risk score of Sustainalytics has decreased. The rating of CDP upgraded from B to A- demonstrating better strategies to run climate change. Ryanair's transitions to investigations into SAF, money related decarbonization, and corporate governance improvements. Ryanair's enhancements in fuel efficiency, causing environmental benefit measures and engaging stakeholders have led to the company's upgrades to B and position to 2023. Ongoing investments in sustainability will be important to sustain these (Table 5).

Table 5: Key ESG Ratings for Ryanair (Ryanair Sustainability Report, 2023)

Metric	FY21	FY22	FY23
MSCI Rating	BBB	BBB	A
Sustainalytics Score (lower is better)	29.6	23.8	23.6
CDP Climate Rating	B	B	A-

Ryanair's carbon emissions have increased in absolute terms, driven by passenger growth, but the airline has successfully reduced per-passenger emissions through its adoption of fuel-efficient aircraft. Scope 1 emissions rose from 9.19 MtCO2e in FY21 to 15.38 MtCO2e in FY23, reflecting increased flight operations. However, emissions per passenger-kilometer have decreased due to fleet upgrades, including the introduction of Boeing 737-8200 "Gamechanger" aircraft. Scope 3 emissions, associated with supply chain and indirect activities, also increased but remain a focus for reduction efforts. Ryanair's commitment to SAF, improved operational efficiency, and winglet retrofitting supports its net-zero by 2050 goal (Table 6).

Table 6: Emissions and fuel consumption for Ryanair (Ryanair, 2023)

Metric	FY21	FY22	FY23
Scope 1 Emissions (MtCO2e)	9.19	14.27	15.38
Scope 2 Emissions (MtCO2e)	0.002	0.003	0.0005
Scope 3 Emissions (MtCO2e)	2.10	3.10	3.27
Fuel Consumption (Million USG)	952	1,484	1,600
Emissions per Passenger-km (gCO2)	76.3	66.8	66.1

Ryanair shows steady growth in workforce from 19,000 in FY21 to 27,000 in FY23 in line with expansion strategy. The airline has high levels of collective bargaining coverage, with peak coverage of 95% in FY22 and a slight decline to 94% in FY23. The percentage of women on the Board of Directors increased to 50% in FY22, which was 10% higher than in FY21. In FY23, the level of gender changes again improved further, taking Merger Partner to a near equality position. This shows Ryanair's commitment to diversity and inclusion, ensuring a balanced leadership team. Ryanair is seen as an employer of choice - in a demanding aviation sphere, thanks to uninterrupted investments in training, hiring and workforce policy (Table 7).

Table 7: Workforce and diversity for Ryanair (author's own elaboration)

Metric	FY21	FY22	FY23
Total Employees	19,000	25,000	27,000
Collective Bargaining Coverage (%)	89	95	94
Gender Diversity (Board, % female)	40	50	50

Ryanair's finances recovered strongly, with revenue increasing from €4.8 billion in FY21 to €13.4 billion in FY23. This growth is aided by increasing passenger demand and smart cost management. Strongly recovering from the pandemic, Ryanair's net profit increased from a loss of €241 million in FY21 to €1.92 billion in FY23. Ryanair's hedging strategy helps offset major fuel costs affecting many other airlines in the industry. Ryanair has recorded benefits from higher load factors (94%) and ancillary revenue streams. Ryanair's investments in fleet and digital continue and we see longer-term growth potential in Ryanair (Table 8).

Table 8: Key financial indicators for Ryanair (author's own elaboration)

Metric	FY21	FY22	FY23
Revenue (€m)	4,801	10,775	13,444
Operating Costs (€m)	5,141	9,332	11,383
Profit Before Tax (€m)	-430	1,443	2,128
Net Profit (€m)	-241	1,314	1,917
Load Factor (%)	82	93	94

Ryanair fleet has increased from 480 aircraft in FY21 to 584 in FY23. The airline has focused on fuel-efficient aircraft, particularly the Boeing 737-8200, which lowers fuel usage and CO2 output. The strategic move to raise the size of the fleet is aligned with Ryanair's objective to carry 300 million passengers in a year by FY34. Owing to delays in the delivery of Boeing, Ryanair is retrofitting older aircraft with winglets that save fuel (Table 9).

Table 9: Capital Expenditure and Fleet Growth (author's own elaboration)

Metric	FY21	FY22	FY23
CapEx (€m)	1,522	1,928	2,182
Fleet Size	480	531	584

Strategic investments in fleet modernization not only enhance sustainability but also contribute to cost savings. Future expansions will further cement Ryanair's position as Europe's largest low-cost carrier.

4.6 Relationship between ESG Strategy/Metrics and Financial Performance

The academic literature has thoroughly examined the link between Environmental, Social, and Governance (ESG) strategies and financial performance, especially in the high-impact and highly regulated aviation sectors. Some studies suggest that companies with strong ESG strategy can have a competitive advantage such as companies with better financial performance, better investor confidence and better regulatory environment (Friede et al., 2015). However, this relationship is quite sensitive to business models, as can be seen in contrast with ESG strategies of Aegean Airlines and Ryanair. Aegean Airlines incorporates ESG into its long-term strategy, while LCC Ryanair implements ESG on a selective basis with cost focus. An examination of comparative studies of ESG - Financial Performance in case of Aviation that shows how ESG creates value does depend on Business Models, as seen with Aegean and Ryanair.

Aegean Airlines is taking steps to achieve ESG as a full-service legacy carrier. In this light, it also complies with the Corporate Sustainability Reporting Directive (CSRD) in Europe. The airline has made substantial investments in updating its fleet to incorporate more fuel-efficient aircraft that reduce both emissions and costs (Gössling & Humpe, 2020). Research in ESG and financial performance highlights that investing in ESG initiative increases profitability in the long-term by avoiding regulatory fines and cost efficiency (Flammer, 2021). Aegean does not just help save the environment. It is also efficient at governance, transparency, social responsibility, and more which make it popular with institutions. Nonetheless, the costs involved in sustaining them are not straightforward, given that their high costs and low willingness of consumers to pay higher prices for sustainable travel could negate any potential benefits (Friede et al., 2015).

In comparison, Ryanair is taking a more cost-effective approach to ESG strategy. It implements sustainable measures wherever it works with its ultra-low-cost strategy. Although the airline has invested in new Boeing 737-8200 "Gamechanger" aircraft which helps reduce fuel consumption and emissions, the airline's wider ESG strategy is still reactive, not initiative-taking (Chang & Lin, 2021). Unlike Aegean, which invests in sustainability reporting and clear governance practices, Ryanair is often under fire for its labor conflicts and governance issues, which have sometimes marred its reputation (Ioannou & Serafeim, 2019). Ryanair has shown strong financial gains despite controversies, indicating that ESG is not the only factor influencing financial performance. This is in line with arguments in the literature that while ESG improves long-term resilience, financial results are also heavily affected by operational efficiency and strategy execution (Berg et al., 2022).

The Aegean and Ryanair Airlines differ significantly in their prioritization of environmental attitudes. Aegean Airlines is using sustainable aviation fuels (SAF) in its operations and waste reduction programs in line with sustainability goals of the European Union. Research indicates that the use of SAF and other environmental measures will help in reducing costs over the extended period as well as gaining investor confidence as regulations become stricter (Khan et al., 2016). Though SAF is quite costly and in contrast to other industries where such sustainability allows immediate value-for-money like electric vehicles, the aviation firm is unable to get value-for-money for their ESG efforts (Subramanian, 2023). Ryanair, on the other hand, has capitalized on the low-cost environmental strategies of fuel-efficient flying through optimized timing and route selection without large-scale engagement. This shows that in aviation, LCCs focus more on operational efficiencies than on broad ESG strategies, further supporting the argument that ESG–financial performance relationships are industry- and model-specific (Sorsa & Bona-Sánchez, 2024).

The social aspect of ESG actions shows differences in strategies too. Aegean Airlines is investing heavily in employees and diversity programs and community services such as the "Supporting the Youth" scheme. This is in line with other research showing that more socially responsible companies have more satisfied and productive employees, and this also benefits performance (Edmans, 2020). Nevertheless, even if these initiatives do add to brand equity and engender stakeholder trust, it is difficult to put a number on this in financial terms. As far as Ryanair is concerned, this airline is getting continuous criticism for its treatment of the employees particularly on issues like labour rights and union negotiations (Chang & Lin, 2021). Despite the controversies, Ryanair has been able to maintain low operating costs and sell tickets at incredibly low prices. As such, Ryanair continues to have financial success, which may suggest that social responsibility is not always essential for LCCs.

From a governance perspective, Aegean Airlines has adopted a well-structured and transparent governance model that adheres to best practice governance as well as ethical business conduct. The strong governance frameworks contribute to lower capital volatility and increased investor confidence, leading to the conclusion that governance is an essential pillar of financial resilience (Ioannou & Serafeim, 2019). Aegean Airlines' proactive management of risks and compliance in business governance contributes to long-term stability. Beyond compliance with current literature, governance has been linked to financial sustainability (Flammer, 2021). On the other hand, Ryanair has faced governance issues related to accusations of acting against competition policy and strikes by labour that have sometimes cost it money. Although Ryanair has faced a financial governance shortcoming, the airline continues to do well in earnings or profitability relative to its low costs.

The critical comparison of the two business models shows that even though ESG strategies can enhance a business's resilience to financial impacts and increase investor confidence, they can't fully explain differences in financial performance in aviation. The ESG initiatives at Aegean Airlines are in line with the industry trend of legacy carriers utilizing sustainability for differentiation and compliance.

Still, high implementation costs and the highly competitive environment prevent it from gaining direct financial benefits from ESG. On the other hand, it was observed that the selective integration of ESG by Ryanair helps it sustain better cost efficiency and profitability. This may risk its reputation and the regulatory landscape, nonetheless. This indicates that the financial impact of ESG is contingent on strategic alignment, as opposed to merely the willingness to 'adopt' (Berg et al., 2022).

In the end, the example of Aegean Airlines and Ryanair illustrates the complex link between ESG and financial performance in the aviation industry. While adopting ESG improves long-term resilience, financial benefits depend on business model, regulatory environment, consumer demand and other factors. ESG is a wonderful way for legacy carriers like Aegean to differentiate their offering and meet regulations, which helps reinforce long-term financial stability even though the process incurs great costs. For low-cost carriers like Ryanair, it must make sense financially to invest in those improvements. As rules become stricter and expectations change, airlines that focus on ESG with money flexibility will benefit from long-term success.

4.7 Summary of the findings

Environment, Social, Governance (ESG) is a significant aspect of corporate responsibility in the airline sector. Aegean Airlines and Ryanair, which operate on different business models have undertaken different ESG strategies in order to meet the ESG requirements. This section discusses their ESG strategies, the effect on financial performance and ESG performance, the dissimilarities between ESG strategies, and the critical success factors and hindrances in the implementation (Table 10).

Table 10: Summary of findings

ESG Factor	Aegean Airlines	Ryanair
Environmental (E)	- Fleet modernization for lower emissions - Sustainable aviation fuels (SAF) research - Carbon offset programs - Waste reduction and recycling initiatives	- Ultra-efficient fleet (Boeing 737-8200) - Net zero carbon target by 2050 - High load factor for fuel efficiency - Investment in SAF and carbon reduction projects
Social (S)	- Employee training and diversity programs - Community engagement and tourism support - Customer service and passenger experience focus - Health and safety measures	- Low-cost travel accessibility - Employment opportunities across Europe - Focus on worker conditions and union negotiations - Passenger rights and safety policies
Governance (G)	- Transparent corporate policies - Ethical business practices - Strong leadership and board diversity - Compliance with EU aviation regulations	- Cost-control and profitability focus - Shareholder engagement and transparency - Disputes with labor unions and regulatory compliance - Strong leadership under Michael O'Leary

4.7.1 ESG strategies implemented by Aegean Airlines and Ryanair

Aegean Airlines and Ryanair follow compatible ESG strategies because of regulations and goals. Nonetheless, their approaches have differences owing to their different business models. As a legacy carrier, Aegean Airlines is taking measures to reduce fuel consumption and emissions. The airline's sustainability strategies integrate into its operations. Aegean Airlines' fleet modernization includes investing in new-generation aircraft like the Airbus A320neo. The airline is also assessing the usage of sustainable aviation fuels (SAFs) to reduce its carbon footprint and optimize flight routing and maintenance for enhanced operational efficiency. Also, Aegean places great importance on (CSR) activities, whether in the communities in which they operate or among employees. The company's governance practices, including board diversity, ethical business practices, and adherence to global aviation standards, improve its ESG rating.

Ryanair, a low-cost airline, takes the opposite approach, primarily minimizing fuel consumption and emissions through cost-effective processes. The airline has pledged net-zero emissions by 2050 through carbon off-setting programs and is investing in fuel-efficient aircraft such as Boeing 737 Max. Although Ryanair invests in employee development and diversity, being a low-cost airline, the scope of its initiatives is restricted. The airline complies with existing regulations, though they have been scrutinized over labor practices. Although both airlines comply with a range of regulatory provisions, both Aegean Airlines and Ryanair implement their ESG practices differently based on their respective operational focus.

4.7.2 Impact of ESG Strategies on ESG and Financial Performance

The ESG strategies of Aegean Airlines and Ryanair should affect these firms' sustainability and financial performances, the result will depend on their business models. Aegean Airlines benefits from ESG, as it enhances reputation, improves customer loyalty and adheres to European environmental regulations. Through fleet renewal and the use of sustainable aviation fuels (SAFs), the airline contributes to lower emissions to meet EU aviation sustainability goals. Also, Aegean's community initiatives and investments in the well-being of employees strengthen the relationships with stakeholders. Investing in sustainability will incur short-term costs but the long-term benefits like increased brand value, loss of customer retention, and gaining of regulatory benefits will be higher.

On the contrary, Ryanair took an economic approach towards the ESG and focused on cost-effective measures. Although the carbon offset programs that Ryanair has put in place do help to some extent in reducing emissions, the overall impact of the airline is quite high owing to the high volume of passengers it takes every day. By stressing cost, the airline's less investment in social initiatives from time-to-time gives it a bad public image. Nonetheless, the impact of the ESG measures on investor confidence and regulatory requirements are a curse because it is very expensive. In the end, the two low-cost carriers have different objectives from their implementation of an ESG strategy.

4.7.3 Aegean Airlines versus Ryanair: ESG Approaches

The two airlines have different ESG approaches that are in-line with their respective business models. Aegean is a legacy airline, and Ryanair is a low-cost airline. Aegean Airlines integrates ESG into its corporate strategy and adopts a proactive approach that stresses quality of service, sustainability and compliance with the law. Aegean Airlines adopts a customer-oriented approach to their ESG initiatives so that ESG initiatives also result in customer experience enhancement. Additionally, Aegean commits to investing in sustainability in the long run through research into sustainable aviation fuels (SAFs) and eco-friendly policies. Through this dedication to ESG, the reputation of the airline will enhance, and stakeholder trust will strengthen.

On the other hand, Ryanair's response to the ESG is more of a compliance-driven approach. The airline is a low-cost carrier that only incorporates sustainability initiatives if they have cost savings, maintaining a cost-driven focus and ensuring low fares for passengers. Although Ryanair operates with fuel-efficient aircraft and carbon offset schemes, the high volume of passengers in its business model poses challenges for meaningful ESG improvement. Basically, while Aegean prioritizes ESG, Ryanair only integrates sustainability as long as it serves its low-cost model by complying with the law and ensuring operational efficiency.

4.7.4 Key Success Factors and Challenges in Implementing ESG Strategies

Both Aegean Airlines and Ryanair have their own set of opportunities and risks to implementing successful ESG strategies influenced by regulations, finances and markets. The two airlines are expected to comply with EU aviation sustainability targets as it will enhance their credibility and ensure business continuity. A significant way to lower emissions and keep operational costs down in the long term is through fleet modernization. Moreover, a strong stakeholder engagement builds trust with investors, customers and regulators that add to your corporate image. Sustainable practices innovation, such as alternative fuels and operational efficiencies research, helps achieve ESG success by driving long-term environmental benefits.

However, significant challenges exist in implementing ESG strategies. High implementation costs present a big barrier as switching to sustainable fuels and buying new aircraft is very expensive. Ongoing regulatory pressure also presents issues, as stricter environmental laws require constant adaptation without sacrificing profits. Ryanair faces challenges in balancing ESG with finances due to its cost-sensitive business model. Increasing demand in the market with regard to ESG is forcing both these airlines to enhance their ESG (sustainability) commitments. They require a strategic plan to manage compliance, profitability and long-term sustainability objectives.

5. Conclusions, Theoretical and Practical Implications, Limitations and Future research Avenues

5.1. Conclusions

The research conducted in this dissertation studies how Environmental, Social and Governance strategies affect profit in the aviation context focusing on Aegean Airlines and Ryanair. In light of global rising importance of sustainability, research has sought to study how ESG integration affects corporate strategy and financial performance. The comparison analysis of the full-service carrier and the low-cost airline allowed for some understanding of how ways ESG practices are adopted, challenges faced as well as impact of these practices. The research results indicate that integrating ESG into corporate strategies is becoming necessary and that it can help with regulation compliance and improving efficiency as well as backing. But how much of this converts into dollars isn't straightforward and depends upon many internal and external factors.

Aegean Airlines is a full-service airline that has worked on ESG issues with serious commitment following international and European sustainability and regulatory frameworks. The company has taken a number of environmental initiatives (i.e., the use of Sustainable Aviation Fuel (SAF), cross investments in new-generation fuel-efficient aircraft, and efficiency-enhancing measures reducing carbon through aircraft movements). Also, on the social front, training of employees, gender equality, and a wide range of community programs are taken seriously by Aegean. The current state of the sector indicates that smart implementation of well thought out ESG strategy can be beneficial to enhance brand loyalty and investor confidence. Having a well thought out ESG strategy may incur high cost, and there may not be profits for a long time, if at all. Nonetheless, Aegean Airlines' policies demonstrate the heightened necessity for an ESG for sustainable competitiveness.

On the contrary, Ryanair, a low-cost airline, has taken a more selective approach to sustainability and is focused on cost-effective means. The airline is investing into new and more fuel-efficient aircraft as well as operational efficiencies to mitigate environmental impacts whilst keeping cost-leadership. Despite these advancements, Ryanair has attracted criticism for its social responsibilities, particularly regarding labor relations, employee well-being, and engagement with broader social issues espite improvements in some areas, the company's governance practices remain largely grounded in a cost mindset, which pursues profits rather than coherent ESG integration. The difference between Aegean Airlines and Ryanair shows how business models can affect ESG adoption. Full-service airlines might tend to adopt a comprehensive ESG strategy; however, low-cost carriers typically face challenges as their sustainability commitments will constrain them from incurring high operational costs.

All in all, a strategy that develops the ESG image will help enhance a company's reputation and compliance, attract sustainable investors but perhaps not its bottom line. According to experts, investment towards Environment, Social, and Governance (ESG) is being faced with several challenges in the aviation industry. It mainly has to do with the capital cost, fuel cost, and environmental cost. Nonetheless, as the demand for sustainable business practices increases, airlines that proactively implement ESG may have a first-mover advantage. The study points out that regulatory compliance, competitive positioning, and stakeholder pressures drive the aviation industry's adoption of ESG. Although both airlines have developed ESG strategies, their breadth and depth differ in accordance with their bottom line and positioning. In future, airlines will have to reconcile sustainability commitments with financial sustainability, thereby fuelling the adoption of these ESG efforts into further financial objectives.

5.2 Theoretical and Practical Implications

This research paper attempts to add to the growing literature on ESG strategies with empirical evidence from the airline industry. This research seeks to narrow the focus of previous literature that broadly identifies ESG trends, by comparing two airline business models. This paper compares the low-cost carrier Ryanair to full-service carrier Aegean Airlines. This analysis will give us better insight into how different airlines are implementing ESG based on their strategic priorities, financial objectives, and regulatory constraints. A main theoretical finding is that ESG is a competitive differentiator in an industry that faces heavy regulation, such as that of the airline industry. The research supports the view that airlines use ESG strategies to create a competitive advantage through a good reputation, investor confidence, and regulatory compliance. While Aegean Airlines marketed itself as a sustainability brand using its ESG efforts, Ryanair's more selective use of this thesis reflects the challenge of balancing costs against sustainability.

This study gives us a helpful insight into the ESG and financial relationship. Research, in line with past studies, suggests that while ESG investments will provide good financial benefits in the future, they require short-term trade-offs, namely in capital-intensive sectors like aviation. Airlines that make strategic sustainability investments, especially in fuel and fleet modernization and compliance with regulations, could realize valuable savings and stronger investor ties. The adoption of ESG requires significant capital expenditures that will not receive immediate economic compensation. Low-Cost Carriers face strategic challenges due to low profits. They are trying to understand the costs/benefits of sustainability initiatives.

This study also claims that airline business models have different counts in their adoption of ESG. Aegean Airlines and full-service airlines are sophisticated adopters of ESG. Moreover, they have a considerable investment in sustainability initiatives. Also, they already fulfill regulatory requirements and CSR (corporate social responsibility). By contrast, low-fares carriers like Ryanair implement only the cheapest possible ESG (Environmental, Social, and Governance) processes that do not disrupt their operations and ensure maximum profitability. The different levels of effort and intensity in ESG implementation by full-service carriers and low-fares carriers shows that not all measures can be applied universally, and need unique assessment. This research makes important practical recommendations for the management teams of airlines. One of the most pressing priorities is the investment in Sustainable Aviation Fuel (SAF). Airlines should hasten their Sustainable Aviation Fuel (SAF) adoption to reduce carbon footprint due to increasing pressure from regulators and environmentalists. Presently, SAF is costly, however, investment in this technology is crucial to achieve decarbonization across the whole aviation industry.

Likewise, the airline sector needs upstream focus on social responsibility and employee engagement in view of increasing stakeholder expectations. By enhancing industrial relations, diversity at workplace, organizational culture, employee retention and brand image may improve. The significance of corporate governance and transparency in terms of board diversity, anti-corruption, and ethics, has been stressed in the paper. Strong governance frameworks can foster the success of a corporation and its sustainability by effectively mitigating financial and reputational risks.

Ultimately, the study notes that especially low-cost carriers need to balance their profits along with ESG commitments. Legacy airlines have the financial capacity to invest in longer-term sustainability initiatives because of their built-up cash. Certainly, low-cost carriers will not be able to afford to do so. As the report points out, these carriers should strike a balance that is not detrimental to their profit margins but is low enough to fit in with their business model. Ultimately, the research reminds the reader that ESG is not a tick-the-box exercise but a smart play that will beget better business.

5.3 Research Limitations

Though the study analyses the environment, social and governance (ESG) strategies and financial performance in the aviation industry, there are many limitations. One of the main constraints is secondary data reliance, as the study uses corporate reports, sustainability disclosures, and industry reports and publications. Though these sources are reliable, they may be partial in nature where the companies would show their sustainability achievements while hiding their actual challenges. Due to the lack of access to internal corporate data or primary research (eg, interviewing key personnel), the authenticity of stated ESG claims cannot be verified.

One more limitation is the scope of comparative case study which targets Aegean Airlines and Ryanair as representatives of a full-service carrier and low-cost airline respectively. Although this methodology facilitates a detailed examination of how ESG has been integrated into different business frameworks, it does limit the applicability of the findings across the entire aviation industry. A larger sample that involves more airlines, especially those in other geographical areas, would improve the study's external validity and contribute to a better understanding of industry ESG trends.

The study further has problems in measuring the short-term versus long-term impact of ESG results on financial results. Investments that ESG take time to lead to positive financial effects, and our study shows only a snapshot of them. Further research which uses long-term data in the future will provide a better insight into how ESG strategies affect profit and competitiveness in future years.

Finally, this study fails to consider the regulatory differences across regions that have a serious impact on ESG. Sustainability regulations differ widely across markets and future research should take regional policy frameworks into account to better understand their impact.

5.4 Suggestions for Future Research

In order to enhance the findings of the present study, future researchers may study the further area for the understanding of ESG adoption in the aviation industry. One way to expand the learning from the study findings is through longitudinal studies on the impact of ESG. Long-term monitoring of ESG investments would help to assess their true value since they often give quantifiable results after a few years of investment.

It may also be worthwhile comparing the ESG strategies adopted by other airlines for differences. Researchers could consider studying a larger sample size here, potentially global carriers or regional airlines. If the comparative analysis is broadened, it would lead to more universally applicable findings and salient best practices could be identified that are applicable across different business models. Academic papers on the competitiveness of ESG aspects are scarce. We would therefore be the first to start result modelling.

Moreover, gathering information directly from airline executives, sustainability managers, and regulators would make the implementation of the decision to use ESG more comprehensive. Direct engagement with key stakeholders would help reduce the likelihood of bias in their disclosures and would also offer useful insights into the airline context about the challenges and opportunities related to ESG adoption and integration.

In-depth analysis is warranted on the impact of regulators and policies on ESG of airlines to assess the effect of government interventions/international sustainability standards. As environmental policies change rapidly, how the airlines respond to and deal with the various different sources could provide valuable insight for government & industry.

It would also be beneficial to study consumer perceptions of ESG to understand how passenger choices for sustainable travel affect airline profitability. Understanding whether travelers will pay more for eco-friendly travel can help airlines have effective marketing strategies for sustainability.

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