

# **SUSTAINABILITY REPORTING OF AIRLINES: PERFORMANCES AND DRIVING FACTORS**

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## **Abstract**

Sustainability reporting is an effectual way for airlines to communicate their sustainability strategies and achievements. In spite of the existence of sustainability reporting guidelines such as GRI, airlines have shown a wide range of performances in reporting quality. To figure out the driving forces behind airlines' sustainability reporting performance, this paper first builds a scoring system for airlines' sustainability reports, with which the top 100 airlines worldwide are evaluated and scored. Then we run regression analysis to gauge the impacts of factors that may have influence on this score, including the size, the nationality, the business model (full-service vs. low-cost), the alliance membership, etc.

**KEYWORDS:** Sustainability Reporting, Airlines, Performances

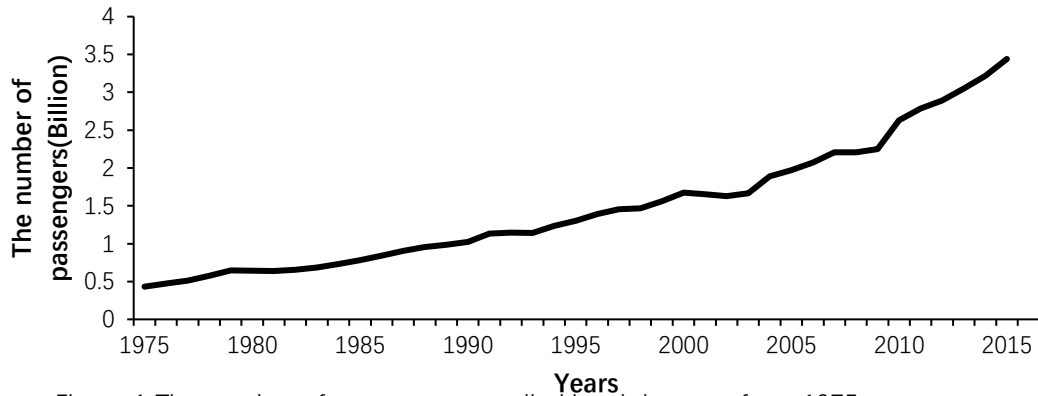
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Sustainability Reporting of Airlines: Performances and Driving Factors

## **Introduction**

Since Kyoto Protocol was signed in 1997, the environmental problem has been becoming more and more crucial in business activity. As one of three main transportation methods, airlines not only contribute a large amount of economic development, but also have an significant impact on the environment. If aviation is considered as an country, its gross domestic product (GDP) will be around 664 billion dollars (ATAG, 2016). Moreover, the demand of air transportation is growing continuously. Figure 1 shows that the passengers carried by air are increasing year by year. In 2015, over 3.441 billion passengers were carried by air transportation, which increased by 6.92% comparing to the number of 2014 (The World Bank, 2016).



*Figure 1.* The number of passengers travelled by air increases from 1975 to 2015

With jet fuel burning during a flight, greenhouse gas (GHG) are discharged. According to Air Transport Action Group (ATAG), 781 million tonnes of CO<sub>2</sub> has been emitted in 2015 worldwide (ATAG, 2016). That amount of emission contributes 2.17% total CO<sub>2</sub> emission globally. Although airlines are starting to renovate their fleets with new technology, reducing GHG emission is still a big challenge. Besides air pollution, aircrafts cause noise problem and energy waste (Schäfer & Waitz, 2014). In the foreseeable future, as the growing of the number of passengers, those different types of pollution produced by aviation will be increased as well. As such, aviation GHG emission should be highlighted in the progress of ameliorating climate change.

On the other hand, airline is a worldwide industry, which is also a main part of supply chain. It links to a wide-range group of stakeholders. Those stakeholders' interests may conflict with each other (Ndolo & Njagi, 2016). Therefore, a suitable strategic goal must be set to make sure all stakeholders' benefits are met. In this circumstance, a clear and transparent sustainability report can be an essential way to present the benefit balance of all stakeholders. Consequently, airlines would love to devote money and resource to pursue an ideal sustainability report which will give benefit back in return.

However, the fact is that the quality of sustainability report from different airlines are like chalk and cheese. Some airlines don't even publish a sustainability report. But the good news is that the number of airlines which publish their sustainability report is increasing (Kuo, Kremer, Phuong, & Hsu, 2016). This phenomenon shows that there must be something behind process of sustainability reporting, which leads to

different result of reporting performance. Furthermore, the sustainability reporting performance still can be improved. Since this report is an effective way to monitor sustainable development of such airlines, it is necessary to focus on those driving factors behind the reporting. After all, the results can provide a guideline for those airlines who want to improve their reporting performance.

In order to have a better understand of those driving factors, top 100 airline companies ranked by Revenue Passenger Kilometres(RPK) in 2015 are selected as sample. RPK is a measure to reflect the revenue volume from passengers, which means the larger the RPK is, the more money is earned by the airline corporation. On the other hand, RPK also reflects the production of those airline companies. Those airlines selected are from North America, Europe, Asia Pacific, Middle East, Latin America and Africa, which basically covers all the aviation markets. Sustainability reports are collected from their website. Based on the methodology provided from the report (PriceWaterhouseCoopers, 2011), those sustainability reports from various airline companies will be given a score separately. This methodology uses elements performed in the reports, such as the description of business profile, to assess the quality of sustainability reporting, which means all those factors are based on the literal context. Those score shows the coverage of those sustainability reports on different aspects. Those pieces of information presented in the reports are based on the real sustainability performance. However, those external factors or real driving factors behind those reports are not shown up, such as the size of airline, their business model and etc.

In this research, those potential factors are determined by a regression on the score of corresponding sustainability reports. At first, those potential factors will be selected based previous researches and experience about those factors which may have possible influence on sustainability reporting performance. All the data about these factors are collected from their website and sustainability reports (or other publications, such as corporate sustainability report or corporate responsibility report). Based on the significance of different possible factors generated by regression, those with higher significance level are regarded as driving factors behind sustainability reporting performance. After all, aspects based on those factors could be emphasized in the future sustainability reporting process.

## Literature Review

The word, sustainable development, has been used more frequently than before. This concept has been generally accepted by different industries, such as manufacturing, mining, transportation and etc(Environment Canada, 2010). The predecessor of sustainability report is corporate social responsibility (CSR), which mainly focus on one corporation's responsibility on unfinancial aspects(Rob, Reza, & Simon, 1995). In industry, some airlines consider sustainability as a part in CSR, while others use sustainability report to replace CSR or even integrate sustainable development with financial report. Actually, sustainability reports are quite similar to CSR. Sustainability is defined as the development that meets the needs of present without damaging the resource of future generations(Brundtland, 1987). However, this definition is too broad and blur, which makes corporations don't know how to achieve this goal in practice. In actual fact, sustainability is basically meet the need of current and future needs of human being. All generations of human beings are equally weighted.

There two goals of sustainability reporting. One is to picture a corporation's expectation of future impact on social, economic and environmental aspects. The other is to present achievements in those three aspects in the last year.(Satterfield et al., 2009). The definitions of sustainability are various by companies. At the very begin, the concept of sustainable development is based on the development of society. However, more and more companies are starting to consider it by taking the corporation as a unit(Steurer, Langer, Konrad, & Martinuzzi, 2005). In a corporation's sustainable development, there should be considered to environmental impact, economic development, social justness and equality(Chow & Chen, 2012). Sustainability reports is the way to show that companies can maintain their competitiveness when they are pursuing achievement in environmental protection, economic growth and social justness and equality.

In the process of sustainability reporting, employees from all different departments are trying to perform how they collaborate to construct a more sustainable biosphere. Behind those words in reports, all

stakeholders are essentially involved. Those stakeholders receive information from the corporation through sustainability report. Hence, they can estimate corporation's performance in sustainable development and determine the sustainability level of this corporation among others(Leszczynska, 2012). In a corporation's perspective, the goal of sustainable development should be consistent with its long-standing objective so that the corporation can achieve an both sustainable and healthy development. Besides, the goal of sustainable development is always changing. Therefore, companies have to pay their attention on it to meet the needs of every stakeholder timely.

Sustainability reporting is to present corporate sustainable situation and strategy to interior and exterior stakeholders. Those sustainable pictures cover information in environmental, economic and social aspects(Heemskerk, Pistorio, & Scicluna, 2003). In other words, sustainability reporting is to demonstrate a corporation's achievement in sustainability. However, definitions from different researchers are various. Sustainability reporting is an annual assessment about a corporation's economic, environmental and social implementation(Dissanayake, Tilt, & Xydias-Lobo, 2016). At the same time, its also a tactical statement affecting environment, economy and society, which declares the tasks, chances and concerns in the sustainable development(Geng, Liu, & Zhu, 2017).

The corporate reporting progression began in the 1930s, and the sustainability report was considered began in the 1970s. Then from the 1980s to the mid-1990s, the corporate reports were focusing on environmental reporting. The concept of triple bottom line(TBL) was presented in 1997. Different from the previous theory which only consider sustainable development in economic aspects, the new TBL also took environment and society into consideration(Elkington, 1997). In 1990s, sustainability reporting had been becoming a way to balance the influence among environment protection, financial growth and community concern. When it came to 2000s, sustainability reporting had started to replace CSR(Hahn & Kühnen, 2013). As companies' continuous attention on sustainability reporting, it has come to be an indispensable part of commercial plan.

Since sustainability reports is a method for airline corporations to communicate with other stakeholders,

a mature standard is necessary. Actually, there are several different guidelines for companies to choose, such as ISO 2600. Although these guidelines can provide a clear and neat construction to airline companies, Global Reporting Initiative Guideline is the one most airlines companies interested in. This was issued in 1999 to help corporations to construct an exhaustive and clear sustainability report, which was trying to create a standard for corporations worldwide and improve their sustainability reporting performance. The last version of GRI Guideline is GRI G3.1, which is published in 2011. It is such an instruction that if corporations can follow it thoroughly, the sustainability reporting performance will have a great improvement(Fonseca, McAllister, & Fitzpatrick, 2012). Nowadays more and more corporations start to use GRI Guideline as the plate of their sustainability reports, concluding airline corporations.

There are three main respects in sustainability report: reducing GHG emission, creating more economic growth and enhancing relationship with society and other stakeholders. In addition, corporations' impression is based on the perception from public, which leads to challenge to aviation industry(Dray, Scha, & Ben-akiva, 2012). To improve the impression and make aviation industry a green industry, sustainability reports need to present the amount of GHG footprint as a propaganda machine. Besides, improving sustainability performance can increase corporation profitability. The purpose of airline companies to publish sustainability reports is to enhance their image of sustainable development, such as environment protection.

Presently, researches about sustainability reporting performance is rare. Most of researches is focused on how to reduce cost and create more benefits for airline companies. Previous studies about sustainability reporting concentrated on the sustainability reporting of a specific area or countries(Delbard, 2008). Therefore, to have a much more broader view of reporting performance, all those airlines ranked by RPK is included in this research. On the other hand, researches are mainly focused on issues or topics about how to offset or reduce GHG emission and etc(Johnson & Gonzalez, 2013). However, those driving factors behind sustainability reporting performance should be paid attestation. Those factors may don't have direct influence on reporting activity. Since there are various sustainability reports in different qualities in the

aviation industry, those factors should be found out to analysis why those factors have influence on it, and how can they affect reporting behavior. Therefore, we need more attention to find out what is the driving factors behind sustainability reporting performance. In this article, research is divided into two part. At first, sustainability reports are collected from different airline companies. Those reports will be scored in the next step based on the scoring system by PricewaterhouseCoopers. Those scores will be used to in the second step to find out driving factors behind reporting performance.

## **Methodology**

### **Sample**

The final goal of this research is to find out those driving factors, which can provide direction of future research. Therefore, sample selected in this research should meet the need of generalizability. In an ideal situation, the results of research should reflect the rule of a real world without any limitations. However, there are around 5000 airlines in the world. Considering the cost and time, it is not possible to achieve all those airline corporations. Since the idea of this research is to score reporting performance and find driving factors, top 100 airlines ranked by RPK are selected as the sample. There are several reasons to do that. First, those corporations are representative. RPK is a corporations' profitability, which means this ranking can be considered as their ranks on financial performance. While those corporations have a higher profitability, the likelihood to spend money on sustainability reporting will be higher. On the other hand, those airlines can be regarded as standard in the industry. Second, this list is a worldwide ranking. There are five main airline market in the world: North America, Europe, Asia Pacific, Middle East, Latin America and Africa. This is also a variable in following research because the degrees of economic development in different regions are different. A wide coverage can be eliminated.

### **Reporting performance scoring**

While browsing websites of those airlines, we noticed that the progress of sustainability reports from

different corporations are different. To make sure all those reports are in the same period, reports selected are from 2014-2015. According to the methodology by PricewaterhouseCooper, the scoring system focus on these 10 aspects:

- (1) Corporation Profile: The completeness of the corporation's basic information in the sustainability report, such as corporation structure, actions, etc.
- (2) Strategy and plan: The completeness of description of their sustainability strategy and the degree of integration to the whole picture of such corporation.
- (3) Governance structure and management method: Describe the participation extent of different governance bodies, the system of sustainability developing and how to ensure the policy is effectively implemented.
- (4) Outcome: The completeness of corporations' influence reporting in economic, environmental and social aspects.
- (5) Corporate social reporting principles: The use of sustainability reporting standards or guidelines, the definition of reporting scope, and the measurement and evaluation methods.
- (6) Relevance of the evaluation factors: To what extent the content of reports matches users' expectation, such as GHG emission, RPK and etc.
- (7) Reporting Transparency: Focus on the structure of report and the definition of key factors.
- (8) Report Reliability: Focus on the external validity of the report.
- (9) Stakeholder Engagement: A discussion of the definition of stakeholders and to what extent those stakeholders involve in the discussion.
- (10) Context Coherence: Focus on the suitability of the report for the overall industry, economic situation, the corporation's strategy, etc.

The score range of above factors are ranged from 0 to 10, which 0 is for no data and 10 is for a perfect description. If a report reveal all those data mentioned above, then its score is 100. And for different scores,



those sustainability reports are divided into following categories.

Table 1

*Categorize sustainability reports based on score*

Score	Category
0-20	Insufficient
21-40	Sufficient
41-60	Average
61-80	Good
81-100	Outstanding

Limited by article length, only 10 airlines will be shown as example in this article. Those 10 airlines are Qatar Airways, Singapore Airlines, Cathay Pacific, Turkish Airlines, Emirates, Etihad Airways, ANAs (All Nippon Airways), Garuda Indonesia, EVA Air and Qantas Airways. Since those 10 airlines are randomly chosen from the top 100, they only cover the market of Asia-Pacific and Middle-East. Besides, 10-airlines sample has other bias problems. Because driving factors need to be determined by regression modal, those bias problems remain unclear for now. But in the 100-airline version, those problems will be solved in some extent.

For every factor mentioned above, they all have sub-factors in order to eliminate the bias caused by the subjective evaluation. That's because if the range is just simply from 0 to 10, different person may have different opinion to such sustainability performance. Some one may think this one is good enough, which should be given an 8. At the same time, another person may think this report is good but not deserve an 8, which should be given a 7. As sub-factors are added, a range from 0 to 2, which 0 is for no data and 2 is for perfect description. And 1 is for those between no data and perfect description, which may need more details to improve its reporting. Therefore, this method can blur the influence from a person's subjective. For example, in the Corporation Profile section, there are five sub-factors with 2 points for every sub-factor. They are company structure, activities, brands, countries it operations and contact information. Table 2 is

the result of scoring.

Table 2

*Corporation Profile score*

<b>Name of Airline</b>	<b>Company structure</b>	<b>Activities</b>	<b>Brands</b>	<b>Countries</b>	<b>Contact information</b>	<b>Total Score</b>
Qatar Airways	0	2	2	0	0	4
Singapore Airlines	0	2	2	2	2	8
Cathay Pacific	0	2	1	0	0	3
Turkish Airlines	2	2	2	0	2	8
Emirates	0	2	1	2	0	5
Etiihad Airways	0	2	0	0	0	2
ANAs	2	2	2	2	2	10
Garuda Indonesia	2	2	1	2	2	9
EVA Air	2	2	2	2	2	10
Qantas Airways	1	2	2	2	2	9

Based on these scores for sub-factors, the score of this factor is simply added by these numbers. And the final score of those sustainability reports is the add-up of 10 main factors. Although those different main factors should be weighted differently, this score is to measure the performance of sustainability reporting, which means this score focus on the completeness of information. Without a doubt, main factors, like strategy and plan, are more important than the contact information, which can be found in other information source, in the sustainability reporting. That is not the focusing point of this research. Table 3 is the final result of these sustainability reporting performance.

Table 3

*Sustainability reporting performance score*

<b>Name of Airline</b>	<b>2015 Rating By RPK</b>	<b>Total Score</b>
Qatar Airways	1	78
Singapore Airlines	2	81
Cathay Pacific	3	69
Turkish Airlines	4	88
Emirates	5	76

Etihad Airways	6	65
ANAs	7	93
Garuda Indonesia	8	82
EVA Air	9	94
Qantas Airways	10	90

### Sustainability reporting driving factors

Beside those pieces of information from published reports, there are still lots of information remaining behind, which is also quite important to sustainability reporting performance. That information could be critical to determine potential factors for the following regression.

Those potential factors can be basically divided into internal factors and external factors. Therefore, the regression model should be as following:

$$Score = f(internal\ factors) + g(external\ factors)$$

$$f(internal\ factors) = \beta_0 + \sum_{n=1}^{10} \beta_n \times Internal\ factor_n$$

$$f(external\ factors) = \gamma_0 + \sum_{n=1}^{10} \gamma_n \times External\ factor_n$$

Through the regression, those real driving factors will be determined by its significance level. If an potential driving factor is significant, then there must be some relationship between this factor and sustainability reporting performance. Since correlation is not causation, all those factors are generated based on reasonable conjecture.

Since all these factors are determined once database is built, some examples will be added to test and verify its truthfulness.

### Conclusion

As we can notice from the result of regression, the most important factor driving behind sustainability reporting is the input of a certain airline. If an airline company is low cost carrier, then it may even have no sustainability reports. Those tycoons having several airline brands would like to integrate all their

sustainability performance altogether. There may be some tricks in this kind of practice because the real performance of those low-cost brands in their group, which may have a poor sustainability performance, will be averaged by other brands.

Therefore, as a conclusion, full service carrier will have a better reporting performance than those of low cost carrier.

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