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Master Thesis

Sustainability reporting in the airline industry: a comparative case study analysis of four selected European passenger airlines and their countries of registration on the basis of the airlines' annual reports and sustainability report from 2018

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Abstract

Sustainability reporting for airlines is becoming more and more important. The driving forces are the external and internal pressures, such as demand from the public and society, from governments, stakeholders and shareholders, as well as from NGOs, activists, and the industry-intern economic competition between the airlines.

Within the scope of this research, the main focus was on the research question: *How can the variation in the claims of sustainable measures reported in the 2018 annual reports and sustainability reports by four different European airlines be explained from the characteristics of the airlines and of the countries in which the airlines are registered?*. The ecosystem for the conducted analyses consists of four airlines from four different countries in the European Union. Seven sustainability parameters were chosen in order to objectively analyze the sustainability reporting of the airlines and of their countries of registrations. The parameters are: (I) alternative fuel, (II) CORSIA, (III) aviation tax, (IV) aircraft age, (V) aircraft design, (VI) Dow Jones Sustainability Index, and (VII) atmosfair Airline Index. On the one hand, the comparison was made between the chosen airlines. On the other hand, the comparison was made between the airlines' countries of registration. In the end, the airlines' sustainability reporting is compared with the countries' reporting on sustainable measures addressed. For this comparative analysis, the airlines 'annual reports and sustainability reports of the year 2018 were considered.

The following methods were applied to study and analyze the information gathered within this work: First, a quantitative dataset is created. This way, an inventory table of all European airlines is generated which already helps to address the hypotheses. Second, a documentary analysis, namely a content analysis according to Mayring (2004), is performed. The technique of deductive coding is applied in order to compare four airlines studies from four different countries with each other.

The main findings of this research are that today's sustainability reporting by European airlines is heterogeneous within the airline industry itself and also differs from the sustainability reporting of the airlines 'countries of registration. Interestingly, from an expected knowledge point of view, this is opposite to Institutional Theory which expects that organizations operating in the same institutional field become more similar as they adopt activities from each other.

Results of the research conducted in this work delivered the following facts:

- CORSIA is the most important and highest addressed measure at both the country and airline levels.
- The (mean of) Sustainable Development Goals of a given country is a better indicator than the (mean of) sustainability rating of countries in order to evaluate the extent of the sustainability reporting in terms of the seven selected factors. Although no clear correlation could be established, a clear trend could still be seen: the lower the SDG of a country, the more likely the country shows a smaller number of reported measures.
- A higher number of reported measures by airlines is linked to the target of reputation building and keeping, and image creation.
- Low-cost airlines do not report less on sustainability measures compared to full-service airlines. The business model of an airline does not play a role in the reporting of sustainable measures.

Due to the increasing public and governmental pressures, sustainability reporting has become a tool for legitimacy, especially in the digital age. All actors involved in this industry do care and are concerned with the sustainability of the airlines. Digitalization and public awareness in general have tremendously increased the awareness and interest for sustainability. As such, sustainability is and will keep growing to be a very important and dynamic main facet for the airline industry's future.

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List of Abbreviations

ANSP	Air Navigation Service Provider
ATM	Air Traffic Management
ASI	Airline Sustainability Index
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CSR	Corporate Social Responsibility
ICAO	International Civil Aviation Organization
IATA	International Air Transport Association
MNC	Multinational Corporation
MSA	Mokken Scale Analysis
NGO	Non-governmental organization
SES	Single European Sky
SDG	Sustainable Development Goals
T&E	Transport & Environment NGO
UN	United Nations

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1. Introduction

1.1. Background

Environmental and climate protection received a different dimension of attention since the young climate activist Greta Thunberg started her “Friday for Future“ strike in late 2018. By now, her movement slopped over to many countries all over the world as Greta has become a role model fighting for climate protection. While the automotive industry had suffered severe problems regarding the worldwide Diesel scandal in 2015 (Hotten, 2015), through Greta, light is shed on other transport industries that influence one’s individual carbon footprint: the aviation industry (Asquith, 2020). Because the emissions produced by this industry are growing very fast, the European Commission forecasts an increase of 70 percent in global international aviation emissions compared to the year 2005 (European Commission, 2020a). This is why actions for a more sustainable aviation industry including all its actors are urgently needed.

The fast growing aviation industry has called for much academic research from many different fields of interests — from technical studies to psychological studies. Research referring to the aviation industry mainly focused on airline companies because they are the responsible actors that operate the environmentally contentious flights. This is why this research as well focuses on the airline operators as the responsible parties for the environmental impacts. Nevertheless, there are other interesting actors involved in the aviation industry, such as aircraft manufacturers, or Air Navigation Service Providers (ANSP). However, the analysis of such actors would be beyond the scope of this study. Sustainability and especially its reporting have become a recently addressed topic that can be best related to airlines within the aviation industry.

This research consists of two analyses that aim at explaining how variation in sustainability measures arises across different European airlines, registered in different European countries.

1.2. Research Problem

Since the rise of public awareness towards a more sustainable airline industry, it has become a new trend and necessity for airlines to report more about their sustainable activities due to the public pressure coming from a changing consciousness regarding the environment, climate change and protection (Taskinsoy & Uyar, 2017). This pressure relates to the airlines’ reputation (Mayer, et al., 2015) which is an important aspect for them because of their

dependency on customers (travelers) and the customers' choice and decision to fly with a certain airline. However, not only airlines are under public pressure, but also government authorities that need to adopt and propose sustainability measures. On the one hand, governments experience pressure arising from European Union policies. On the other hand, they also exert pressure on airlines in order to meet sustainability and environment targets set by the European Union.

Sustainability reporting by airlines as a new trend has been under research before (Taskinsoy & Uyar, 2017; Migdadi, 2018). The research of Taskinsoy and Uyar (2017), for example, focuses on the sustainability reporting of Turkish Airlines. Environmental actions by airlines are included in either annual reports, or separate sustainability reports, both published by the airlines (Taskinsoy & Uyar, 2017) or the airlines's parent companies. Publishing sustainability reports separately from annual reports has been analyzed as an "indication of (…) seriousness" (Taskinsoy & Uyar, 2017, p. 12). Using annual and sustainability reports as a main data source is an interesting choice and has been used throughout a number of studies (e.g. Migdadi, 2018). Best practices of an airline's environmental and sustainable operations on the basis of these reports were detected during the last years (Migdadi, 2018) as well as it can now be said that over the last years, disclosed dimensions of sustainability increased in total (Taskinsoy & Uyar, 2017). The reports show that more information is made public by the airlines, although a lot of the reporting can be related to reputation management and green marketing. Keeping in mind the different types of reports (annual reports and sustainability reports), it would be highly interesting to understand how different airlines report on the issue of sustainability while taking into consideration the country in which they are based and registered. The alignment between airlines' reports and the national governments' characteristics towards sustainability in the airline industry will be an additional, quite important factor to analyze.

The mentioned issue of reputation has been subject to research before (Mayer, et al., 2012; Mayer, et al., 2014; Mayer, et al., 2015). Although the actual term "reputation" was not used primarily, it was referred to dealing with the green image of airlines, their green communication and marketing strategies that all together aim at receiving a good reputation, and, therefore, a higher number of passengers.

Studies on the passengers' perceptions of the green image associated with airlines using surveys about how they see airlines and what they think about a certain set of measures for sustainability

and environmental friendliness have shown that “using newer aircraft is seen as the most effective way“ (Mayer, et al., 2012, p. 1). Nine measures were mentioned to which the respondents had to give feedback to: (1) increasing the number of seats per aircraft, (2) using newer aircraft, (3) reducing the waste on board by not offering free food, (4) offering “carbon off-setting”, (5) promoting public transport to reach the airport, (6) testing bio fuels, (7) serving “fair-trade” and organic products, (8) having a positive attitude towards the environment, (9) using propeller aircraft instead of jet aircraft (Mayer, et al., 2012). What is interesting about this is that passengers do not take into consideration the business model of an airline, meaning that they do not think that low-cost airlines as less environmentally friendly per se. Instead, the marketing strategy is a major influential factor that has an effect on the passengers’ perceptions. Also, it is closely connected to building credibility which includes that a green image influences passengers in their perception, and behavior (Mayer, 2013). So, green marketing and travelers’ perceptions are strongly correlated (Mayer, 2013). The environmental image of an airline is the major factor as green communication is used to convince customers. Convincing the customers is highly important for airlines as they generate an airline’s profit and are responsible for the reputation. Nevertheless, it needs to be noticed that “green airline marketing is not static but evolves and changes over time, both with regard to the scope and intensity in marketing terms as well as the development of new ideas“ (Mayer, et al., 2014, p. 15).

Such new ideas can be seen in other studies that, for example, shed light on different dependent variables such as load factor, aircraft age, and the atmosfair Airline Index (Mayer, et al., 2015) which are new measures to better analyze an airline’s sustainability. The action of reporting about an airline’s sustainability towards the public is more important than the actual actions taken to become a more sustainable airline (sustainable performance). Again, this refers to a marketing strategy aiming at improving the reputation, and thus targeting at more clients (Mayer, et al., 2015). It is important to note that selection and, especially, the number sof the measurements for sustainability differ throughout the studies which indicate a variation in the claims of sustainable measures by airlines as well.

Apart from that, to the importance of addressing the sustainability measures of airlines, it is essential to consider an airline’s motivation for environmental commitment (Lyes & Dredge, 2006). It has been proven that an airline’s environmental policy-making depends on its attitude, beliefs, and values. These factors are shaped internally, and externally. The motivation for airlines’ commitments varies since these factors exert different pressures on airlines. However,

an airline's motivation for environmental commitment might also be triggered by its stakeholders and shareholders. As a brief clarification: shareholders are always stakeholders. If someone has shares in an organization, this person will acquire decision-making power to some extent. Shareholders, thus, can directly influence an organization according to their own goals and beliefs.

Especially now, during the times of the COVID-19 pandemic, airlines are fighting for their survival due to massive travel restrictions. It is well-known that governments often have significant shares in airlines which are labeled as national flag carrier airlines. This might be one of many reasons why governments now try to rescue the airlines in which they are shareholders. The European NGO Transport & Environment (T&E) has published a government bailout tracker for European airlines in which it keeps record of the amount of money European airlines receive from their respective governments and if the bailout is linked to climate conditions (Transport & Environment, 2020). It becomes obvious that the national governments of European airlines clearly are involved in the airlines' motivations for environmental commitment. Hence, the analysis of the airlines' characteristics in terms of their sustainability reporting behavior needs to take into account the characteristics of an airline's country in which it is registered, specifically for national flag carrier airlines.

It is interesting to see if, and to what extent an institutional field and its environment, as described in Institutional Theory (Scott, 2013), has impact on how airlines report their sustainable measures. Also, very similar to this, the corporate social responsibility (CSR) practices in the airline industry reveal more about sustainable measures of airlines (Cowper-Smith & de Grosbois, 2011). Variation in CSR reporting has been observed which can be traced back to a variation in measurements for CSR initiatives by airlines which makes it quite hard to directly compare airlines properly. The fact that there actually is variation has been proven (Cowper-Smith & de Grosbois, 2011). However, the question about how this variation comes into existence is still open and is to be answered in this research.

The literature review shows that there already are a lot of studies that deal with reporting sustainability, greenwashing, green communication or green marketing for improved reputation, and green operations in the airline industry. This proves that in the past, such research studies already were very important. Most of them address research gaps that still need to be closed and thus highlight the call for further research. Investigation on the variation in the

claims of sustainable measures has not been subject to any of these studies yet. The changing landscape of the aviation industry and the increasing consciousness for the environment and climate change underline the scientific relevance for more research in this field.

Migdadi (2018) explicitly calls for further research that examines the "reasons for the differences in strategy patterns" (Migdadi, 2018, p. 30). By examining the variation in the sustainable measures by different European airlines on the basis of the annual reports and sustainability reports from 2018, this research can be considered a serious trial for an answer to this call. This master thesis aims at finding explanations for the variation in sustainable measures, and, thus, also tries to detect patterns. Although Kılıç et al. (2019) correctly argue that sustainability reporting in the aviation industry has been subject to research studies before, it is noteworthy that most of the studies mainly put focus on an airline's reputation, on its actual sustainability performance or on passengers' perceptions of an airline's green image. Kuo et al. (2016) state that there are common characteristics of reporting-related research in the airline industry (Kuo, et al., 2016, p. 186). According to them, research studies shed light on the following: "(1) drivers of CSR reporting, (2) reported content, (3) CSR reporting in communications from the company, (4) the impacts of CSR reports on corporate image and performance, and (5) the extent of CSR reporting." (Kuo, et al., 2016, p. 186; Cowper-Smith & de Grosbois, 2011).

A research gap considerably exists for the justified and explained variation in sustainable measures by European airlines. It is the goal of this research study to fill this gap by creating a quantitative dataset which will help to find evidence for the systematic variation in sustainable measures, as well as to reveal the mechanisms that drive the correlation between national governments' measures of sustainability and sustainability measures reported by airlines.

1.3. Research Approach

In order to fill the research gap and to achieve the above mentioned objective of this master thesis, a theoretical framework will provide the basis of an understanding of the object of research. The results from a quantitative evaluation and from a qualitative analysis are discussed in the light of these theoretical assumptions which are presented in the next chapter.

First, a quantitative dataset is created. This way, an inventory table of all European airlines is generated which already helps to address the hypotheses (Appendix A). Second, a documentary analysis, namely a content analysis according to Mayring (2004), is performed. The technique of deductive coding is applied in order to compare four case studies with each other. The four cases are four different airlines from four different countries. By analyzing and comparing them it is possible to explain the variation in the sustainable measures of European airlines.

1.4. Research Questions

As shown, the constantly changing landscape of the airline industry entails many interesting topics and open questions. Next to the missing explanation of how variation in the claims of sustainable measures by European airlines comes into existence, the accordance between airlines' reports and the national governments' attitude and measures towards sustainability in the airline industry is an open subject that needs to be analyzed.
The resultant main research question, therefore, is:

How can the variation in the claims of sustainable measures reported in the 2018 annual reports and sustainability reports by different European airlines be explained from the characteristics of the airlines and of the countries in which the airlines are registered?

The dependent variable is 'the variation in the claims of sustainable measures'. Claims refer to the claims made by airlines explaining how they try to address sustainability or what their sustainable measures are. It is important to note that this master thesis is not looking at the actual environmental performance of the airlines. This indicates that the research does not include the analysis of whether airlines really adopt the measures they state in their sustainability reports and annual reports. However, for some measures the term 'claim' might not appear suitable as some measures stated in the reports actually need to reflect real actions. The independent variables are (I) the characteristics of the airlines and (II) the characteristics of the countries in which the airlines are registered.

In this research study, the characteristics of the airlines and of the countries refer to the behavior and attitude towards sustainability and its reporting. Based on the discussion of existing literature and research studies, it can be assumed that there is an overlap of the airlines', as well as of the countries' characteristics to some extent. Moreover, this overlap might exist due to the fact that some airlines are partly owned by national governments who hold shares and, thus,

have a say in important decisions. This can also be considered as a pressure that influences an airline's decision on the actual publication of an annual report or a sustainability report as well as on the information published. The theoretical framework in the next chapter provides a more concrete and more complex picture of these expectations and ideas.

The following sub- questions will help to answer the main question, and can be seen as a guideline. By answering them, it will be possible to best find an answer to the complex main research question.

First of all, it is important to find evidence for the actual variation in sustainability measures between and within European countries. Airlines from different countries as well as from the same country might also show differences and variation in their reporting on sustainable measures. Thus, the first sub- question is:

1) *Is there a systematic variation in sustainability measures between and within European countries in which the airlines are registered?*

It is expected that there is an actual variation in sustainability measures, both, within and between countries. Therefore, another sub- question should then focus on the governments' attitudes and characteristics of the countries in which the airlines are registered. As mentioned above, the influence and power of the government as a shareholder in an organization should not be underestimated. Therefore, the second sub- question is:

2) *To what extent is the variation observed between countries associated with the national government's measures for sustainability beyond the airline industry?*

Going further into detail, it is expected that the national governments' measures of sustainability are associated with the sustainability measures reported by airlines. The third sub-question is:

3) *What are the mechanisms that drive the correlation between national governments' measures of sustainability and sustainability measures reported by airlines?*

In general, all three sub- questions support the main research question and build the skeleton of this research. They will help to find a detailed and reasonable answer to the main research question and function as a guiding light. The main goal of all research questions is to fill the knowledge gap that exists in how this variation comes into existence is still open.

1.5. Reading Guide

This master thesis proceeds as follows. Chapter 1 is the introductory chapter in which the knowledge was highlighted and the guiding research questions were developed. Chapter 2 will deal with the theoretical framework of this thesis which focuses on Institutional Theory combined with Legitimacy Theory, Stakeholder Theory, and, to a small extent, Signaling Theory. In chapter 3, the applied methodology will be described. This includes the description of the research design and approach, as well as the case description, the method of data collection, and the method of data analysis. Chapter 4 will present the quantitative evaluation of a created dataset. The analysis tests the proposed hypotheses and helps to find answers to the sub- questions. Chapter 5 will deal with the comparative case study analyses of four European airlines from four different European countries. Similarities and differences between countries, between airlines, and between countries and airlines are examined. In chapter 6, the results will be discussed in the light of the theoretical assumptions, and also in the light of the findings from other scholars. The last chapter, chapter 7, concludes this research by summarizing the results as well as by answering the main research question. Moreover, practical implications for policy makers and public managers, limitations and recommendations for future research will be included.

2. Theoretical Framework

2.1. Introduction

This chapter will deal with the combination of multiple theoretical approaches that can best contribute to answer the research questions. The theoretical approaches to be applied are Institutional Theory, Stakeholder Theory, and Legitimacy Theory. Also, the term of 'multinational corporations' (MNC) is introduced and connected to them. Further, in line with the theoretical approaches, theoretical assumptions about sustainability reporting in general follow.

2.2. Institutional Theory

Institutional Theory is a theoretical approach that is relevant and considered a promising approach. A very basic statement of it made by DiMaggio and Powell (1983) is: "rational actors make their organizations increasingly similar as they try to change them" (DiMaggio, & Powell, 1983, p. 147). Institutional Theory explains why organizations as well as their practices are

very similar to each other. A basic assumption of this approach is that organizations that are similar, build an organizational field due to technical and exchange interdependencies (Meyer, & Rowan, 1977). As soon as one organizational field is well-established, the organizations within this field become similar (DiMaggio, & Powell, 1983). Organizations in the same organizational field have similar stakeholders and the same customers, although they might have different business models. This can be perfectly referred to the airline industry because, although there are full-service operators and low-cost airlines, both kinds of airlines have the same customers and operate in the same field. An organizational field needs to be structured institutionally which means that a certain set of rules, such as laws, professions, regulatory structures, or government authorities, exerts pressure on organizations and individuals within them (Bruton, et al., 2010). It is expected that the organizations follow the rules and practice in accordance with them. This is how institutions define whether an organization's actions and behavior are appropriate or not. When an organizational field has been established, the environment around involved actors is built in such a way that change in this field is very limited (DiMaggio, & Powell, 1983). According to DiMaggio and Powell (1983), normally organizations are dominated by their environment and adapt to it due to pressure. This is what is called a process of *homogenization*. The different organizations are subject to exactly the same external pressures, such as the mentioned rules. For the cases of airlines in the EU, it can be said the chosen airlines in Europe build an organizational field. They have the same customers, suppliers, and need to meet the same expectations of EU law.

The mentioned process of *homogenization* refers to *isomorphism*. "Isomorphism is a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions" (DiMaggio, & Powell, 1983, p. 149). Isomorphism has several impacts on the organizations. One of them is that the organizations do not focus on efficiency primarily, but comply with legitimizing externally (Meyer, & Rowan, 1977). Another impact is that the organizations are dependent on external institutions as "institutional isomorphism promotes the success and survival of organizations" (Meyer, & Rowan, 1977, p. 349).

It can be differentiated between three mechanisms of *institutional isomorphism*: (1) coercive isomorphism, (2) mimetic isomorphism, and (3) normative isomorphism (DiMaggio, & Powell, 1983).

Coercive isomorphism refers to organizations that behave alike due to external pressures. They meet the same customers' expectations or have the same legal restrictions. The linger an organization is in an organizational field, the more coercive pressure it will face. Sometimes, a certain change in an organization can be seen as a response to such expectations and pressures. The common legal environment in the organizational field has an impact on an organization's behavior and practices.

Mimetic isomorphism needs to be seen as a response to uncertainty that arises when an organization is in an ambiguous situation. When this happens, organizations tend to look outside of their organizational field in order to copy best practices or to gain inspiration for improvement. Older organizations serve as a basis for new ones in the same organizational field, of course, only when the older ones have been successful (DiMaggio, & Powell, 1983).

Normative isomorphism derives from educational pressure and pressure from professions. The similar information regarding the education or profession is shared so that it becomes generally accepted and practiced, throughout different organizations in the same field. Due to the same knowledge and the same environment, the organizations become so alike that they will engage in similar actions.

Institutional Theory aims at exposing the survival and legitimacy of organizational practices (Glover, et al., 2014). In accordance with rules, the organizations try to ensure and safeguard their strategies, as well as their decisions. As these institutional approaches aim at explaining the homogeneity of organizations, it would be highly interesting to raise the question on how institutional forces could result in *heterogeneity* (Delmas, & Toffel, 2004). Some researchers state that within an organization itself, there is a unique history and culture that differs from organization to organization (Levy, & Rothenberg, 2002). Heterogeneity could establish from the different interpretations of the institutional forces across the organizations. "Differences in managerial interpretations were influenced by certain factors in the organizational context, including the legitimation of environmental issue" (Levy, & Kolk, 2002).

Another very interesting view on heterogeneity is that there are macro social factors that reduce isomorphic pressure which leads to organizations becoming more different (Hambrick, et al., 2004). The result is greater variety throughout the organizations in an institutional field. This view is especially interesting because the macro social factors that need to be seen as contextual

conditions, can be related to DiMaggio and Powell (1983). Heterogeneity is seen as an organization's attempt to be different from other organizations. Hambrick et al. (2004) refer to the airline industry as an example for an industry in which heterogeneity is not exceptional when looking at how different airlines generate their profit. While some airlines do not transport luggage or do not offer any food or beverages to their customers, other airlines provide gourmet meals and offer seats made of leather (Hambrick, et al., 2004). This already is an indicator for a possible impact of an airline's business model referring to variety.

2.2.1. Multinational Corporations

Another view and explanation for heterogeneity is that there are conflicting institutional pressures. Researchers argue that multinational corporations (MNC) tend to having to deal with conflicting pressures that come from the institutional environments (Kostova, et al., 2008). Since this master thesis covers four cases of European airlines that operate in more than one country, it can be assumed that these airlines are MNCs. They are present in a number of countries, they receive their revenues from the business inside as well as outside their home country, and they all carry a mix of passengers. Thinking about conflicting pressures, it can be expected that there will be tensions between the airlines' own attitude towards sustainability and the airlines' countries of registration. On another level one could talk about the airline industry as a whole versus climate change. Also, conflicting pressures may arise due to a government's view and attitude towards sustainability, not only limited to the airline industry.

Generally seen, MNCs form an own organizational field that "operates according to particular rules, logic, and norms" (Kostova, et al., 2008, p. 998). This can easily be referred to the context of this research paper. The MNCs are the airlines, that need to follow environmental standards as well as safety standards.

Staying at the meta level of MNCs, it can be said that all airlines belong to an organizational field in which the same set of values and patterns are shared (Kostova, et al., 2008). This is in line with the assumptions of Institutional Theory, saying that MNCs behave and act similar. A look from the meso level shows that the institutional pressures for MNCs are weaker due to multiplicity and ambiguity of the organizational fields (Kostova, et. al., 2008). Further, MNCs are subjected to local and global pressures due to the transnational nature of MNCs (Comyns, 2018). When talking about MNCs, it is important to also mention an organization's subsidiaries

as they face isomorphic pressure from the local as well as the intra-organizational institutional context (Comyns, 2018). Although institutional pressure might be weaker for MNCs, they are also more diverse and more complex, and, thus, entail the variation of structures within a MNC (Comyns, 2018). Comyns' theoretical assumption puts focus on the internal consistency within MNCs. Hence, it is assumed that "when pressure for internal consistency within the MNC organization is high, then there is little variation between subsidiaries of the MNC" (Comyns, 2018, p. 10). In other words, when the pressure for internal consistency within the MNC organization is not high, there is or might be variation between subsidiaries of the MNC (Comyns, 2018). Using this idea as a starting point, one can expand the assumption not only to subsidiaries of a MNC, but to different MNCs. Institutional pressures are different for every MNC, and, thus, for every airline in this study.

Therefore, a thoroughly performed analysis of the individual national contexts of the airlines is highly necessary. This means that the individual countries become subject to an analysis which might cause problems regarding a comparison as the contexts might not be assimilable. However, such an analysis would exceed the scope of a master thesis. This study conducts comparative case studies while examining predetermined aspects and not considering the national contexts in a detailed way.

The institutional landscape of MNCs is rather shaped by diverse practices and patterns of activities (Kostova, et al., 2008) which allow each MNC to judge about them. On the one hand, this could mean that MNCs simply copy practices which they assess as successful and good which explains similarity among organizations (Kostova, et al., 2008). However, on the other hand, this could also mean that organizations seek to develop own practices as they think other, established practices and patterns of activities are unsuitable or not contemporary enough.

When it comes to legitimacy, MNCs aim at being socially accepted and approved while engaging in negotiations. Kostova et al. (2009) explain that "achieving legitimacy in this context makes companies less (…) similar" (Kostova, et al., 2008, p. 1000). This assumption contradicts the basic idea of Institutional Theory, and, thus, is a sound explanation for the variation in sustainability measures of European airlines. Another important aspect mentioned by Kostova et al. (2008) is that negotiation, such as political communication and exchange, is seen as a social construct that unintentionally creates a certain perception about an organization

(Kostova, et al., 2008). Therefore, symbolic image building and reputation are other relevant points to consider.

2.2.2. Multinational Corporations and Sustainability Reporting

Following up the last importance of legitimacy, scholars found out that because MNCs pursue the goal of keeping and enhancing legitimacy in society, MNCs have voluntarily started to report on financial and sustainability information (Kolk, 2010). Again, this clearly needs to be seen as an act of improving a MNC's reputation and the perception of important stakeholders as well as national governments (Kolk, 2010). In accordance with Institutional Theory, Kolk (2010) assumes that organizations keep a watch on each other as they are operating in the same global industry. This behavior can be seen in the reporting as well. Kolk (2010) explains "When main firms adopt the practice, the overall tendency is that others do the same, or follow a little later" (Kolk, 2010, p. 9).

However, there are different influences that cause different dynamics when it comes to the reporting on sustainability (Kolk, 2010). Such influences can be seen in firm-specific dynamics, in competition-related dynamics, and in the influence of the country of origin (Kolk, 2010). Also, theoretical assumptions suggest that the ownership structure of a MNC has a significant impact on sustainability reporting which in general is referred to as Corporate Social Responsibility (CSR) practice (Ntim, & Soobaroyen, 2013). Especially in the airline industry, governments are shareholders, mostly in flag carrier airlines. Considering the possible influence of the country of origin of airlines, the first hypothesis to be tested is:

H1a:

The extent to which an airline adopts sustainability measures is associated with the (presence of) national sustainability policies of the country in which the airline is based.

This first hypothesis addresses the national sustainability policies rather generally. A slight variation in the independent variable makes the hypothesis focus more on the aviation industry. Thus, the second hypothesis to be tested is:

H1b:

The extent to which an airline adopts sustainability measures is associated with the (presence

of) national sustainability policies towards the aviation industry of the country in which the airline is based.

2.2.3. Corporate Social Responsibility: Sustainability Reporting

The literature review already has shown that today's reporting on sustainability-related information is increasing. It is also known that the reports of different MNCs vary because of institutional pressures (Herold, 2018). However, also stakeholders exert pressure. This is why Institutional Theory alone is not sufficient for analyzing the variation in sustainability measures of European airlines. As such, Stakeholder Theory offers an additional, more complete and promising theoretical view on the subject of interest.

In line with Hahn and Kühnen (2013), Fernando and Lawrence (2014), and Herold (2018), Stakeholder Theory states that organizations have to consider the conflicting expectations and interests of various stakeholders. In Stakeholder Theory, the relation between an organization and its stakeholders is of importance because, on the one hand, organizations seek legitimacy from its stakeholders (Herold, 2018). On the other hand, "stakeholders need to perceive the company's action as an accepted behaviour to legitimate the organisation" (Herold, 2018, p. 11). This sheds light on the complex environment of an organization and also explains that the organization's CSR practices might be a strategy for becoming accountable and legitimate (Fernando, & Lawrence, 2014). In its original assumptions, Stakeholder Theory "is about groups and individuals who can affect the organization" (Freeman, 2010, p. 48). Thus, it is expected that organizations not merely focus on the interests of its shareholders, but that it creates value also for stakeholders. Stieb (2009) explains that Stakeholder Theory, on the one hand, consists of the redistribution of benefits to stakeholders. While an organization is supposed to benefit from its stakeholders, at same time it is ought to demand costs from them. On the other hand, Stieb (2009) mentions the redistribution of important decision-making power to stakeholders. According to this part of Stakeholder Theory, organizations shall give each stakeholder the power to contribute to important decision-making. However, this power is not equally distributed among the stakeholders, but dispensed (Stieb, 2009).

A theory that has been touched upon in Stakeholder Theory is Legitimacy Theory (Fernando, & Lawrence, 2014) which focuses on the relation between an organization and society in general. This is often referred to as a 'social contract' because organizations aim to comply

with socially accepted norms and values. Only when society as a whole accepts an organization and its operations and practices, it receives the 'social contract', meaning the right to exist (Hahn, & Kühnen, 2013). Legitimacy is defined as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574). The originator of Legitimacy Theory, Suchman (1995), divides organizational legitimacy into three types: (I) pragmatic legitimacy, (II) moral legitimacy, and (III) cognitive legitimacy.

(I) *Pragmatic legitimacy*. This type of legitimacy means that stakeholders consider an organization as legitimate only if they see a benefit from the organization's practices and operations (Suchman, 1995). It can be subdivided into exchange legitimacy, influence legitimacy, and dispositional legitimacy. While exchange legitimacy focuses on the legitimacy that an organization only receives when its stakeholders benefit from its activities, influence legitimacy is about how an organization considers the wishes and interest of its stakeholders. Dispositional legitimacy refers to the stakeholder's support for an organization that is based on the stakeholder's perception (Suchman, 1995).

(II) *Moral legitimacy.* This type of legitimacy refers to the judgment about an organization's activities and if they are "the right thing to do" (Suchman, 1995). Again, Suchman (1995) divides this type of legitimacy into three sub-categories. The first one is consequential legitimacy which is concerned with a judgement based on what an organization achieves (Suchman, 1995). The second category is structural legitimacy which refers to the structural characteristics of an organization. These are seen as "indicators of an organization's socially constructed capacity to perform specific types of work" (Suchman, 1995, p. 581). The last category of moral legitimacy is personal legitimacy which is about what stakeholders think about and how they perceive an organization's leader (Suchman, 1995).

(III) *Cognitive legitimacy*. This type of legitimacy has two sources: comprehensibility and taken-for-grantedness (Suchman, 1995). Only when the stakeholders understand an organization's practices and operations, the organizations can be considered as comprehensible (Van Oers, et al., 2018). An organization achieves the status of taken-for-grantedness only when "for things to be otherwise is literally unthinkable" (Suchman, 1995, p. 583).

As expected, there are multiple challenges due to the multiplicity of legitimacy. Each type of legitimacy faces challenges in gaining, maintaining and repairing legitimacy (Suchman, 1995). These are presented in the following table:

	Gain	Maintain	Repair
General	Conform to environment	Perceive change	Normalize
	Select environment	Protect accomplishments –Police operations –Communicate subtly –Stockpile legitimacy	Restructure
	Manipulate environment		Don't panic
Pragmatic	Conform to demands –Respond to needs –Co-opt constituents –Build reputation	Monitor tastes –Consult opinion leaders	Deny
	Select markets –Locate friendly audiences –Recruit friendly co-optees	Protect exchanges –Police reliability –Communicate honestly –Stockpile trust	Create monitors
	Advertise –Advertise product –Advertise image		
Moral	Conform to ideals –Produce proper outcomes –Embed in institutions –Offer symbolic displays	Monitor ethics –Consult professions	Excuse/Justify
	Select domain –Define goals	Protect propriety –Police responsibility –Communicate authoritatively –Stockpile esteem	Disassociate –Replace personnel –Revise practices –Reconfigure
	Persuade –Demonstrate success –Proselytize		
Cognitive	Conform to models –Mimic standards –Formalize operations –Professionalize operations	Monitor outlooks –Consult doubters	Explain
	Select labels –Seek certification	Protect assumptions –Police simplicity –Speak matter-of-factly –Stockpile interconnections	
	Institutionalize –Persist –Popularize new models –Standardize new models		

Table 1: Legitimation Strategies (Suchman, 1995, p. 600).

Connecting Legitimacy Theory with the CSR practice of sustainability reporting, one can say that "organisations generally tend to disclose positive CSR behaviour rather than negative news (…). This strategy implies that through CSR disclosure, organisations seek to communicate

their legitimisation actions“ (Fernando, & Lawrence, 2014, p. 154). This is a relevant point for the comparative case studies because it is suspected that the different airlines show a different behavior in their sustainability reporting. The relevance of image creation and reputation also is highlighted in Signaling Theory (Hahn, & Kühnen, 2013) which states that “in situations of asymmetric distribution of information, one party tries to credibly convey information about itself to a second party“ (Hahn, & Kühnen, 2013, p. 14).

Considering Stakeholder Theory, Legitimacy Theory and Signaling Theory in combination with Institutional Theory, it is possible to establish another hypothesis that could explain the variation in the airlines’ sustainability reports. Neo-institutional theoretical views help to better understand the combination of the theories aforementioned. In accordance with Neo-Institutional Theory, Ntim and Soobaroyen (2013) state that “CSR practices are low in corporations with high block ownership and institutional ownership, but high in corporations with high government ownership, larger boards, diverse boards, and more independent boards“ (Ntim, & Soobaroyen, 2013, p. 36). This can be referred to the influence of the country of origin (Kolk, 2010), which, inter alia, is responsible for different dynamics in the sustainability reporting.

Thus, the ownership of airlines is an important point to consider for another hypothesis. There are different types of airlines. Flag carrier airlines mostly are full-service airlines of which the governments of the airlines’ countries of registration commonly hold shares. So, government ownership is not uncommon in the airline industry. Therefore, it is expected that airlines that are partly owned by governments adopt more sustainability measures or publish a sustainability report in contrast to low-cost airlines. The hypotheses are:

H2a:

Full-service airlines adopt more sustainability measures.

H2b:

Full-service airlines are more likely to publish a sustainability report.

2.3. Conclusion

As can be seen, Institutional Theory and its presented assumptions are a good start for having a theoretical view on the topic of the master thesis. While the theoretical approach explains homogeneity, it was adopted, modified, and extended by views from other theoretical approaches that help to explain organizations' heterogeneity. Institutional pressures play a key role considering the research questions. The presented theoretical approach of Institutional Theory helps to explain the variation in the claims of sustainable measures by European airlines.

Combining Stakeholder Theory, Legitimacy Theory and Signaling Theory with Institutional Theory provides a very complemented and comprehensive theoretical framework that presents promising ideas and ways of explaining how the variation in sustainable measures of European airlines comes into existence. While an organization seeks to be legitimate, it not only has to comply with various expectations and interests of stakeholders, but also with values and norms accepted and determined by society as a whole. CSR practices or sustainability reporting are seen as reputational, image-creating strategies that support legitimacy. The proposed hypotheses formulated with regard to the theoretical approaches present expected results from the analyses.

By answering the first sub-question, it is possible to test all hypotheses in a rather general way. The second sub-question addresses hypotheses 1a and 1b while the third sub-question also helps to test both variations of hypothesis 1.

The following figure (Figure 1) presents an overview of how the theoretical approaches can be combined. It provides a basic understanding and depiction about how variation in sustainability measures by European airlines might come into existence.

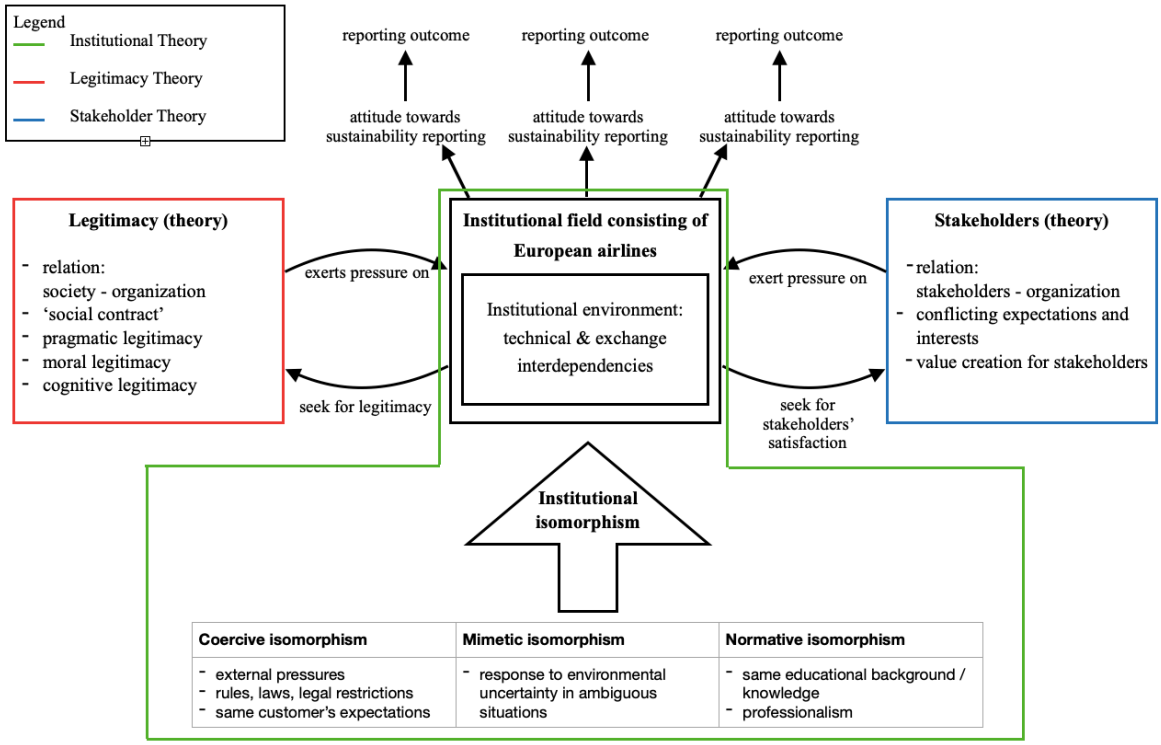


Figure 1: Theoretical framework including Institutional Theory, Legitimacy Theory and Stakeholder Theory.

The figure shows the institutional field consisting of European airlines as the central object. It is subject to institutional isomorphism as well as it is influenced by society as a whole – which refers to Legitimacy Theory – and by the airlines' stakeholders – which refers to Stakeholder Theory. In turn, airlines try to satisfy society and their stakeholders by reacting to their expectations and interests which sometimes conflict each other. This is why each airline within the organizational field develops an own attitude towards sustainability measures and sustainability reporting. Of course, there occur overlaps which lead to the general assumption of Institutional Theory saying that all organizations become similar. However, as the figure shows, the sustainability reporting outcomes might also vary.

3. Methodology

3.1. Introduction

This chapter's purpose is to show which methods are chosen and applied to the research on the variation of sustainable measures of European airlines. The thesis aims to explain how this variation comes into existence. Therefore, it is important to outline the methods applied. First, the research design and the research approach will be described. In this section of this chapter,

the understanding of sustainability and how to measure it in this research study are explained. Second, the case description will follow. The third section of this chapter will deal with the method of data collection. Fourth, the method of data analysis including the coding scheme applied in the content analysis will be outlined.

3.2. Research Design and Approach

Definition and Meaning of Sustainability

The term "sustainability" is one of the most important terms in this research as this paper aims at explaining variation in the claims of sustainability measures by different European airlines. Trying to explain this, it is necessary and essential to clarify what sustainability is and how it can be measured.

The conceptualization of sustainability in general refers to the ultimate goal of living in order to survive (biological system), and to the avoidance of major economic collapses (economic system) (Costanza & Patten, 1995, pp. 193-194). The interplay of the economic and biological perspectives serves as the overall understanding of sustainability. Sustainability in the context of airline industry can, therefore, be seen as the airlines' goal to stay legitimate and competitive in a world that must be preserved from environmental damage. Only then airlines are able to achieve their aim of surviving and maintaining their businesses.

Measuring Sustainability

Through research on similar topics that deal with the airline industry and sustainability, ideas on how to measure sustainability were collected and illustrated in the table below (Table 2). Furthermore, policies and other sustainability measures of the most important organizations within the airline industry are included. These organizations are the International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA).

Process- oriented measures		***Technology- oriented measures***	
Activities	*Policies*	*Investment (in research and development)*	*Indices*
• Use of alternative fuels	• CORSIA - fuel efficiency - carbon- neutral growth - CO2 emission reduction • (Air travel) taxation	• Aircraft age • Aircraft design	• atmosfair Airline Index • Dow Jones Sustainability Index

Table 2: Measures of sustainability in the airline industry.

Generally, the table differentiates between process- oriented and technology- oriented measures. Process- oriented measures target activities and policies that ensure potentially better sustainability. By implementing policies and by changing their activities, airlines address the process of sustainability whereas technology-oriented measures address measures that aim at explaining technological changes. Such measures focus on investment and indices. Through literature review and extensive research on existing sustainability measures, seven important measures for airlines' sustainability were identified. Beginning with the process- oriented measures, it needs to be said that in the table, activities and policies are presented in columns separated by a dotted line. This dotted line means that the content of the policies also imply a certain action of the airlines.

Process-oriented measures

The activities involve the use of alternative fuels. It is well-known that aviation emissions damage the environment as they have warming effects on the average global temperature (Whitelegg & Williams, 2000). In 2011, the first commercial flight was operated using sustainable aviation fuels (IATA, 2020) which shows that looking at alternative aviation fuels is a measure that has been subject to research for several years. Nevertheless, it is still a big

issue. Looking at the use of alternative fuels is, therefore, a suitable and necessary measure for sustainability measures.

The policies that are used for assessing the airlines' sustainability are the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), and the discussed implementation and policy of taxes on flight tickets or in general on air travel. CORSIA was established in 2016 by ICAO and sets three targets for tackling the global challenge of climate change: (I) improvement in fuel efficiency, (II) carbon-neutral growth, and (III) reduction in aviation CO2 emissions (IATA, 2019). This policy is a world-wide binding call for all airlines and aviation industry actors and should, therefore, be seen as a basic process- oriented measure. The realization and adoption of the stated goals are supposed to track airlines' sustainability. CORSIA is also supported by IATA which highlights the importance and necessity of its implementation. Another policy that is being discussed now, is the taxation of air travel. This measure does not address the airlines as such; governments need to decide about whether the taxes on air travel will be introduced. This would affect the airlines as tickets would become more expensive for travelers which might lead to less people using the plane as a means of transportation. Several countries already joined together to implement the idea of the taxes on a European level (Pieters, 2019).

Also, there are other policies that address aviation sustainability, for example the Single European Sky (SES) initiative by the European Commission (European Commission, 2020a) which aims at optimizing the organization and use of the airspace in order to decrease delayed flights and flight routes. However, this policy addresses Air Navigation Service Providers (ANSP) and Air Traffic Managers (ATM), not airlines. This is why this very interesting policy cannot be included as a measure for airline sustainability in this research.

Technology-oriented measures

Coming to technology- oriented measures, two further divisions can be made. One kind of measure addresses investment. The other one refers to indices. Investment is seen and shall be applied as a means of financing newly researched technological instruments that help to make an airline more sustainable. Being more precise, existing research on the factors aircraft age and aircraft design showed that investing into more modern and new aircraft would produce fewer emissions (Miyoshi & Mason, 2009). At a later stage of research, other conclusions that can be made on the basis of the aircraft age will be added in order to increase the significance

of this measure. The factor, aircraft design, is similar to the age of aircraft. It is a bit more precise, as it will include the changes on aircraft, such as changes to the wings or to an aircraft's weight or other adjustments that would make an aircraft more sustainable. Relevant literature shows that aircraft noise pollution is a serious and harmful issue to many people who are regularly working in the aviation industry or who are costumers to it. Noise pollution significantly has an impact on health (Basner, et al., 2017) and therefore, needs to be tackled. Noise reduction, thus, is included in the overall term 'aircraft design'. Investing into technologies that address this problem thus can be seen as important sustainability measures. Reducing aircraft noise is essential for contributing to a more sustainable environment.

The final category of sustainability measures for airlines is the indices- category. Based on existing research studies, two indices were identified to be important measures. One of them is the atmosfair Airline Index, the other one is the Dow Jones Sustainability Index. Both of them measure defined criteria which allows a quantification of the parameters qualifying the sustainability as well as it allows the objective comparison of different players for the same category. The atmosfair Airline Index is an index established by a German not-profit climate protection organization which compares the biggest 190 airlines of the world (atmosfair, 2018). It is a more objective measure of selected parameters which highlights its reliability (De Grosbois, 2013). On the website, atmosfair (2011) provides a detailed document that explains how the index is measured. It is an objective measure that already compares the airlines' efficiency. A better-known index is the Dow Jones sustainability index which was established by a Swiss fund management firm. This index has already received criticism as it puts more emphasis on the economic factors more than on the economic ones (Fowler & Hope, 2007). Although this index might not be a very exact measure, it is a sufficient and interesting measure to keep in mind when analyzing the 2018 annual reports of the airlines.

Table 1 could be extended by, for example, policies that address substitution of air transport or policies that incentivize travelers to use the train instead of airplanes, or maybe even by the aspect of reducing aircraft noise as measures for sustainability. However, such items go beyond the scope of this master thesis and should be subject to further research studies.

The research questions can be best answered by qualitative research techniques as the study seeks to explain the phenomenon of the variation in the claims of sustainable measures by airlines in the year of 2018. The snapshot of the year 2018 of four case studies allows to describe

the variation of chosen airlines and between countries. This comparison can be used as a sound basis for generalization. Also, the cases will make the research study more understandable as they represent the real life of the airline industry. The qualitative approach offers the possibility to conduct an in-depth and very detailed case study analysis. However, before the case analysis, a broad quantitative study on all European airlines will be made which helps to identify suitable cases for the further analyses.

The combination of both, a quantitative data collection method and analysis with case study analyses follows some simple, logical thoughts. First of all, the combination of both methods allows a more in-depth view into the airlines' sustainability reporting which helps to gain a more explicit and better understanding of the variation observed sustainability reporting behavior. Secondly, the combination offers different lenses on the same reality (Li, & Earnest, 2015). Thirdly, a mixed- method study contributes to a better understanding of reality and, thus, makes research more vivid and comprehensible. Fourthly, the term of 'triangulation' is suitable in explaining the logic behind the combination of two research methods. According to Reinhardt (2012), the method of triangulation can be interpreted in two ways. On the one hand, triangulation with regards to the applied research methods could mean that applying and using a second method is helpful for validating the results from using the first method. On the other hand, triangulation describes that the second method is used as an additional method to create a richer and more substantial image of the subject of research.

3.3. Case Description

At first, a broad quantitative dataset is created by measuring the concepts depicted in Appendix A. The concepts, also referred to as items of ASI, are measured by assigning a binary variable, either a "1" or a "0", to them. While "1" indicates the presence of an item observed in either the annual report and/or the sustainability report, "0" indicates the absence of an item. For every airline in Europe, the seven items previously mentioned in chapter 3.2. are measured. As a spatial limit, 'European airlines' includes all airlines from the European Union (status 2020) and from the UK. The UK is included in the dataset because this study examines data from the year 2018, in which the UK still was a member of the European Union.

Further, through research on all included European airlines, an inventory is created. Next to the seven items that measure sustainability, the inventory also comprises information about the membership in airline alliances, the airlines' numbers of destinations, numbers of aircraft (fleet

size), numbers of flights per year, numbers of passengers per year and the yearly turnovers. Further, again measured in binary variables, the inventory includes the findings about whether an airline is a flag carrier, a full-service or low-cost airline, as well as whether an airline has published an annual report and/or a sustainability report, and whether there is a COVID-19 rescue plan for the airline. The last mentioned information provided in the inventory (Appendix A) is not collected from 2018, but from 2020. Especially due to the fact that multiple airlines are partly owned by governments of the countries in which the airlines are registered in, it is expected that the information about the COVID-19 rescue plan reveals more about both hypotheses with regard to the importance of the governments. Based on the quantitative data set, a quantitative evaluation is executed. A Mokken Scale Analysis (MSA) is created that tests the hypotheses.

Based on the findings of the first quantitative analysis, a second, qualitative analysis is conducted. The comparative case study compares four cases (airlines) from four different European countries. It is expected that this analysis reveals important insights that help to explain the variation in the claims of sustainable measures of European airlines.

3.4. Method of Data Collection

In this thesis, both, a quantitative and qualitative evaluation based on the same data are executed in the form of a documentary analysis, namely a content analysis. This qualitative research method includes two important prerequisites: a robust data collection technique and a documented research procedure (Bowen, 2009). The source of data is documents which are looked at "with a critical eye" (Bowen, 2009, p. 33). As Bowen (2009) states, a documentary analysis needs to follow the analytical process of "finding, selecting, appraising (making sense of), and synthesizing data contained in documents" (Bowen, 2009, p. 28). In order to be able to gain an overall impression as well as detailed information about the airlines under research, different data sources are drawn upon.

The collected documents have to meet defined requirements. This way it is ensured that the documents are of high quality which makes the research more reliable. The first requirement is that only documents from relevant and credible sources should be included. The second requirement is that the content of the documents needs to be relevant for the study, meaning that the topics addressed in the documents should contribute to answer the research questions.

The last requirement is that the documents have to be collected from different sources which improves the overall understanding of and view on the variation in the sustainable measures of European airlines. Further, evaluating documents from a wide variety of sources - meaning the collection of documents from relevant actors, such as airlines, governments or independent journalists - contributes to create the most complete view on understanding where the variation in sustainable measures of European airlines comes into existence.

In order to gain background information, academic studies, scientific articles and researches as well as news articles, and press releases of relevant actors were cosidered. All those readings deal with the relevant topic of sustainability (measures) in the airline industry. The actual data that is analyzed within this study are secondary data: annual reports and sustainability reports of the year 2018 of chosen airlines that have published at least one of the articles. Also, government documents and information on official government websites about sustainability, with reference to the airline industry and the environment/ sustainability, are considered and analyzed. As the topic about climate change and environmental protection referring to the airline industry still is a very hot topic, the data used for the quantitative analysis are chosen deliberately for the year 2018. This is because many airlines have not yet published annual reports or sustainability reports of 2019, and the year 2018 is the most current year in which airlines have published their reports. In order to explain the variation in the claims of sustainable measures, it is necessary to include reports from multiple airlines.

The data collection process took place from January to August 2020. In this study, the reporting on sustainable measures of European airlines is examined for the year 2018 only.

3.5. Method of Data Analysis

This research consists of two analyses:

(I) quantitative evaluation of all European airlines: creation of an inventory dataset (chapter 4),

(II) qualitative, comparative case study analysis with included examination of the governments' characteristics, set in relation with the airlines' characteristics towards sustainability (chapter 5).

The first evaluation of the created quantitative dataset is carried out by using the statistical tool STATA. This program is mostly used by social scientists in order to run regression analyses because it is very well organized and offers a very clear presentation of the results which can then be interpreted according to the study. Before being able to use the statistical program, an inventory of all European airlines had to be created. This inventory consists of a large set of categories. Information collected for the inventory were worked out with a content analysis.

Selection criteria for cases:

Cases that are subject to the second, comparative case-study analysis need to fulfill certain criteria. First, a variation in the dependent variables should be given. Second, at least one, either the annual report, or the sustainability report need to be available. Third, other data sources should be available about the airlines that are subject to the analysis. Fourth, comparable data that make clear the attitude and characteristics of the countries in which the airlines are registered need to exist for all countries included in the analysis.

All four airlines need to have varying values in the number of reported items of ASI. Consequently, a variation in the first dependent variable 'extent to which an airline adopts sustainability measures' would be given (Table 3, marked in blue). The second dependent variable is the 'publication of a sustainability report' (Table 3, marked in red). In order to create variation in this variable, the analysis should include two airlines that have published a sustainability report while also two airlines need to be included that have not published a sustainability report. It is also possible to create variation in the independent variables 'national sustainability measures' and 'national sustainability measures towards the airline industry'. Using the Aviation Carbon Tax as an indication for the 'national sustainability measures towards the airline industry' (Table 3, marked in green), two airlines should be chosen that are registered in such countries that are in favor of the Aviation Carbon Tax, while two airlines should be chosen that are not officially in favor of it.

Considering all these criteria, the following four full-service airlines in four different EU countries are chosen:

Country	*SDG rank*	*SDG score*	*renewable energy consumption percentage*	*Full-service airline (flag carrier)*	*Number of reported items*	*Publication of sustainability report*	*Aviation carbon tax*
Netherlands	7	71.81	6.6	KLM	6	Yes	Yes
Finland	3	79.06	41.0	Finnair	4	Yes	No
Luxembourg	17	65.96	6.4	Luxair	2	No	Yes
UK	12	70.22	10.2	British Airways	5	No	No

Table 3: Chosen cases (full-service airlines) for the comparative case study analysis.

Comparative Case Study Analysis

As afore mentioned, the method chosen for the comparative case study analysis is a qualitative document, namely a content analysis according to Mayring (2004). It is a qualitative oriented text interpretation method which is very suitable for case studies which "desire to understand complex social phenomena" (Yin, 2003, p.2). The goal is to establish new theoretical considerations related to the research question(s) with a relatively small amount of texts. The core of the qualitative content analysis are categories: the relevant elements of the document texts are categorized in a repeated process of coding. Through multiple rounds of coding, meaning going through the text several times, the codes and categories are revised and improved so that the results can be interpreted correctly and, ideally, objectively.

In general, a case study is "the intensive study of a single case" (Gerring, 2012, p. 411), studying a social phenomenon or specific issue in great detail (Babbie, 2013). Qualitative approaches focus on the "interpretation of observations, for the purpose of discovering underlying meanings and patterns" (Babbie, 2013, p. 390). This is applicable to the study to be conducted as it seeks to find explanations for the variation in sustainable measures of European airlines. Interpreting the data accordingly as well as striving to detect underlying processes is of high relevance. However, instead of a single case study, this research conducts a comparative case analysis for four individual cases. Pre-determined items are examined for each of the four cases.

This way, it is possible to draw a comparison between the cases which represent the airlines. It is expected that the comparison allows to test the hypotheses and, thus, to give detailed answers to the research questions. Also, comparative case studies allow to produce generalizable knowledge (Goodrick, 2014), which is not the case for a single case study. This adds value to knowledge on another dimension as it considers the complexity of four case at once. Although a comparative case study analysis implies certain limitations such as a high resource-intensity or ambiguity about how comparable units are chosen (Abadie, et al., 2010), it is the best applicable approach to answer the research questions and to test the hypotheses due to an in-depth view into the cases (Yin, 2014).

Mayring (2014) suggests specific techniques of conducting the qualitative content analysis. The Structuring – Deductive Category Assignment is the best and most suitable technique for this study because it allows to "assess the material according to certain criteria" (Mayring, 2014, p. 64). Those criteria are predetermined which is why a coding guideline is strongly needed. With regard to Mayring (2014), there are three steps that should be followed:

1. Explanation of categories,
2. Definition of categories,
3. Samples.

Defining the categories is important because only then the researcher knows what text elements belong to which category. Giving examples by citing text passages for each category helps to clarify the character of the categories. Rules for coding helps to avoid ambiguity of categories (Mayring, 2014). Following these steps results in creating a coding scheme. In order to ensure reliably of the research, the same coding guideline and the same coding scheme is applied to all documents.

The following table (Table 4) depicts the applied coding scheme:

Variable	*Category label*	*Category Explanation*	*Category definition*	*Anchor example*
Use of Alternative Fuel	AF1	Strong positive attitude towards alternative fuel, giving examples of how it could be implemented	Very positive expressions in extensive parts of reports about e.g. - biofuel Sustainable - aviation fuel, - renewable energy fuel/ sources	"progress made in producing and using sustainable alternative fuels for aviation" "Air France and KLM have shown that flying on sustainable aviation fuel (SAF) can be done both safely and responsibly"
	AF2	Positive attitude towards alternative fuel	Positive expression about the use of alternative fuels, mentioning concrete other alternative fuels, e.g. - biofuel Sustainable - aviation fuel, - renewable energy fuel	"a new robust energy policy for substituting fossil fuel for renewable energy sources is imperative"
	AF3	Neutral attitude towards the use of alternative fuels	Simply mentioning alternative fuels/ renewable energy, but being unclear with the formulation	"need to increase substantially the share of renewable energy"
	AF4	Showing insufficient effort	Expression of confession that aim relating to alternative fuels was not achieved	"The 'eco towns' initiative of the former Labour government, promoting low carbon emissions, renewable energy (…) was substantially scaled back due to spending cuts"
CORSIA	COR1	Strong positive attitude towards CORSIA	Strong positive expression about applying/ performing according to CORSIA, mentioning **all** concrete CORSIA measures, e.g. - fuel efficiency - carbon- neutral growth - CO2 emission reduction	"aims to limit the CO2 emissions from international aviation by targeting carbon-neutral growth with an average of 1.5% annual fuel efficiency improvement by 2020"

Variable	*Category label*	*Category Explanation*	*Category definition*	*Anchor example*
	COR2	Positive attitude towards CORSIA	Positive expression about CORSIA, mentioning CORSIA or **one** of CORSIA measures, e.g. - fuel efficiency - carbon- neutral growth - CO2 emission reduction	"The country has focused its development aid policy (…)on programs to reduce carbon emissions"
	COR3	Showing insufficient effort towards achieving CORSIA goals	Expression of confession that aims of CORSIA were not achieved	"a civilian court recently ruled against the Dutch government for showing insufficient effort to reduce CO2-emissions"
Aviation Tax	AT1	Negative attitude towards aviation/ environmental tax	Negative expression about aviation/environmental tax, making examples why it is bad, explaining the problems of it	"the Group is against a national air passenger tax that does not help the environment"
Other environmental related taxes	T1	Mentioning another environmental related tax	Neutral expression about environmental related taxes	"a tax on the manufacture and import of plastic packaging"
Aircraft Age	AA1	Strong positive attitude towards aircraft age, with concrete examples of measures	Very positive expression about aircraft age, highlighting the investment, mentioning: - new aircraft - Investment in aircraft - Investment in fleet - Fleet age - Renewal of aircraft/ fleet - fleet renewal - modernization; Own chapter about aircraft fleet modernization	"KLM implemented the new Noise Abatement Departure Procedure 2, which significantly reduces noise pollution"
	AA2	Positive attitude towards aircraft age	Positive expression about aircraft age, mentioning: - new aircraft - Investment in aircraft - Investment in fleet - Fleet age - Renewal of aircraft/ fleet - fleet renewal - modernization	"Maintaining a modern fleet is one of the most important measures an airline can do for the benefit of environment"

Variable	*Category label*	*Category Explanation*	*Category definition*	*Anchor example*
	AA3	Neutral attitude towards aircraft age	Neutral expression about aircraft age, just mentioning anything about aircraft age	"The Luxair Luxembourg Airlines fleet will grow in 2019"
Aircraft Design	AD1	Strong positive attitude towards aircraft design with concrete measures	Very positive expression about aircraft design, highlighting the investment in/ mentioning: - Investment in engines - New engines - Cabin design - (Reducing) aircraft weight - New technology - Investment in innovation - Noise pollution - Noise emissions - Noise reduction - Quieter aircraft; Concrete measures	"By using the Continuous Descent Operations (CDO) technique, (…) aircraft noise can be reduced"
	AD2	Positive attitude towards aircraft design	positive expression about aircraft design, mentioning: - Investment in engines - New engines - Cabin design - (Reducing) aircraft weight - New technology - Investment in innovation - Noise pollution - Noise emissions - Noise reduction - Quieter aircraft	"promoting sustainable innovation investment", "investment in Green innovation"
	AD3	Neutral attitude towards aircraft design, talking about plans (future)	Neutral expression about aircraft design, just mentioning anything about that can be related to aircraft design, e.g. reduction noise pollution	"Noise and Soundscape Action Plan for Wales sets out plans to tackle noise pollution"
Dow Jones Sustainability Index	DJS1	Positively using/ mentioning DJS Index	Positively reporting about DJS Index, highlighting the own rank	"the Group was listed on of the Dow Jones Sustainability Indices (DJSI World and DJSI Europe) and ranked second among the airline industry"

Table 4: Applied coding scheme. Inspired by Mayring, P. (2014). Qualitative content analysis: theoretical foundation, basic procedures and software solution, p. 102.

The qualitative content analysis in case study research with the technique of Structuring – Deductive Category Assignment (Mayring, 2014) has multiple advantages. While this method allows to deal with complexity by analyzing the material step-by-step, it also enables the inclusion of the context which is essential for the interpretation, especially keeping in mind the research approach of this study (Kohlbacher, 2006). A possible disadvantage could be that the quality of the content analysis is dependent on the quality of the materials to be examined. Thus, materials should be relevant, credible and representative. Further, it is difficult, and almost impossible, to establish a fully objective coding guideline as a single researcher. However, the multiple rounds of coding force the researcher to reconsider the coding guideline and to re-evaluate it keeping in mind to be as objective as possible.

The order of the analyses is of importance because the first analysis on all European airlines is a very broad analysis. By creating an inventory of all airlines in the European Union whilst looking at specific items, patterns become visible which make clear what airlines should be used for a further, more detailed and in-depth analysis.

3.6. Conclusion

This chapter has outlined the type of research and has shown the focus on change and variation. A quantitative dataset was created which is based on data from the year 2018 and depicts an inventory on all European airlines. The collected data had to meet a set of requirements in order to be considered for this research. After a quantitative evaluation of the data, four cases were chosen to be subject to the case study analyses. The four cases represent four airlines from four different European countries: KLM from the Netherlands, Finnair from Finland, Luxair from Luxembourg, and British Airways from the UK. A coding scheme for measuring sustainability in terms of the variables (or items) of ASI was created for these cases. This coding scheme was applied to each case by following the technique of deductive coding.

4. Data Analysis

4.1. Introduction

This chapter focuses on the evaluation of the quantitative dataset that was created using a documentary analysis. The dataset consists of a set of variables that are analyzed for all European airlines that meet defined criteria. The program STATA is used to run the analysis

which results in generating a scale. This scale helps to find out more about the airlines' levels of sustainability. In the end of this chapter, the statistical results are discussed and the hypotheses 2a and 2b are tested.

4.2. Results

Making use of internet articles and the airlines' websites, the information for the variables that are important for the creation of an inventory were found. A first table is a collection of 20 variables that need some more explanation. Airlines in the inventory were pre-selected according to several criteria. The first criteria is that the airlines listed in the table all are registered at and members of the International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA) with registration in European countries. ICAO is an agency of the United Nations (UN); IATA is an umbrella organization of all airlines. Within the aviation industry, airlines receive an airline- designation, or code. While the ICAO code has 4-Letter-Codes, the IATA code exists of 3-Letter-Codes. IATA codes are used for the standardization and simplification of clearance processes. ICAO codes are technically and operationally important in order, for example, for air navigation service providers to correctly identify aerodromes. Another criteria is that Cargo airlines were excluded because they represent only 7% of all flights in a year (Di Muzio, 2015). Furthermore, only airlines that are Air Operator Certificate (AOC) holders are included. As defined by the European Union " 'air operator certificate (AOC) 'means a certificate delivered to an undertaking confirming that the operator has the professional ability and organisation to ensure the safety of operations specified in the certificate" (Council Regulation (EC) 1008/2008 of 24 September 2008 on common rules for the operation of air services in the Community [200] OJ L 293/3). Also, only airlines that were founded before 2018 and are still operating in 2020 are included in the inventory.

In order to classify the airlines, the following variables were selected: "number of destinations", "number of aircraft/ fleet size", "number of flights per year", "number of passengers per year", "yearly turnover/ revenue". These variables are control variables that indicate the size of an airline. The variables "flag carrier", "full-service", "price fighter/ low cost", "annual report 2018", "sustainability report 2018" and "COVID-19 rescue plan" are variables that are expected to reveal more about the variation in sustainability measures. Distinguishing between "full - service" and" price fighter/ low cost" airlines might already show differences or variation in reporting on sustainability measures. Being a flag carrier of the country in which an airline is

registered might also contribute to finding out more about the variation. The variables listed under the categories named “activities“, “policies“ ,“investment“, and “indices“ (Table 2) are the variables that are relevant for the annual reports and sustainability reports.

Apart from the explanation of the components of the inventory, it is important to operationalize the variables in order to make them measurable and feasible. The definitions of the variables help to make clear what is important to look at within the reports and to categorize the airlines.

Flag Carrier	Airline that is or was subsidized or owned by the country in which it is registered, supported by the government (Rehal, 2019)
Full-Service Airline	Airline that offers more than one cabin class, flight entertainment, checked baggage, meals, beverages and comforts (Delbari, et al., 2016)
Price Fighter / Low Cost Airline	Airlines that minimize operating costs, offer lower fares and fewer amenities (no free catering, with the aim to reduce maintenance, spare parts, and crew training costs by using a single type of aircraft (Akpur, & Zengin, 2019)

Table 5: Definitions of airlines.

The first analysis conducted in this research is a quantitative data evaluation, conducted according to the Mokken Scale Analysis (MSA) which is a well-known scaling technique in public administration studies (Torenvlied, et al., 2013). This nonparametric cumulative scaling analysis pools specific items into scales. What is important about the MSA is that it only uses dichotomously scored test items which means that there are only two possible item scores: ones and zeros. The aim of MSA in the context of this study is to explore whether different dimensions exist in the sustainability reporting by airlines (Torenvlied, et al., 2013). One major important aspect of the MSA is the scale homogeneity coefficient H which is the homogeneity index. It indicates the strength and, thus, the validity of a created scale. If $0.30 < H < 0.40$, the scale is considered to be weak while $0.40 < H < 0.50$ indicates an intermediate strength. A

strong scale is present when H > 0.50. If H = 1, the scale shows that no errors occur and that the scale is fully deterministic (Torenvlied, et al., 2013; Mokken, 2011).

Using STATA, the sustainability reporting items were examined. There is one scale with a homogeneity index *H* = .92; which is a very strong scale. An airline sustainability index was created by summing up all seven airline sustainability scores. Each item of this scale either is documented with a zero - meaning that the item is not present in either the annual report or the sustainability report of an airline - or with a one - meaning that the item is present in either the annual report and/or the sustainability report of an airline. The summed airline sustainability index, thus, varies between 0 to 6 and is named Airline Sustainability Index (ASI). The seven items are: use of alternative fuels, CORSIA, Air travel/ Aviation taxation, Aircraft age, Aircraft design, Atmosfair Airline Index, and Dow Jones Sustainability Index.

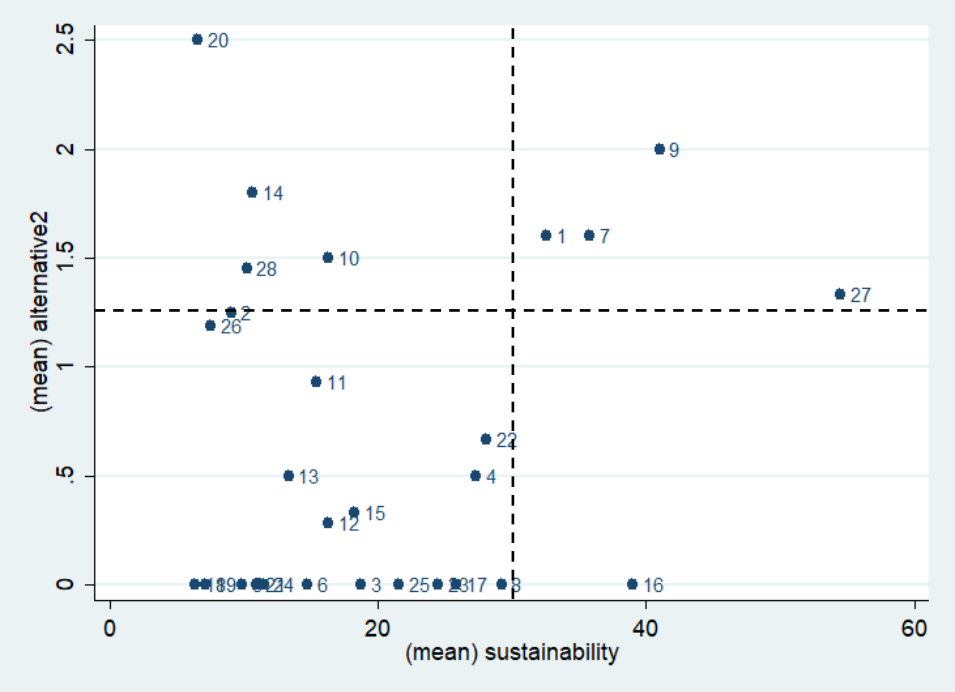
In order to assess the extent to which a country has sustainability policies in force, data on the percentage of renewable energy (sustainability) and the Sustainable Development Goals (SDGs) score per country were retrieved from the 2019 Europe Sustainable Development Report (Sustainable Development Solutions Network and Institute for European Environmental Policy, 2019) and added to the existing dataset of all airlines (Appendix A)[1]. There are 119 valid observations (airlines), nested in 28 EU countries.

The following graphs (graph 1; graph 2) show a summary (the mean) of how sustainable the countries in which the airlines are registered ('SDG' and 'sustainability') are, considering the sustainability measures (ASI). The countries are marked with a number according to the alphabetical order of the 28 European countries included in the data set. In both graphs, the y axis gives mean values of all items included in 'alternative 2'. The higher the (mean) sum-score, the more sustainable the airline. The numbers presented in both of the graphs represent the EU countries. Appendix B presents the number of each country shown in the graphs.

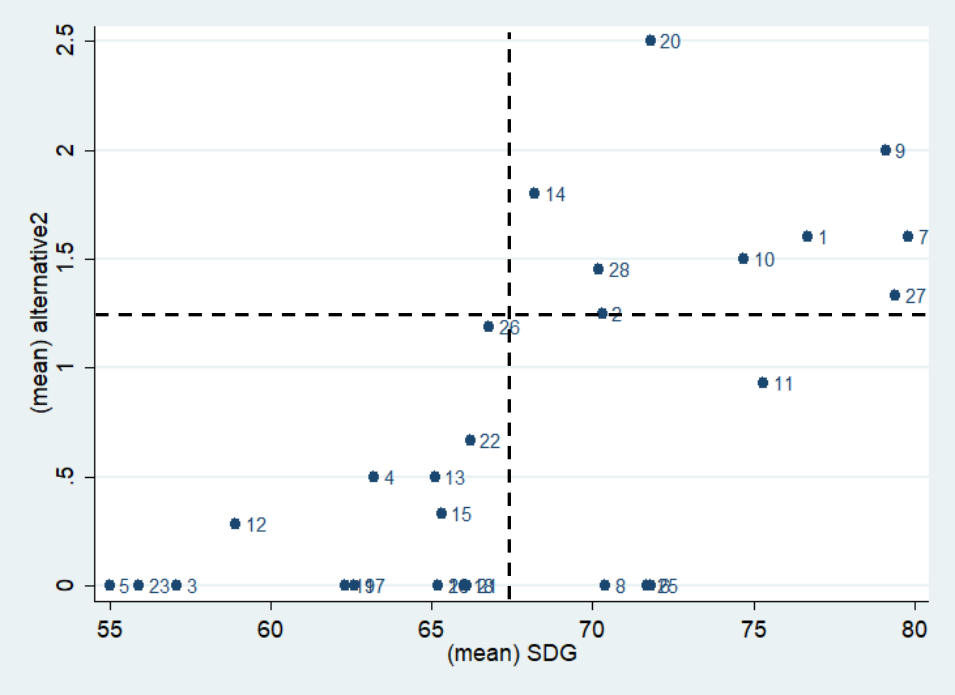
In graph 1, the x axis describes the (mean) sustainability of the included countries, meaning the percentage of renewable energy. The dotted line presents a division into four squares for a more detailed analysis. As can be seen, most of the countries are positioned in the lower left square which represents a low mean of ASI measures and a low mean of sustainability retrieved from the 2019 Europe Sustainable Development Report (Sustainable Development Solutions

[1] on the suggestion of and in consultation with Prof. Dr. René Torenvlied

Network and Institute for European Environmental Policy, 2019). Thus, the graph shows that there is the likelihood of a country- airline correlation. However, the results do not provide much information about the reporting behavior of countries in terms of a high (mean of) sustainability and a high (mean of) of ASI, as well as in terms of a high (mean of) sustainability and a low (mean of) of ASI. Consequently, a rule cannot be defined.



Graph 1: ASI and mean sustainability.



Graph 2: ASI and mean SDG

The other graph (graph 2) describes the (mean) SDG score the countries achieved on its x axis. Graph 2 was also divided into four squares in order to analyze the findings in more detail. It can be seen that most of the countries are positioned in the lower left and in the upper right corner, showing that the countries either have a low (mean of) SDG and a low (mean of) ASI, or a high (mean of) SDG and a high (mean of) ASI. This table, and, therefore, using the SDG mean as a measure, provide better and clearer information about the countries' reporting behaviors.

Comparing the graphs, some countries become salient because they are clearly not too close to other countries regarding their values.

4.3. Discussion of Findings

Airline Sustainability Index (ASI)	*Coef.*	*Std. Err.*	*z*	*P>|z|*
SDG	.07	.02	3.79	.000
Full Service	-.64	.23	-2.78	.005
Alliance	-.78	.35	-2.23	.025
No. Aircraft / Fleet Size	.00	.00	3.49	.000
_cons	-3.23	1.35	-2.39	.017

Table 6: Statistical results of ASI.

Table 6 shows the statistical results of ASI put into relation with four other variables of the airline inventory: SDG, Full Service, Alliance, and No. Aircraft/ Fleet Size. The variable Full Service is a dummy variable indicating that the airline is a full-service airline. The variable Alliance indicates that an airline is not member of an alliance. The variable No. Aircraft/ Fleet Size is a control variable, indicating the size of an airline. The correlation coefficients presented in the table (Table 6) show that ASI is in a high positive correlation with SDG (coefficient = .07). Full Service has a moderate negative effect on ASI (coefficient = -.64), while the variable Alliance shows a high negative effect on ASI (coefficient = -.78). The variable of the No. Aircraft/ Fleet Size shows a negligible effect on ASI (coefficient = .00).

The z-value indicates how many standard deviations the result is from the mean of the results (Glen, 2020). Values greater than 2 indicate that the result is very far from the mean of the results which is the case in the statistical analysis of this study. The values of the z-scores are very high - for SDG the z-score is 3.79 - as well as very low - for Full Service the z-score is -2.78). Associated with the z-score, the p-value that signals the statistical significance, shows interesting statistical results. As a rule of thumb, the smaller the p-value, the more significant the variable because the null hypothesis can be rejected (McLeod, 2019). If the p-value is $\leq$ 0.05, a statistical significance is given which leads to the string evidence that the null hypothesis can be rejected. If the p-value is > 0.05, there is no statistical significance and the null hypothesis cannot be rejected. The table (Table 6) shows $p < .001$ for the variables SDG as well as for the variable No. Aircraft / Fleet Size which indicates a strong statistical significance of both variables. Thus, they are highly relevant variables as they indicate a strong effect on ASI.

The dummy variable Full Service shows a p-value of p = .005. Again, a statistical significance is given. The p-value for the variable Alliance is p = .025, which once more indicates that the null hypothesis should be rejected as there is a statistical significance.

Random-effects Parameters	***Estimate***	***Std. Err.***	***N***
Country	.36	.16	28
Airline	1.04	.075	119
Log likelihood = -178.59667			
Wald chi2 = 54.96			

Table 7: Statistical Results: Country and Airline Effects.

All statistical findings show that the score on the scale can be explained by country and airline characteristics. There are country effects as well as airline effects which indicate that variation lies within these two units. Many variables of the sustainability measures of airlines reported in the airlines' annual reports and sustainability reports are correlated. Presented in table 7, the analysis further shows that 26 percent of the variation in airline sustainability measures can be found at the level of the country while 74 percent of the variation in airline sustainability measures can be found at the level of the individual airline.

Additionally to these encouraging results about the data, the Wald Chi-Squared Test shows a value of 54.96. The Wald Chi-Squared Test is used for deciding about whether explanatory variables within a model are significant. The value 54.96 represents such significance which indicates that the variables (or items) are important to consider as they contribute to the model and make it more complex as well as more extensive (Glen, 2016).

4.4. Conclusion

Before moving to the next analysis, it is important to reflect on the statistical findings and the inventory in terms of testing the hypotheses. Hypothesis 2a was: *full-service airlines adopt more sustainability measures*. The data show that there are 20 full-service airlines that reported on the items of ASI. ASI includes both, the reported sustainability and real sustainability. The scaling analysis shows the empirical outcome that airlines that have scored high on real sustainability, also score high on reported sustainability. The determined average of the number

of items reported is 4.25. Out of 54 full-service airlines, 20 airlines have reported on the items of ASI. In comparison to this, the data show that out of 70 low-cost airlines, only 33 airlines have reported on the items of ASI. The determined average of the items reported for the 33 airlines is 4.24. This result shows that full-service airlines and low-cost airlines almost do not differ in the adoption of sustainability measures in terms of reporting. Therefore, hypothesis 2a has to be rejected.

Given this result, hypothesis 2b should be considered: *full-service airlines are more likely to publish a sustainability report*. As mentioned before, there are 54 full-service airlines and 70 low-cost airlines that have reported on the items of interest. Beginning with the full-service airlines again, the data show that 15 full-service airlines have published a sustainability report. This represents 27% of all full-service airlines. Further, the data show that 20 low-cost airlines have published a sustainability report. This represents 28% of all low-cost airlines. Again, hypothesis 2b also has to be rejected. The business model of airlines has no meaning for the sustainability reporting.

Similar outcomes have been shown before. Meyer et al. (2012) looked at the passengers' perceptions of the green image associated with airlines. As explained before, the study has shown that passengers do not take into consideration the business model of an airline when deciding about its environmental friendliness. This result is valid for the case of sustainability reporting, too.

5. Case Studies

5.1. Introduction

This chapter will deal with the comparison of four different airlines from four different EU countries (EU membership status: 2018). After a description of each case, it will be explained how and on what basis the comparison is made. The findings of the case study analyses will be presented in subdivided sections: similarities and differences between countries (chapter 5.3.1.), similarities and differences between airlines (chapter 5.3.2.), and similarities and differences between airlines and countries (chapter 5.3.3.). In the end of this chapter, hypotheses 1a and 1b are tested.

The case studies of the four different EU airlines and countries add significant value to this research as they provide detailed and rich-qualitative information about the central subject of research. Further, the complexity of the variation in sustainability measures can be depicted in a more vivid way. The case studies represent existing European airlines and, thus, reflect real-life. Although case studies normally do not serve the purpose of generalization, this study enables to make statements about the variation of sustainability measures that can be transferred to other airlines as well. Therefore, a certain extent of generalization is possible applying the method of comparative case studies.

5.2. Results

The previous analysis and the creation of an inventory have shown that hypotheses 2a and 2b (hypothesis 2) need to be rejected, considering the given and predefined conditions and the time frame. Full-service airlines, thus, neither adopt more sustainability measures, nor are they more likely to publish sustainability reports. It should be remembered, however, that this only counts for the sole reporting on sustainability measures per se. The actual performance or implementation of sustainable and environmentally friendly measures is not taken into consideration in this study. Further research clearly should elaborate on this.

Below, the table (Table 8) gives an overview of the airlines' levels of sustainability given the number of reported items mentioned in the airlines' reports. The table is limited and only shows an extract of all airlines. Only airlines that at least report on 4 items are included.

Country	*SDG rank*	*Airline*	*Number of reported items*
France	6	Air France	6
		Transavia France	6
Netherlands	7	KLM - Royal Dutch Airlines	6
		KLM Cityhopper	6
		Transavia	6
Denmark	1	SAS Scandinavian Airlines	5
		Sun-Air of Scandinavia (IAG)	5
Sweden	2	TUIfly Nordic (TUI Group)	5
Austria	4	Laudamotion	5
Germany	5	TUIfly (TUI Group)	5
France	6	Corsair International (TUI Group)	5
Netherlands	7	TUI Airlines Netherlands (TUI Group)	5
Belgium	11	TUIfly Belgium (TUI Group)	5
United Kingdom	12	BA CityFlyer (IAG)	5
		British Airways (IAG)	5
		TUI Airways (TUI Group)	5
Ireland	13	Aer Lingus (IAG)	5
		Ryanair	5
Spain	14	Air Nostrum (Iberia)	5
		Iberia (IAG)	5
		Iberia Express (IAG)	5
		LEVEL (IAG)	5
		Vueling (IAG)	5
Denmark	1	SunClass Airlines (Thomas Cook Group)	4

Country	*SDG rank*	*Airline*	*Number of reported items*
Sweden	2	Norwegian Air Sweden	4
Finland	3	Finnair	4
		Nordic Regional Airlines	4
Austria	4	Austrian Airlines (LH Group)	4
Germany	5	Eurowings Europe (LH Group)	4
		Eurowings (LH Group)	4
		Lufthansa (LH Group)	4
		Lufthansa City Line (LH Group)	4
		Condor (Thomas Cook Group)	4
		SunExpress Deutschland (LH Group)	4
Belgium	11	Brussels Airlines (LH Group)	4
United Kingdom	12	Norwegian Air UK	4
		Virgin Atlantic Airways	4
Ireland	13	Norwegian Air International	4
Portugal	15	Orbest (Barceló Group)	4
		Evelop Airlines (Barceló Group)	4
Italy	18	Air Dolomiti (LH Group)	4

Table 8: Airlines' levels of sustainability given the number of reported items mentioned in the airlines' reports (extract).

The rejection of hypothesis 2 makes clear that the following analysis needs to consider the remaining, untested hypotheses. According to the general criteria defined before, four airlines from four EU countries are chosen.

The first country selected is the Netherlands. With a SDG score of 71.82 points, it is on the seventh rank of the SDG rank and shows a share percentage of 6.6 of renewable energy in gross final energy consumption. The Netherlands is one out of nine countries with an official government call for an aviation carbon tax (Government of the Netherlands, 2019) which

highlights the government's attention and attitude towards the environmental and sustainable pollution through the aviation industry. The inventory (Appendix A) lists six Dutch airlines in total.

The first case to be presented is the airline KLM Royal Dutch Airlines (KLM) which is the national flag carrier airline of the Netherlands. The Dutch government has taken action to rescue KLM, since due to COVID-19, the airline has suffered severe problems (Meyer, 2020). This shows that the government is a stakeholder of KLM. The bailout about $3.8 billion is bounded to environmental improvements of the airline. KLM operates as a full-service airline as defined in table 5 with 500,000 flights per year with 116 aircraft to 135 destinations worldwide. The airline is a member of the alliance SkyTeam and has published both, an annual report and a sustainability report of 2018. In the reports, KLM has addressed six of the items of ASI.
The second case was chosen from Finland, which is on the 3rd rank with a SDG score of 79.06. It shows a share percentage of 41.0 of renewable energy in gross final energy consumption and lists only 2 airlines in the inventory (Appendix A). It has not called for an aviation carbon tax, but just as the Netherlands, Finland has agreed upon a COVID-19 rescue plan for its flag carrier Finnair. The full-service airline operates 126,000 flights per year with 84 aircraft to 132 destinations. Finnair is a member of the alliance OneWorld and has published both, an annual report and a sustainability report of 2018. Although it has been ranked as the third most sustainable country in Europe, only 4 items of ASI were addressed in Finnair's reports.

The third case is Luxair, which is the flag carrier full-service airline of Luxembourg. Luxembourg is on rank 17 with a SDG score of 65.96. Based on these values and valuation of the 2019 Europe Sustainable Development Report (Sustainable Development Solutions Network and Institute for European Environmental Policy, 2019), Luxair represents the least sustainable airline within this study. Its share percentage of 6.4 of renewable energy in gross final energy consumption underlines this. Although Luxair seems to be an unsustainable airline, it should be included in this research as it represents an airline that has not published a sustainability report, but an annual report. Also, it is interesting to see that Luxembourg is one of the few countries with the official call for an aviation carbon tax (Government of the Netherlands, 2019) which makes the case very interesting as it represents the opposite of Finnair. Luxair is the only airline listed in the inventory for Luxembourg (Appendix A).

The fourth and last case was chosen from the United Kingdom (UK). The UK was ranked on the 12th place with a SDG score of 70.22 and a share percentage of 10.2 of renewable energy

in gross final energy consumption. The inventory (Appendix A) lists 11 airlines of which the flag carrier full-service airline is British Airways. It operates as a member of the Alliance OneWorld with 300,000 flights per year, transporting passengers to 182 destinations with a fleet size of 278 aircraft. British Airways has also only published an annual report and has not called for an aviation carbon tax in 2018. It addresses five items of ASI in is annual report and, thus, is the airline with the second most reported items.

What can be seen already from the case descriptions is that two countries, the Netherlands and Finland - that are ranked higher in the 2019 Europe Sustainable Development Report (Sustainable Development Solutions Network and Institute for European Environmental Policy, 2019) - have both published a sustainability report whereas the lower ranked countries, Luxembourg and the UK, have not published a sustainability report. Research has shown that the publication of a sustainability report, separately from an annual report, is seen as a trait of seriousness of the publishers towards sustainability in a specific industry (Taskinsoy & Uyar, 2017, p. 12). Referring this to the context of this research, it seems that the higher the SDG score of a country, the more likely it is to publish a sustainability report.

It is important to keep in mind that this study merely examines the reporting of sustainable measures, and does not take into account whether the selected airlines act and perform according to their reports and legal requirements. The following analysis aims at testing the unaudited hypotheses and, thus, compares the airlines' reporting and publication behaviors with the governments' attitudes and the national sustainability policies of the countries in which the airlines are based - in general and towards the aviation industry, specifically.

In order to compare the four selected countries with each other, it needs to be made clear how and on what basis this comparison is made. Extensive research on national sustainability policies of the countries in which the selected airlines are based has shown that there are two reliable and qualitatively solid criteria (documents) that are be used to analyze the countries' attitude and characteristics: (I) UN Voluntary National Reviews, and (II) Sustainable Governance Indicators. The criteria each describe a certain type of document that is available for all selected countries. In the documents, the national sustainability polices of the countries in which the airlines are registered and based, are described. This set of documents help to address hypotheses H1a and H2a.

As aforementioned, the Aviation Carbon Tax already can be seen as one indication for the national sustainability measures towards the airline industry, specifically, because it touches upon the aviation/ airline industry. The independent variable is also examined by looking at the National Air Transport/ Aviation Strategies as well as by analyzing the National State Action Plans published on the ICAO website.

Altogether, every document is analyzed with regard to the attitudes and characteristics of the countries and airlines referring to the items of ASI.

The following table gives an overview of the countries' publications of documents that deal with national sustainability policies in general and towards the airline industry, specifically:

Country	***national sustainability policies in general***		***national sustainability measures towards the airline industry***		
	UN Voluntary National Reviews	Sustainable Governance Indicators	Aviation Carbon Tax	State Action Plan (ICAO)	Air Transport/ Aviation Strategy
NL	Yes	Yes	Yes	Yes, but not publicly accessible	Yes
FIN	Yes	Yes	No	Yes	Yes
LUX	Yes	Yes	Yes	No	No
UK	Yes	Yes	No	Yes	Yes

Table 9: Overview of publication/availability of national sustainability policy documents in general, and towards the airline industry according to selected countries.

The approach of the qualitative content analysis is as follows: first, the relevant documents presented in table 9 were read carefully to make sure they are relevant, credible and representative. Relevant text passages of the documents that address the predetermined categories are identified and then highlighted. After that, the text passages are further analyzed and filed in tables of deductive coding according to the categories.

The categories are the items of ASI and have already been defined before. The documents are grouped in an ordinal way, meaning that the qualitative content analysis focuses on the formulation and attitude towards the items of ASI (Mayring, 2014). Thus, for each category (item of ASI), there are labels that explain to what extent and, in particular, how a certain category has been mentioned in a document (Appendix C).

Once again, it is important to keep in mind that the study only focuses on the reporting about sustainability measures while the content analysis only reveals what is addresses/ mentioned in the documents selected. Although the content analysis does not take into account the absence of sustainability items, - because categories can only be created for text passages that exist- it still is important to keep track of the absent items. All national sustainability policy documents are analyzed by looking at the items of ASI.

5.3. Discussion of Findings

The results are quite complex which is the reason for dividing the results according to (5.3.1.) similarities and differences between the countries, (5.3.2.) similarities and differences between the airlines, and (5.3.3.) similarities and differences between the airlines and their country of registration. All findings have been collected and illustrated in Appendix C. The created table gives an overview of the reporting behavior and attitudes towards the defined sustainability measures of each country, including the national flag-carrier airline and the national sustainability policy reports.

5.3.1. Similarities and Differences between Countries

What all countries have in common is that their national sustainability policy documents in general as well as towards the aviation industry mostly report on items of CORSIA expressing a positive attitude about it. As CORSIA is the most addressed item, a more detailed look into the countries shows that Finland and the UK address items of CORSIA in every chosen document. Also, Finland and the UK are the two countries that have published all of the national sustainability policy documents in general as well as towards the aviation industry while the Netherlands has not published the State Action Plan and Luxembourg has not published the

State Action Plan and an Aviation Strategy. The least addressed item of ASI is the Dow Jones Sustainability Index, which only the Dutch airline KLM has mentioned in its sustainability report.

The first considerable difference can be seen in the total number of categories reported of the countries. Unexpectedly, the UK has reported on most categories (12) although the country has been ranked on the 12th place in the SDG rank which represents the penultimate place of the four countries selected for the comparative case studies. Finland has reported on 10 categories in total, Netherlands on six, and Luxembourg on three categories. The number of categories of Luxembourg seems to be associated with the country's SDG rank as it is ranked at the 17th place and represents the least sustainable country of the countries included in this analysis. Therefore, it already was expected that Luxembourg would not report on a lot of the items very extensively, but rather poorly, which has been proven by the analysis.

Another difference can be seen in the category 'alternative fuel'. Luxembourg and the Netherlands both show a positive attitude towards alternative fuel while Finland shows a strong positive attitude towards alternative fuels and the UK shows an insufficient effort. Further, Appendix C depicts a difference in the reporting about other environmental taxes. Only the UK reports on "a tax on the manufacture and import of plastic packaging will be introduced to encourage greater use of recycled plastic and help reduce plastic waste" (Stewart, 2019, p. 108) that is related to the environment and sustainability. Again, this is an unexpected result for the UK, considering its SDG rank. Moreover, Finland is the country which reported on aircraft age the most, meaning that the country highlights the importance of investing into new technology, and with it investing in new aircraft, that contributes to making the environment more sustainable.

Generally, the policy documents are more or less consistent regarding each item of ASI. There is not much variation in the documents within a country, but differences do exist in the airlines' reporting behaviors.

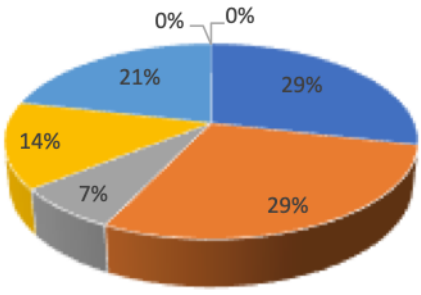
5.3.2. Similarities and Differences between Airlines

One similarity that is obvious is that Finnair and British Airways both show a positive attitude towards the use of alternative fuel while Luxair does not refer to this category at all. KLM

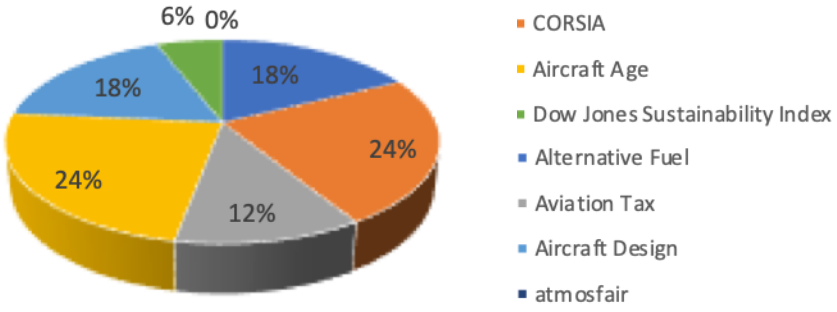
expresses a strong positive attitude towards alternative fuel by giving concrete examples about how to implement alternative fuels properly and about where alternative fuels have already been used successfully. Another similarity has been identified in the reporting about COSIA. Again, Finnair and British Airways share an attitude towards it as they both report on insufficient effort towards achieving the goals of CORSIA. Furthermore, KLM again expresses a very positive attitude towards the CORSIA measures. It seems that KLM really tries hard to address most of the important ASI categories in order to create the most positive image as possible about the airline. This is also highlighted by the fact that only KLM refers to the Dow Jones Sustainability Index. Referring to the aircraft design, it is interesting to see that KLM and Finnair both show a strong positive attitude as they mention concrete measures, such as "the use of the continuous descent approach (CDA)" (Finnair, 2018, p. 23). Luxair does not refer to the aircraft design at all, and British Airways expresses a neutral attitude towards the aircraft design, only talking about plans in future. It is notable that there are quite a lot of differences in the expressions and in the frequency of categories reported within the same topics. This underlines the pre-formulated assumption that there actually is variation within the airlines' reporting about sustainable measures.

5.3.3. Similarities and Differences between Airlines and Countries

Comparing the reporting behavior of the airlines and countries has resulted in the following pie charts (graph 3; graph 4):



Graph 3: Country-based sustainability measures reporting



Graph 4: Airline-based sustainability measures reporting

Graph 3 depicts the seven ASI measures addressed by the four countries' reports according to their frequency. It can be seen that that the sustainability ASI measures CORSIA and alternative fuel have been addressed the most by countries. Both measures have been reported to the same percentage of 29. Comparing this with the reported sustainability measures by airlines (graph 4), it becomes noticeable that also airlines address CORSIA most. However, instead of alternative fuel, airlines address the aircraft age to the same extent as they refer to CORSIA, showing a frequency of 24 percent.

What is most interesting about the content analysis referring to the untested hypotheses is the airlines' reporting compared to the countries' reporting about the same sustainable measures. Beginning with KLM and British Airways that both expressed a negative attitude towards an air travel taxation, it can be seen that the airlines address this kind of tax although the national sustainability policy documents of 2018 have not mentioned it. This might give a hint that airlines are thinking ahead, although the own countries in which the airlines are registered have not yet decided to establish a new binding policy. As mentioned before, KLM is the only airline that addresses the Dow Jones Sustainability Index in oder to present itself as a sustainable and good airline. It also shows the airline's proactive behavior. Just like the other governments, the Dutch government does not see the need to address this index which might have an impact on the SDG rank. Of course, this needs to be taken into account in further research which should address the actual performance of airlines and of the countries in which the airlines are registered with reference to the selected categories of this research.

Anther important point is that there is no documentation about the atmosfair Airline Index, which would have been especially interesting to investigate within national sustainability policy documents that refer to the airline, or even aviation industry. However, this also shows that the index probably is not as esteemed as other measures, for example the items of the CORSIA category.

Moreover, it is very interesting to see that there is variation in the CORSIA category, meaning that there are different expressions and attitudes about it. The Netherlands has reported on CORSIA items in a positive way, addressing the "reduction of CO2 emissions" (Ministry of Foreign Affairs of the Netherlands, 2017, p. 30) or "fuel-efficient (…) air travel" (Dutch government, 2009, p. 14). As mentioned before, KLM highlights its strong positive attitude towards CORSIA items by addressing the important aspects of the CORSIA policy all together

and by highlighting them throughout the paper several times. Finland and the UK both express a positive attitude towards CORSIA as well. However, their flag carriers Finnair and British Airways depict themselves worse than how the governments apparently see their airlines. While both countries express a positive attitude towards CORSIA, the airlines express their own insufficient effort towards achieving the CORSIA goals by confessing that, for example, "CO2 emissions from flight operations increased by 11.7 per cent from the previous year" (Finnair, 2018, p. 19). In sum, Finnair and British Airways are more critical and less optimistic about the results and express this in their reporting.

For the category 'alternative fuel', the analysis shows that the Netherlands expresses a positive attitude in the national sustainability policy documents while the airline KLM, again, depicts itself better and expresses a strong positive attitude by showing how alternative fuels already have been implemented and hoe beneficial they are. It is highly fascinating to see that British Airways this time depicts itself less critical than its country of registration. The UK expresses a neutral attitude about alternative fuels by simply mentioning renewable energy in its national sustainability policy documents, whereas British Airways this time expresses a positive attitude about the use of alternative fuels. It becomes clear that it depends on the measured aspects if an airline depicts itself better or more critical than its country in which it is registered. All the findings concerning the assigned codes for the chosen airlines and their countries are captured in Appendix D.

5.4. Conclusion and Answers to Sub-Questions

This chapter has shown that there are differences and similarities between countries, between airlines, and between airlines and countries. CORSIA is the most addressed item of ASI. While the UK has reported on most categories in total, Luxembourg has reported on least items. The policy documents are more or less consistent regarding each item of ASI. There is not much variation in the documents within a country. It is salient that KLM is the only airline that continuously tries to create the most positive image by presenting items as a very sustainable and environmentally friendly airline. It is very noticeable that KLM tries to address most of the important ASI categories which can be considered a strategy of reputation management. Moreover, this highlights the proactive character of the Dutch national flag carrier airline. However, other examined flag carriers are not as optimistic and self-confident as KLM appears to be. Finnair and British Airways depict themselves worse compared to their governments'

reporting behavior. A very unexpected finding is that airlines address the aviation tax more explicit than governments. This might highlight a strategic lobbying approach of the airlines, trying to influence a not yet decided policy that could harm the airlines in their revenues.

Based on the results of the evaluations and analyses from chapter 4 and 5, answers for the sub-questions can be formulated. The first sub-question was: *Is there a systematic variation in sustainability measures between and within European countries in which the airlines are registered?*. A systematic variation in the sustainability measures between and within European countries could not be verified. As shown above, both hypothesis had to be rejected. Therefore, neither the business model of an airline is a factor for the systematic variation, nor is the extent to which an airlines adopts sustainability measures. This finding has been highlighted by the fact that flag carrier airlines Finnair and British Airways show more critical and less optimistic expressions in their reports whereas their countries of registration, Finland and the UK, show a more positive attitude within their reports.

The second sub-question was: *To what extent is the variation observed between countries associated with the national government's measures for sustainability beyond the airline industry?*. In order to answer this sub-question, it is helpful to look at the following table:

Country	*SDG rank*	*Number of reported sustainability measures by airlines*	*Number of reported national government's measures for sustainability beyond the airline industry (in general)*	*Number of reported national government's measures for sustainability towards the airline industry*	*Number of reported categories (in total)*
Finland	3	4	2	8	10
Netherlands	7	6	4	2	6
United Kingdom	12	5	6	6	12
Luxembourg	17	2	3	0	3

Table 10: Selected countries and the numbers of their national government's measures for sustainability beyond the airline industry and towards the airline industry.

The table gives an overview of the selected countries and the numbers of their national government's measures for sustainability beyond the airline industry and towards the airline industry. Also, the table shows the airlines' measures reported by themselves. It is clearly identifiable that, first of all, there is a variation between the countries. The numbers of reported categories in total differs for each country which can be seen in the last column of the table. This is reflected in the first column which presents the SDG rank of the countries. Looking at the second column from the left, it can be seen that although Finland is ranked as the highest country, it has the least number of national government's measures for sustainability beyond the airline industry. Chapter 5, section 5.3.1. has explained the variation between the countries in more detail, showing the different attitudes and characteristic behaviors. In this way, it can be seen that the national government's measures for sustainability beyond the airline industry have no association with the variation observed between countries. Again, this might be an indicator for the independent image and reputation building of the airlines since the numbers of reported ASI items vary with no salient pattern or system.

The table further shows that the SDG rank of the selected countries is not meaningful for the correlation with the reported sustainability measures reported by airlines. Furthermore, it is interesting to see that at a higher number of the governments' reported sustainability measures towards the airline industry, it looks like there are larger discrepancies from the reported

measures by airlines. Moreover, the table underlines that there is no association between the national government's sustainability measures beyond the airline industry and the government's sustainability measures towards the airline industry. Additionally, no trend can be seen in the correlation between the national government's measures for sustainability towards the airline industry and the reported sustainability measures by airlines. Therefore, no statement about correlations can be made with the information based on the reports only.

The third sub-question was: *What are the mechanisms that drive the correlation between national governments' measures of sustainability and sustainability measures reported by airlines?*. In the beginning of this research, it was expected that either the business model of an airline could be a reason for the variation in the claims of sustainable measures reported in the 2018 annual reports and sustainability reports by different European airlines or the national sustainability policies - in general, as well as towards the airline industry explicitly - of the country in which the airline is based. The analyses have shown that only for the Dutch case, KLM and the Dutch government have the same number of reported items (see Table 10). All other airlines address less ASI items than their countries in which they are registered. Moreover, the analyses have also shown that the countries' attitudes towards the individual ASI variables are different from the airlines' attitudes and characteristic reporting behavior. Therefore, it can be said that there are no clear mechanisms that drive a correlation between national governments' measures of sustainability and sustainability measures reported by airlines.

6. Discussion

6.1. Introduction

In this chapter, the findings of the results from chapter 4 and from chapter 5 are discussed in two separate parts. The first one focuses on discussion of the findings in light of the theoretical assumptions from chapter 2. The second part discusses the findings in consideration of the findings and research results from other scholars.

6.2. Discussion of Findings: Theoretical Framework

Connecting these complex results to the theoretical approach of Institutional Theory linked with views of Stakeholder Theory, Legitimacy Theory and Signaling Theory seems quite challenging as there is quite a lot of variation between the airlines, but the countries more or

less report about a certain category in the same or at least in a very similar way (see Appendix C).

Referring to the hypotheses first, it can be said that hypotheses 1a and 1b need to be rejected. The qualitative content analysis has shown that the total number of categories reported, both within national sustainability policy documents in general, and towards the airline industry do not correlate with the total number of categories reported by the airlines. The UK has reported on 12 categories in total, while British Airways has reported on 5 categories only. Comparing this to the Netherlands, it can be seen that although KLM has reported on more categories than British Airways, the Netherlands only addressed 6 categories in total. This underlines the rejection of both part of hypothesis 1. Thus, airline sustainability activities cannot be seen as a correlation to the country's sustainability measures, qualitatively.

Also, hypotheses 2a and 2b have to be rejected because the inventory (Appendix A) does not show any persuading results that confirm the hypotheses. The Netherlands and Finland are the two countries that have published sustainability reports. First of all, the total number of categories mentioned is proportionally different for the national sustainable policy documents in general and towards the airline industry. In the general national sustainability policy documents, the Netherlands addresses four categories while the documents towards the airline industry address two categories. Finland mentions two categories in the general national sustainable policy documents whereas four categories are addressed in the documents towards the airline industry. The UK, - that can be considered a good, qualitatively comparable country because Luxembourg has not published any of the chosen national sustainability policy documents with regards to the airline industry - has addressed both documents with the same amount of categories (six) while British Airways has not published a sustainably report. It becomes clear that the publication of an airline's sustainability report is neither associated with the number of categories mentioned in general national sustainable policy documents, nor with documents towards the airline industry.

Although all hypotheses had to be rejected, the results clearly give evidence for the existence of variation in the airlines' reporting behaviors and attitudes. The theoretical implications of Institutional Theory suggests that heterogeneity could establish from conflicting institutional pressures. It was assumed that these pressures may arise due to a government's view and attitude towards sustainability, measured with national sustainability policy documents.

However, the analyses have shown that this is not true for the cases under consideration. Since heterogeneity is seen as an organization's attempt to be different from other organizations, other factors for the emergence of conflicting institutional pressures are responsible for the variation in sustainability measures of European airlines. Researchers have referred to the airline industry before in order to explain heterogeneity (Hambrick, et al., 2004). It was explained that airlines are different from each other because they differently generate their profit (Hambrick, et al., 2004). The results presented in the qualitative case study analyses have shown that the business model - airlines being full-service or low cost operators - does not affect the reporting behavior of airlines regarding sustainability measures. However, macro social factors reduce isomorphic pressure. Isomorphic pressure normally is responsible for organizations becoming very similar to each other. Considering the macro social factors which can be of economic, social and political nature as well as they can be cultural and environmental factors, heterogeneity might be explicable. Levy and Kolk (2002) state that differences in managerial interpretations could be such a macro social factor that leads to airlines differing from each other. This is indeed relevant to consider when trying to explain variation in sustainability measures of airlines. Unfortunately, including more macro social factors in this research would have gone beyond the scope of this master thesis. However, analyzing and interpreting the data have shown that the reports mainly serve the purpose of self-portraying and, thus, can be considered a commercial attempt of image creating for a better company presentation.

Integrating the views of Stakeholder Theory and Legitimacy Theory, it can be said that one of the main important points of both theories is that organizations seek legitimacy from its stakeholders. This includes that organizations need to consider the different expectations and interests of their stakeholders which sometimes could become problematic as they might be conflicting. The research study has shown that out of 139 full-service and low-cost airlines, 59 airlines have published an annual report and 36 airlines have published a sustainability report. By publishing these reports, airlines seek to be considered as accountable and legitimate airlines (Fernando, & Lawrence, 2014). However, not only the assessment of specific stakeholders is important. Legitimacy Theory suggests that society as a whole has to accept an organization and its operations and practices in order for an organization to become legitimate (Hahn, & Kühnen, 2013). Referring this to the research, it becomes clear that the term 'society' in the aviation/ airline industry clearly represents the governments and, especially, binding supranational institutions that set laws, such as regulations and directives implemented by the

European Union. Thus, airlines often share the same set of rules, such as laws, professions, regulatory structures, or government authorities (Bruton, et al., 2010).

As mentioned before, an airline faces different expectations and interests of its stakeholders which refers to isomorphism. Institutional isomorphism is seen as a reason for the process of homogenization, meaning that airlines become similar. Since coercive isomorphism refers to organizations that behave alike due to external pressures, it can be said that a certain number of airlines might feel pressured to report on certain sustainable measures because others have been doing the same for a long time. This is closely related to mimetic isomorphism which states that organizations look outside their own institutional field in order to copy best practices or to gain inspiration for improvement (DiMaggio, & Powell, 1983). This might be the case for some airlines as well, however, the examination of other industries or organizational fields would have gone beyond the scope of this master thesis. Future research should examine this in more detail. Also, it seems as if normative isomorphism - pressure from shared knowledge and the same environment - is also present in the case of the airlines.

Yet, although the research can be referred to the different mechanisms of institutional isomorphism that gives reasons for homogeneity of airlines, homogeneity is not achieved in the airline industry regarding the reporting on sustainable measures. Although there are similar values and the same regulatory framework, airlines show a variation in their sustainability reporting. This variation could be the result of factors that reduce isomorphic pressure which leads to organizations becoming more different (Hambrick, et al., 2004). The case of KLM has clearly shown how the airline tried to convince the readers of their annual report and sustainability report to believe that KLM is a very sustainable and environmentally-friendly airline. This underlines the theoretical assumption that heterogeneity is seen as an organization's attempt to be different from other organizations (Hambrick, et al., 2004). When being a salient airline, customers pay more attention to it. This highlights the strategic image and reputation building and needs to be seen as an economic profit-oriented behavior.

6.3. Discussion of Findings: Comparison to other Scholars

The profit-oriented and reputation building character of airlines has been analyzed before (e.g. Kostova, et al., 2008; Kolk, 2010; Kuo, et al., 2016). Scholars see CSR or sustainability reporting as an act of improving an organization's reputation and the perception towards

important stakeholders. It has been proven that publishing reports on corporate social responsibility, including sustainable measures, has a positive influence because “CSR reporting's major motivations are related to reputation and brand value, employees' CSR awareness, communication with stakeholders, management systems, management culture, market share, and transparency with the government.“ (Kuo, et al., 2016, p. 193). These findings can be confirmed as the study conducted in this research clearly shows how some airlines try very hard to convince its addressees by expressing strong positive attitudes through selected ASI variables.

Other scholars have examined whether the business model of an airline has an impact on passengers’ perceptions (Mayer, 2013; Mayer, et al., 2015). Studies found out that passengers do not think that low-cost airlines as less environmentally friendly compared to full-service airlines. In alignment with this fact, this finding could be confirmed with this study: The determined average of the number of items reported for the 20 full-service airlines is 4.25, whereas the determined average of the items reported for the 33 low-cost airlines is 4.24. This means that the business model of an airline does not impact the airline’s adoption of sustainability measures in terms of reporting.

Recent studies are now concerned with the online representation of airlines and how they depict their CSR practices on their websites (Okumus, et al., 2020). Also, specific airlines remain subject of research for many scholars (Taskinsoy, & Uyar, 2017; Sulistya, & Ginaya, 2020; Wicaksana, et al., 2020). Conducting a single case study still seems to be a popular and widespread method. Looking for new studies that have been published in 2020 - by broadly searching for key words such as ‘sustainability’, ‘CSR reporting’, and ‘airlines’ - scholars start to examine the crisis that the pandemic of COVID-19 has caused, referred to the travel industry in general. However, this seems to be a bit hasty because the crisis has not ended yet. The full effects and impacts on the economy as well as on the travel, or airline, industry in particular, cannot be assessed at this point of time. Without doubt COVID-19 will bring a huge change in the overall aviation industry and could be a very important field of research.

6.4. Conclusion

This chapter has addressed the theoretical assumptions presented in chapter 2. Connecting the study's findings with the theoretical approaches has shown that especially institutional isomorphism is clearly present in the airline industry. Although the different mechanisms of institutional pressure normally result in the mutual adjustment of airlines regarding their reporting behavior, scholars have shown that the institutional pressures are weaker for airlines that are considered as MNCs in this research. The pressures are also more diverse and more complex, and, thus, entail the variation of structures within an airline (Comyns, 2018). The main important point of the discussion of the findings in the light of the theoretical framework is that legitimacy is the major goal of all organizations. Reporting on sustainable measures, therefore, clearly has to be seen as a strategy to attain legitimacy, not only from specific stakeholders, but also from society as a whole. Following this train of thought, it is only logical that legitimacy also needs to be expressed by an airline's customers. Thus, the reporting on sustainability measures is a method of reputation building and image creation. The results were also discussed in the light of the findings from other scholars. The research has confirmed previously formulated findings.

7. Conclusions

7.1. Introduction

This last chapter will deal with the final conclusion of this research study. After a short summer of the main findings from the analyses, the main research question is answered. Further, practical implications for public managers and policy makers are given. The chapter will end with a description of this study's limitations and propose final recommendations for further research.

7.2. Summary of Key Findings

The study conducted has revealed some interesting and relevant insights in the airline industry in terms of sustainability reporting. A statistical key finding generated through the MSA is that 26 percent of the variation in airline sustainability measures were found at the level of the country reporting while 74 percent of the variation in airline sustainability measures were found at the level of the individual airline reporting. All items included in ASI were found to be significant for explaining the sustainability reporting in the airline industry. The findings showed that hypotheses 2a and 2b had to be rejected. Thus, the results from previous studies

could be checked, confirmed and extended: the business model of an airline neither plays a role in passengers' perceptions, nor does it say anything about the likelihood of adopting more sustainability measures or of the publication of sustainability reports. Additionally, hypotheses 1a and 1b also had to be rejected.

The comparative case studies were conducted for four different airlines from four different EU countries (status: 2018). The cases were: KLM from the Netherlands, British Airways from the UK, Finnair from Finland, and Luxair from Luxembourg. The results of the analyses showed that the higher a country is ranked in the 2019 Europe Sustainable Development Report (Sustainable Development Solutions Network and Institute for European Environmental Policy, 2019), the more likely the national flag carrier airline is to publish a sustainability report. This means that lower ranked countries, such as the UK and Luxembourg, do not publish sustainability reports.

The results further demonstrated that CORSIA has been the most addressed item of ASI by countries while the least addressed item is the Dow Jones Sustainability Index, which only the Dutch airline KLM has mentioned in its sustainability report. The total number of reported categories of the countries differs among the countries under research. For the case of Luxembourg, it could be seen that its number of reported categories seems to be associated with the country's SDG rank which is the 17th place and represents the least sustainable member of the countries included in this analysis. Moreover, it was found that policy documents are more or less consistent regarding each item of ASI. There is not much variation in the documents within a country, but differences do exist in the airlines' reporting behaviors

On the airline level, the results revealed that Finnair and British Airways both show a positive attitude towards the use of alternative fuel while Luxair does not refer to this category at all. KLM expresses a strong positive attitude towards alternative fuel and the individual measures of CORSIA. The very positive expressions of KLM are very salient and give the impression that KLM addresses as many sustainability measures as possible in order to create the most positive image possible about the airline. As a concluding remark for similarities and differences between airlines, it can be said that there are a lot of differences in the expressions and in the frequency of categories reported.

For similarities and differences between countries and airlines, it becomes clear that governments and airlines do not conform to most of the ASI items. KLM highlights its strong positive attitude towards CORSIA items, while government addressed it in a positive way only. Also, Finland and the UK both express a positive attitude towards CORSIA whereas their flag carriers Finnair and British Airways depict themselves worse. It is notable that KLM follows a reputation management strategy by depicting itself as a very environmentally-friendly and sustainable airline. The research only focuses on the expressions within the reports; the real sustainable performance is not considered. However, also the self-critical presentation of Finnair and British Airways towards certain measures of ASI can be considered a strategy for improving the airlines' images and reputations. Being transparent might contribute to a good reputation because honesty is a strong value in society.

The analyses helped to formulate answers to the sub-research questions which is necessary in order to answer the main research question. This is done in the next section of this chapter. The research showed that a systematic variation in the sustainability measures between and within European countries could not be verified. Further, the national government's measures for sustainability beyond the airline industry have no association with the variation observed between countries. Moreover, there are no clear distinguishable mechanisms that drive a correlation between national governments' measures of sustainability and sustainability measures reported by airlines. Although the answers and the rejection of the hypotheses show that it is difficult to find suitable and reasonable explanations for the observed variation in the sustainable measures reported in the 2018 annual reports and sustainability reports by different European airlines, this research still provides valuable data, especially for future research.

7.3. Answer to the main Research Question

The summary of the key findings has shown that it is difficult to find reasoned and sufficient explanations for the variation in the sustainable measures of European airlines. The main research question was: *how can the variation in the claims of sustainable measures reported in the 2018 annual reports and sustainability reports by different European airlines be explained from the characteristics of the airlines and of the countries in which the airlines are registered?*.

It was found that the reporting behavior and characteristics of airlines and countries do not explain and condition one another. The extent to which an airline adopts sustainability measures

neither is associated with the general national sustainability policies of the country in which the airline is based, nor is it associated with national sustainability policies towards the aviation industry of the country in which the airline is based. In addition, the business model of airlines neither is associated with the adoption of more sustainability measures, nor is it associated with the likelihood to publish sustainably reports. Thus, this research has confirmed, and added new insights to previous findings about the assessment of an airline's business model.

Apart from that, the variation in the sustainable measures reported in the annual reports and sustainability reports by European airlines can be explained by the fact that different managerial interpretations of certain factors in the airline industry lead to the different reporting behavior (Levy, & Kolk, 2002). The theoretical approaches have shown that the overall goal of airlines is to be considered as a legitimate airline in order to generate profit. Therefore, it can be said that reports mainly serve the purpose of self-portraying and, thus, can be considered a commercial attempt of image creating for a better company presentation. Differing strategies of reputation building and image creation are the main drivers for the variation in the claims of sustainable measures reported in the 2018 annual reports and sustainability reports by different European airlines.

7.4. Practical Implications for Public Managers and Policy Makers

The study reveals some insights for public managers and, especially, for policy makers. Practical implications that result from the key findings relate to the actual reporting. As can be seen in the inventory (Appendix A), not all European airlines have published a sustainability report or even an annual report. This clearly should be reflected upon by policy makers as more information about airlines entail better predictions, especially in terms of environmentally friendly and sustainable developments. Also, if sustainability reporting becomes obligatory, this will lead to more transparency and, thus, to more confidence in some airlines. This, in turn, would have a positive effect on the airline's customers and shareholders. Therefore, policy makers should consider directives that make the reporting on predefined categories of sustainable measures obligatory.

Another practical implication addresses airlines and their countries of registration. In particular, flag carrier airlines that quite often are partly-owned by governments, should be aware of its government's attitude towards specific sustainable measures. Also, it should be in the interest of both, the airlines and the governments, to find appropriate and similar expressions in order

to underline a good cooperation. Meetings with representatives from the government as well as from airlines could contribute to successful consultations. Although a coordinated approach would exert pressure particularly on airlines, such meetings could have a positive impact on an airline's reputation and image towards its customers, shareholders, and stakeholders.

7.5. Limitations and Recommendations for Further Research

One apparent limitation of this study is the focus on sustainability reporting measured by the annual reports and sustainability reports of the year 2018 merely. Although this can be seen as an advantage of this study which highlights the clearly defined framework, the scope of this master thesis is narrowed down. Another limitation is that the quality of sustainability reporting has only been touched upon to a very restrained extent. Though the content analysis and deductive coding have both helped to determine the airlines' and governments' attitudes and characteristic behavior towards sustainable measures, the actual quality of the reports has not been analyzed. This already has been mentioned by Hahn and Kühnen (2013), and, therefore, highlights the need for further research. The examination and observations in this study might help to have a general framework that allows to analyze the reports according to predetermined variables. Moreover, this research study is limited because it solely used sustainability reports and annual reports for creating a quantitative dataset that helped to analyze the sustainable measures of European airlines. Future research might also consider interviews or questionnaires that critically scrutinize the information provided in the reports. Additionally, the research concentrates on European airlines, and, thus, the results might not be applicable to other geographic areas. Further, the findings are related to the airline/ aviation industry and, therefore, might not be generalizable for other industries.

Future research clearly should focus on the underlying economic mechanisms behind the reporting of sustainable measures in the airline industry. A longitudinal study would reveal more insight about how airlines changed their reporting behavior throughout the years and when sustainability and environmental friendliness became important for this industry. Further, external pressures, such as initiatives of NGOs or citizens' initiatives, should be the focus of future studies. Since this research has focused merely on the sustainability reporting, the actual sustainability performance of airlines should be considered in further research studies again. Although previous research has already done so, today's crisis of COVID-19 might have an unforeseeable impact on the airline industry as a whole, but also on the sustainability reporting

of airlines. Thus, crises in general might be a very interesting topic to study regarding reporting behavior of the main actors of the aviation industry.

7.6. Conclusion

The analyses show that all presumptions about why variance in the reporting behavior of airlines comes into existence, had to be rebutted which highlights the need for further research in this field. Macro social factors seem to be responsible for the variation in sustainability measures of European airlines. Although the analyses have not shown the exact macro social factors, interpretation of the data can be used for the attempt to explain how the variation comes into existence. Having mentioned the commercial importance of airlines, it becomes clearer why airlines differ. Especially the cases in the qualitative content analysis have shown that in some points, airlines depict themselves better than the national sustainability policy documents, while sometimes the airlines are more critical about their own performance. The most significant word that best explains this is image creation.

KLM is one of the airlines that often portrays itself better than the national sustainability policy documents. Of course, annual reports and sustainability reports do not only serve the purpose to give financial and performance information to customers and investors. Using the reports as an advertisement for the airline surely also is one of the purposes. While addressing more sustainability measures positively, airlines seem to improve their competitiveness and public standing. The demand for more transparency in the airline industry has risen immensely during the last years. Therefore, airlines often seem to be forced to make their reports public which are then used as advertisements and for legitimacy purposes. Even if an airline admits that is has not reached its goals in a certain year, which, for example, Finnair has done, the value of transparency seems to be very high. It becomes clear that airlines report on sustainability measures and that they publish annual and sustainability reports because the customers, on which all airlines depend, demand this information (jetBlue, 2020). By being transparent admitting that certain targets have not been achieved or that the own airline has performed worse than in the last years, trust is built upon the customers which strengthens the bond between airline and customer. Further, transparency shows responsibility (Alaska Airlines, 2018) which also contributes to the positive image creation of an airline.

In sum, it can be said that variation in the claims of sustainable measures reported in the 2018 annual reports and sustainability reports by different European airlines can be explained by macro social factors which mostly contribute to the creation of a good image of an airlines. Through transparent reporting and other trust-building actions within the reports, airlines try to satisfy investors', but also customers' demands with regards to reporting. The business model of airlines does not play a role and also the national sustainability policy documents do not have an impact on the sustainability reporting of airlines. There is variation in sustainability measures between and within European countries in which the airlines are registered. However, this variation is not associated with the attitude and characteristics of the national sustainability policy documents.

As determined before, emissions produced by the aviation industry are growing very fast which highlights the need for alternative solutions that contribute to a more sustainable industry. This research has shown that airlines do report on sustainability measures quite extensively, already explaining alternative solutions and mentioning programs that could help to reach goals set by politics. The consciousness about the importance of environmental protection and sustainability has increased during the last years. Also the demand and pressure of airlines' customers has increased towards demanding more information about an airline's sustainability measures. By creating transparency and by expressing the will to do better in the coming years, airlines address the concerns of their customers. Creating a good image of the own airline depends on the approach followed by a certain airline. Some airlines depict themselves as superior and very environmentally friendly, while other airlines report on failings with which they try to highlight transparency.

References

Abadie, A., Diamond, A., & Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. *Journal of the American statistical Association, 105*(490), 493-505.

Akpur, A., & Zengin, B. (2019). The Concept of Low-Cost Airline Transportation: Definition and Meaning. *Journal of Tourismology, 5*(1), 73-91.

Alaska Airlines (2018). 2018 Report: Creating Lift Through Sustainability. Retrieved from http://www.flysustainably.com/wp-content/uploads/2019/08/AlaskaAirReport-082019_FINAL-1.pdf.

Asquith, J. (2020). The Spread Of Flight Shame In Europe—Is Greta Thunberg The Reason Why?. Forbes. Retrieved from https://www.forbes.com/sites/jamesasquith/2020/01/13/the-spread-of-flight- shame-in-europe-is-greta-thunberg-the-reason-why/#1e398fdb69bd.

atmosfair, (2011). atmosfair Airline Index: Dokumentation der Berechnungsmethode. Berlin. Retrieved from https://www.atmosfair.de/wp-content/uploads/aai-methode-2015-de.pdf.

atmosfair, (2018). atmosfair Airline Index 2018. Retrieved from https://www.atmosfair.de/de/fliegen_und_klima/atmosfair_airline_index/.

Babbie, E. (2013). *The Practice of Social Research*. 14th ed. Boston: Cengage Learning.

Basner, M., Clark, C., Hansell, A., Hileman, J. I., Janssen, S., Shepherd, K., & Sparrow, V. (2017). Aviation noise impacts: state of the science. *Noise & health, 19*(87), 41.

Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal, 9*(2), 27-40.

Bruton, G. D., Ahlstrom, D., & Li, H. L. (2010). Institutional theory and entrepreneurship: where are we now and where do we need to move in the future?. *Entrepreneurship theory and practice, 34(3)*, 421-440.

Comyns, B. (2018). Climate change reporting and multinational companies: Insights from institutional theory and international business. In *Accounting Forum* (Vol. 42, No. 1, pp. 65-77)

Corbin, J. & Strauss, A. (2008). *Basics of Qualitative Research*. Los Angeles, CA: SAGE.

Costanza, R., & Patten, B. C. (1995). Defining and predicting sustainability. *Ecological economics 15(3*), 193-196.

Cowper-Smith, A., & De Grosbois, D. (2011). The adoption of corporate social responsibility practices in the airline industry. *Journal of Sustainable Tourism, 19(1)*, 59-77.

Delbari, S. A., Ng, S. I., Aziz, Y. A., & Ho, J. A. (2016). An investigation of key competitiveness indicators and drivers of full-service airlines using Delphi and AHP techniques. *Journal of Air Transport Management, 52*, 23-34.

De Grosbois, D. (2013). Corporate social performance in tourism. In Holden, A., & Fennell, D. A. (2013). The Routledge Handbook of Tourism and the Environment. London: Routledge.

Delmas, M., & Toffel, M. W. (2004). Stakeholders and environmental management practices: an institutional framework. *Business strategy and the Environment, 13(4)*, 209-222.

Deutsche Welle (2020). Lufthansa and German government agree bailout. Retrieved from https://www.dw.com/en/lufthansa-and-german-government-agree-bailout/a-53557680.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American sociological review*, 147-160.

Di Muzio, T. (2015). Carbon capitalism: *Energy, social reproduction and world order*. Rowman & Littlefield.

Dutch government (2009). White Paper on Dutch Aviation: Competitive and sustainable aviation sector for a robust economy. Ministry of Transport, Public Works and Watermanagement and Ministry of Housing, Spatial Planning and the Environment.

European Commission. (2008). Council Regulation (EC) 1008/2008 of 24 September 2008 on common rules for the operation of air services in the Community [200] OJ L 293/3.

European Commission. (2020a). EU action: Reducing emissions from aviation. Retrieved from https://ec.europa.eu/clima/policies/transport/aviation_en .

European Commission. (2020b). Air: Single European Sky. Retrieved from https://ec.europa.eu/ transport/modes/air/ses_en.

Fernando, S., & Lawrence, S. (2014). A theoretical framework for CSR practices: Integrating legitimacy theory, stakeholder theory and institutional theory. *Journal of Theoretical Accounting Research, 10*(1), 149-178.

Finnair (2018). Sustainability Report 2018.

Fowler, S. J., & Hope, C. (2007). A critical review of sustainable business indices and their impact. *Journal of Business Ethics, 76(3*), 243-252.

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge university press.

Gerring, J. (2012). *Social Science Methodology: A Unified Framework.* Cambridge, UK: Cambridge University Press.

Glen, S. (2016). Statistics How To: Wald Test: Definition, Examples, Running the Test. Retrieved from https://www.statisticshowto.com/wald-test/.

Glen, S. (2020). Statistics How To: Z-Score: Definition, Formula and Calculation. Retrieved from https://www.statisticshowto.com/probability-and-statistics/z-score/#Whatisazscore.

Glover, J. L., Champion, D., Daniels, K. J., & Dainty, A. J. (2014). An Institutional Theory perspective on sustainable practices across the dairy supply chain. *International Journal of Production Economics, 152*, 102-111.

Goodrick, D. (2014). *Comparative case studies: Methodological briefs-impact evaluation no. 9* (No. innpub754).

Government of the Netherlands (2019). Aviation Tax Press Release. Retrieved from https://www.government.nl/latest/news/2019/11/07/aviation-tax-press-release.

Hahn, R., & Kühnen, M. (2013). Determinants of sustainability reporting: a review of results, trends, theory, and opportunities in an expanding field of research. *Journal of cleaner production, 59*, 5-21.

Hambrick, D. C., Finkelstein, S., Cho, T. S., & Jackson, E. M. (2004). Isomorphism in reverse: Institutional theory as an explanation for recent increases in intraindustry heterogeneity and managerial discretion. *Research in organizational behavior, 26*, 307-350.

Herold, D. M. (2018). Demystifying the link between institutional theory and stakeholder theory in sustainability reporting. *Economics, Management and Sustainability, 3*(2), 6-19.

Hotten, R. (2015). Volkswagen: The scandal explained. BBC News. Retrieved from https:// www.bbc.com/news/business-34324772.

IATA. (2019). Carbon offsetting for international aviation. Retrieved from https://www.iata.org/ contentassets/fb745460050c48089597a3ef1b9fe7a8/paper-offsetting-for-aviation.pdf.

IATA. (2020). Sustainable Aviation Fuels (SAF). Retrieved from https://www.iata.org/en/programs/ environment/sustainable-alternative-jet-fuels/.

jetBlue (2020). Sustainability. Environmental Social Governance Reporting: A Brief History. Retrieved from https://www.jetblue.com/sustainability/reporting.

Kılıç, M., Uyar, A., & Karaman, A. S. (2019). What impacts sustainability reporting in the global aviation industry? An institutional perspective. *Transport Policy, 79*, 54-65.

Kohlbacher, F. (2006). The use of qualitative content analysis in case study research. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* (Vol. 7, No. 1, pp. 1-30). Institut für Qualitative Forschung.

Kolk, A. (2010). Trajectories of sustainability reporting by MNCs. *Journal of world business, 45*(4), 367-374.

Kostova, T., Roth, K., & Dacin, M. T. (2008). Institutional theory in the study of multinational corporations: A critique and new directions. *Academy of management review, 33*(4), 994-1006.

Kuo, T. C., Kremer, G. E. O., Phuong, N. T., & Hsu, C. W. (2016). Motivations and barriers for corporate social responsibility reporting: Evidence from the airline industry. *Journal of Air Transport Management, 57*, 184-195.

Levy, D. L., & Kolk, A. (2002). Strategic responses to global climate change: Conflicting pressures on multinationals in the oil industry. *Business and Politics, 4(3)*, 275-300.

Levy, D. L., & Rothenberg, S. (2002). Heterogeneity and change in environmental strategy: technological and political responses to climate change in the global automobile industry.

Organizations, policy and the natural environment: institutional and strategic perspectives, 173-193.

Li, J., & Earnest, J. (2015). Das Beste aus zwei Welten Vorteile einer Kombination von quantitativen und qulitativen Forschungsmethoden. *WZB Mitteilung (150), Dezember*.)

Mayer, R., Ryley, T., & Gillingwater, D. (2012). Passenger perceptions of the green image associated with airlines. *Journal of Transport Geography, 22*, 179-186.

Mayer, R., Ryley, T., & Gillingwater, D. (2014). The role of green marketing: Insights from three airline case studies.

Mayer, R., Ryley, T., & Gillingwater, D. (2015). Eco-positioning of airlines: Perception versus actual performance. *Journal of Air Transport Management, 44*, 82-89.

Mayring, P. (2004). Qualitative content analysis. *A companion to qualitative research*, 1(2004), 159-176.

Mayring, P. (2014). *Qualitative content analysis: theoretical foundation, basic procedures and software solution*.

McLeod, S. A. (2019). What a p-value tells you about statistical significance. Simply Psychology. Retrieved from https://www.simplypsychology.org/p-value.html.

Meyer, D. (2020). Airline bailouts highlight the debate over how green the coronavirus recovery should be. Fortune. Retrieved from https://fortune.com/2020/06/27/airline-bailouts-green-pandemic-recovery/.

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American journal of sociology, 83(2)*, 340-363.

Migdadi, Y. K. A. A. (2018). Identifying the best practices of airlines' green operations strategy: A cross-regional worldwide survey. *Environmental Quality Management, 28(1),* 21-32.

Ministry of Foreign Affairs of the Netherlands (2017). Report on the implementation of the Sustainable Development Goals. United Nations High-Level Political Forum on Sustainable Development 2017.

Miyoshi, C. and Mason, K. J. (2009). The carbon emissions of selected airlines and aircraft types in three geographic markets. *Journal of Air Transport Management, 15*, pp. 138-147.

Mokken, R. J. (2011). *A theory and procedure of scale analysis: With applications in political research* (Vol. 1). Walter de Gruyter.

Ntim, C. G., & Soobaroyen, T. (2013). Corporate governance and performance in socially responsible corporations: New empirical insights from a Neo-Institutional framework. *Corporate Governance: An International Review, 21*(5), 468-494.

Okumus, F., Sengur, F. K., Koseoglu, M. A., & Sengur, Y. (2020). What do companies report for their corporate social responsibility practices on their corporate websites? Evidence from a global airline company. *Journal of Hospitality and Tourism Technology*.

Pieters, J. (2019). Dutch gov't supports EU on new air travel tax. Retrieved from https://nltimes.nl/ 2019/11/08/dutch-govt-supports-eu-new-air-travel-tax.

Rehal, S. (2019). What Makes A Flag Carrier Airline?. Retrieved from https://simpleflying.com/flag-carrier-airline/.

Reinhardt, S. (2012). Das Zusammenspiel von quantitativer und qualitativer Forschung. *Zeitschrift für interpretative Schul- und Unterrichtsforschung*, *1*(1), 231-238.)

Scott, W. R. (2013). Institutions and organizations: Ideas, interests, and identities. Sage Publications.

Stewart, R. (2019). Voluntary National Review of progress towards the Sustainable Development Goals: United Kingdom of Great Britain and Northern Ireland, June 2019.

Stieb, J. A. (2009). Assessing Freeman's stakeholder theory. *Journal of Business Ethics, 87*(3), 401-414.

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of management review, 20*(3), 571-610.

Sulistya, I. A. P., & Ginaya, G. (2020). Corporate Social Responsibility Implementation on Aviation Company: A Case Study in Qatar Airways. *International Journal of Green Tourism Research and Applications, 2*(1), 41-46.

Sustainable Development Solutions Network and Institute for European Environmental Policy (2019). 2019 Europe Sustainable Development Report: Towards a strategy for achieving the Sustainable Development Goals in the European Union. Retrieved from https://www.sdgindex.org/reports/2019-europe-sustainable-development-report/.

Taskinsoy, J., & Uyar, A. (2017). Sustainability reporting in the airline industry: The case of Turkish Airlines. In Sustainability and Management (pp. 100-118). Routledge.

Torenvlied, R., Akkerman, A., Meier, K. J., & O'Toole Jr, L. J. (2013). The multiple dimensions of managerial networking. The American Review of Public Administration, 43(3), 251-272.

Transport & Environment, (2020). Bailout tracker: How much of taxpayers' money are airlines seeking?. Retrieved from https://www.transportenvironment.org/what-we-do/flying-and-climate-change/bailout-tracker.

Van Oers, L. M., Boon, W. P. C., & Moors, E. H. (2018). The creation of legitimacy in grassroots organisations: A study of Dutch community-supported agriculture. *Environmental Innovation and Societal Transitions, 29*, 55-67.

Watts, J. (2019). Interview: Greta Thunberg, schoolgirl climate change warrior: 'Some people can let things go. I can't. The Guardian. Retrieved from https://www.theguardian.com/world/2019/mar/ 11/greta-thunberg-schoolgirl-climate-change-warrior-some-people-can-let-things-go-i-cant.

Whitelegg, J., & Williams, N. (2000). *The plane truth: aviation and the environment.* Ashden Trust.

Wicaksana, N. A., Widarwati, E., & Nurmalasari, N. (2020). ANALYSIS OF CORPORATE SOCIAL RESPONSIBILITY IN FINANCIAL PERFORMANCE (CASE STUDY OF AIRASIA MALAYSIA). *DIMENSIA (Diskursus Ilmu Manajemen STIESA), 17*(1), 39-46.

Yin, R. K. (2003). *Case study research, design and methods* (3rd ed., vol. 5). Thousand Oaks: Sage.

Yin, R.K. (2014). Case study research: Design and Methods. Sage publications.

Appendix A: Quantitative Dataset. Inventory of all European Airlines 2018.

Annex 1 Inventory of all European airlines - Status 2018

Appendix B: Numbering of EU member state countries.

Number	*Country*
1	Austria
2	Belgium
3	Bulgaria
4	Croatia
5	Republic of Cyprus
6	Czech Republic
7	Denmark
8	Estonia
9	Finland
10	France
11	Germany
12	Greece
13	Hungary
14	Ireland
15	Italy
16	Latvia
17	Lithuania
18	Luxembourg
19	Malta
20	Netherlands
21	Poland
22	Portugal
23	Romania
24	Slovakia
25	Slovenia
26	Spain
27	Sweden
28	United Kingdom

Appendix C: Deductive Coding according to ASI measures

Deductive Coding: Alternative Fuel

Case	*Points of discovery (p.)*	*Code*	*Reasons for Code*
A1	.	.	.
A2	p. 4 b	AF2	"a new robust energy policy for substituting fossil fuel for renewable energy sources is imperative"
A3	n/a	n/a	n/a
A4	.	.	.
A5 Airline KLM	p. 24 p. 29 b p. 31 t p. 35 p. 36 p. 37 t	AF1	Very extensive parts on alternative fuel, mentioned multiple times throughout the text (= important for airline)
B1	.	.	.
B2	.	.	.
B3	p. 8 b p. 18 m	AF2	Referring to biofuel, mentioning studies and suppliers
B4	p. 14 m p. 15 t	AF1	Explaining and highlighting Finland's position as " world leader in the continuous use of biofuels"; "A Finnish company has the technology and the capacity to produce a bio- based aviation fuel for continuous use"
B5 Airline Finnair	p. 22 b p. 24 p. 26 m p. 36	AF2	Repeatedly mentioning how good "biofuel" is and that "research results show that the majority of the Finnish public would be willing to make contributions if funds would directly support flying with biofuel"
C1	p. 35 b	AF2	Having a "Plan d'action national pour les énergies renouvelables" in which biofuel is addressed
C2	.	.	.
C3	n/a	n/a	n/a
C4	n/a	n/a	n/a
C5 Airline Luxair	.	.	.
D1	p. 98 p. 103 m	AF3	Address renewable energy "need to increase substantially the share of renewable energy" "The UK has made steady progress increasing the proportion of renewables in the total energy consumption", but wishy-washy
D2	p. 22	AF4	Addressing it, but saying "The "eco towns" initiative of the former Labour government, promoting low carbon emissions, renewable energy (…) was substantially scaled back due to spending cuts"

D3	p. 20 p. 47	AF3	Own chapter about alternative fuel, mentioning a "ACARE Roadmap"
D4	p. 7	AF2	Mentioning biofuel, and "renewable fuels policy involves government regulations to mandate specific renewable fuel percentages in aviation fuel supply"
D5 Airline British Airways	p. 66 p. 89	AF2	"British Airways' partnership with Velocys and Shell in project, to build Europe's first commercial plant to convert household waste to renewable jet fuel"

Deductive Coding: CORSIA

Case	*Points of discovery (p.)*	*Code*	*Reasons for Code*
A1	p. 24 b p. 30 b	COR2	Mentioning “carbon neutral“ Mentioning “reduce CO2 emissions“
A2	p. 25 b	COR3	Insufficient effort: “Dutch government for showing insufficient effort to reduce CO2-emissions“
A3	n/a	n/a	n/a
A4	p. 4 m p. 14 b	COR2	Mentioning two CORSIA aims separately; “Dutch government (…) is striving to achieve sustainable development by (…) focusing on the reduction of CO2 emissions“ “The government would like to encourage aviation stakeholders to realise the ambition of more fuel-efficient (…) air travel“
A5 Airline KLM	p. 19 p. 30 m/b p. 31 t/m p. 139 m p. 140 m	COR1	Addressing all three targets of CORSIA, having a CORSIA- chapter
B1	p. 19 t p. 20 m p. 28 m	COR2	“a large number of parties have committed themselves to (…) making municipalities carbon-neutral“
B2	p. 18 t	COR3	Insufficient effort: “Finland’s greenhouse gas emissions grew by 6% from the previous year, amounting to 58.9 million tons of carbon dioxide“
B3	p. 6 b p. 12 m p. 13 t	COR2	Adressing items of CORSIA
B4	p. 14 m	COR2	Mentioning the reduction of CO2 emission
B5 Airline Finnair	p. 4 m p. 11 b p. 19	COR3	Mentioning carbon-neutral growth, BUT: "CO2 emissions from flight operations increased by 11.7 per cent from the previous year“
C1	p. 32 b	COR2	Addressing the “Plan national en matière d’efficacité énergétique“ (fuel efficiency)
C2	p. 23	COR2	“The country has focused its development aid policy (…)on programs to reduce carbon emissions“
C3	n/a	n/a	n/a
C4	n/a	n/a	n/a
C5 Airline Luxair	p. 26 b	COR2	Highlighting CO2 emissions: “honoured during the 1st Lean & Green Star Awards ceremony for accomplishing their ambitious objective of reducing at least 20% their CO2 emissions in 5 years“
D1	p. 160 b	COR2	Reporting about the reduction of CO2 emission
D2	p. 23 t	COR2	Addressing the reduction of carbon emission
D3	p. 38 p. 49 m p. 50	COR2	Adressing that carbon emissions decreased, carbon neutrality, reduced CO2 emissions

D4	p. 6	COR2	Mentioning CORSIA as a UK's carbon commitments
D5 Airline British Airways	p. 3 p. 51 p. 53 b p. 55 p. 57 m p. 66	COR3	Addressing CORSIA throughout the document several times "We are also working with aircraft manufacturers to improve fuel efficiency" Mentioning concrete plan on how to address CORISA "CORSIA implementation from January, beginning baseline monitoring and preparing our carbon offsetting strategy"

Deductive Coding: Aviation Carbon and Environmental Tax

Case	*Points of discovery (p.)*	*Code*	*Reasons for Code*
A1	.	.	.
A2	.	.	.
A3	n/a	n/a	n/a
A4	.	.	.
A5 Airline KLM	p. 41m p. 139 m/b p. 140 t	AT1	Explaining its rejection of an aviation/ passenger tax
B1	.	.	.
B2	.	.	.
B3	.	.	.
B4	.	.	.
B5 Airline Finnair	.	.	.
C1	.	.	.
C2	.	.	.
C3	n/a	n/a	n/a
C4	n/a	n/a	n/a
C5 Airline Luxair	.	.	.
D1	p. 108	T1	“a tax on the manufacture and import of plastic packaging will be introduced to encourage greater use of recycled plastic and help reduce plastic waste“
D2	.	.	.
D3	.	.	.
D4	.	.	.
D5 Airline British Airways	p. 33 t p. 55 t	AT1	Explaining the rejection of additional taxes in aviation industry "Use of inappropriate tax instruments may lead to competitive distortion including potential carbon leakage and result in increased compliance costs while failing to effectively address aviation emissions“

Deductive Coding: Aircraft Age

Case	*Points of discovery (p.)*	*Code*	*Reasons for Code*
A1	.	.	.
A2	.	.	.
A3	n/a	n/a	n/a
A4	.	.	.
A5 Airline KLM	p. 21 b p. 26 p. 39 t	AA1	Own chapter about fleet renewal
B1	.	.	.
B2	.	.	.
B3	p. 5 t p. 18 t	AA2	“Finland also promotes (…) modernisation of air carrier fleet to reduce environmental impacts“
B4	p. 14 t	AA3	Neutral expression about aircraft age, just mentioning anything about aircraft age
B5 Airline Finnair	p. 4 m p. 19 t p. 26 m p. 38	AA1	Showing that fleet has already been renewed “Finnair operates a modern fleet and has invested from 2015 onward in fuel-efficient next-generation aircraft to maintain its competitive advantage“
C1	.	.	.
C2	.	.	.
C3	n/a	n/a	n/a
C4	n/a	n/a	n/a
C5 Airline Luxair	p. 14 m p. 46 t	AA3	Mentioning growth of fleet, Neutral expression about aircraft age, just mentioning anything about aircraft age
D1	.	.	.
D2	.	.	.
D3	p. 49 t	AA2	“replacing older, less fuel efficient aircraft with newer ones“ "UK airlines have introduced more than 470 new aircraft in 2014“
D4	.	.	.
D5 Airline British Airways	p. 15 m p. 16 p. 18 t p. 20 b/t p. 21 b p. 23 p. 35 p. 51 m p. 55 b p. 66 m	AA2	Concrete explanation that more sustainable aircraft were bought “We brought two fuel efficient Airbus A320neos into the fleet“; still aiming to invest in modern fleet; “Our fleet renewal plans will gather pace in 2019, bringing efficiency benefits as well as the chance to increase revenue“; “New aircraft joining our fleets delivered up to 20% lower carbon emissions and a reduction of up to 50% in noise over the aircraft they replaced“

Deductive Coding: Aircraft Design

Case	**Points of discovery (p.)**	**Code**	**Reasons for Code**
A1	p. 27 t	AD2	Mentioning "promoting sustainable innovation investment", "investment in Green innovation"
A2	.	.	.
A3	n/a	n/a	n/a
A4	p. 6 b	AD2	Positive depiction as "leader in the area of environmentally friendly aviation as regards (…) noise nuisance"
A5 Airline KLM	p. 2 m p. 39 t p. 40	AD1	Reporting about concrete measures how to reduce noise, reporting about percentage of reduction of noise pollution
B1	.	.	.
B2	.	.	.
B3	p. 7 b p. 13 t p. 22 m p. 23 t	AD1	Concrete measures how to reduce noise, "engine demonstrators to integrate technologies for low fuel consumption, whilst reducing noise levels"
B4	p. 14 t	AD1	Concrete measures how to reduce aircraft noise with own program "Finavia's noise abatement programmes"
B5 Airline Finnair	p. 21 m p. 23 m	AD1	Concrete measure how to reduce aircraft noise with programs "The use of the continuous descent approach (CDA) also helps reduce flight noise"
C1	.	.	.
C2	.	.	.
C3	n/a	n/a	n/a
C4	n/a	n/a	n/a
C5 Airline Luxair	.	.	.
D1	p. 144	AD3	"Noise and Soundscape Action Plan for Wales sets out plans to tackle noise pollution and improve soundscapes for happier, healthier communities"
D2	.	.	.
D3	p.48 m p. 50	AD3	Addressing "low carbon engine technologies", reduced noise,
D4	.	.	.
D5 Airline British Airways	p. 51 b p. 53 p. 67		"reduction of up to 50% in noise", addressing the aim to reduce noise, "we are proud of the progress that has been made in reducing aircraft noise"

Deductive Coding: Dow Jones Sustainability Index

Case	*Points of discovery (p.)*	*Code*	*Reasons for Code*
A1	.	.	.
A2	.	.	.
A3	n/a	n/a	n/a
A4	.	.	.
A5 Airline KLM	p. 147 m	DJS1	Mentioning the DJS for representing the airline as good "the Group was listed on of the Dow Jones Sustainability Indices (DJSI World and DJSI Europe) and ranked second among the airline industry"
B1	.	.	.
B2	.	.	.
B3	.	.	.
B4	.	.	.
B5 Airline Finnair	.	.	.
C1	.	.	.
C2	.	.	.
C3	n/a	n/a	n/a
C4	n/a	n/a	n/a
C5 Airline Luxair	.	.	.
D1	.	.	.
D2	.	.	.
D3	.	.	.
D4	.	.	.
D5 Airline British Airways	.	.	.

Legend of Cases

A: Netherlands
B: Finland
C: Luxembourg
D: United Kingdom

1: UN Voluntary National Report
2: Sustainability Governance Indicators
3: State Action Plan (ICAO SEP 4: Aviation Strategy
5: Airline

Appendix D: Assigned Codes for the Chosen Airlines and their Countries.

	Case		*Alternative fuel*	*CORSIA*	*Aviation Tax*	*Aircraft Age*	*Aircraft Design*	*Dow Jones Sustainability Index*
National Sustainability Policies	***A1***	***UN Voluntary National Report***	.	COR2	.	.	AD2	.
	A2	***Sustainability Governance Indicators***	AF2	COR3	.	.	.	.
National Sustainability Policies towards the Airline Industry	***A3***	***State Action Plan (ICAO)***	n/a	n/a	n/a	n/a	n/a	n/a
	A4	***Aviation Strategy Airline***	.	COR2	.	.	AD2	.
AIRLINE	***A5***	***KLM***	AF1	COR1	AT1	AA1	AD1	DJS1
National Sustainability Policies	***B1***	***UN Voluntary National Report***	.	COR2	.	.	.	.
	B2	***Sustainability Governance Indicators***	.	COR3	.	.	.	.
National Sustainability Policies towards the Airline Industry	***B3***	***State Action Plan (ICAO)***	AF2	COR2	.	AA2	AD1	.
	B4	***Aviation Strategy Airline***	AF1	COR2	.	AA3	AD1	.
AIRLINE	***B5***	***Finnair***	AF2	COR3	.	AA1	AD1	.
National Sustainability Policies	***C1***	***UN Voluntary National Report***	AF2	COR2	.	.	.	.
	C2	***Sustainability Governance Indicators***	.	COR2	.	.	.	.
National Sustainability Policies towards the Airline Industry	***C3***	***State Action Plan (ICAO)***	n/a	n/a	n/a	n/a	n/a	n/a
	C4	***Aviation Strategy Airline***	n/a	n/a	n/a	n/a	n/a	n/a
AIRLINE	***C5***	***Luxair***	.	COR2	.	AA3	.	.
National Sustainability Policies	***D1***	***UN Voluntary National Report***	AF3	COR2	T1	.	AD3	.

	D2	***Sustainability Governance Indicators***	AF4	COR2	.	.	.	.
National Sustainability Policies towards the Airline Industry	***D3***	***State Action Plan (ICAO)***	AF3	COR2	.	AA2	AD3	.
	D4	***Aviation Strategy Airline***	AF2	COR2	.	.	.	.
AIRLINE	***D5***	***British Airways***	AF2	COR3	AT1	AA2	.	.