

Improving Decision Making With Statistics: A Case of Airbus

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ABSTRACT

This study looked into how statistics can improve decision making in Airbus. It equally determines the types of passenger aircraft operating from Germany, Spain, France, Italy, and the United Kingdom which are 5 of the top aviation markets in Europe. The study adopted both quantitative and qualitative research. Data were gathered from the Eurostat database. Data about passenger airplanes available in Germany, Spain, France, Italy, and the United Kingdom from 2010 - 2019 were extracted from the database site of Eurostat and statistically analysed in this research. The report revealed that there was a decrease in passenger aircraft with 50 seats or less operating in five of the top European aviation markets in 2019 than in 2015 and 2010 respectively. The operation of passenger planes with 51-150 seats was also decreasing in Germany, Spain, France, Italy, and the United Kingdom. However, the operations of passenger aircraft with 150-250 seats and passenger aircraft with more than 250 seats were increased in Europe in 2015 and 2019. From the discussion section of this report, it is apparent that statistics can help Airbus make informed decisions about the type of passenger planes that are operated mostly in the top 5 aviation markets in Europe. Knowledge of the type of passenger aircraft operating mostly in Europe can help the Aircraft manufacturing company know the type of aircraft to produce more and research on making them better and improved. Therefore, the report recommends that Airbus should invest more in producing passenger aircraft with 150-250 seats and passenger aircraft with more than 250 seats. Also, Airbus should sponsor research to find new ways of making passenger aircraft with 150-250 seats and passenger aircraft with more than 250 seats safer and more comfortable. Lastly, Airbus should conduct inferential statistical research to determine the reason lesser passenger planes with less than 50 seats and passenger planes with 51-151 seats were operating in Germany, Spain, France, Italy, and the United Kingdom in 2015 and 2019 respectively.

Keywords: *Decision Making, Statistics, Airbus,*

INTRODUCTION

Statistics is concerned with the collection, analysis, interpretation, and presentation of data (Holmes et al., 2017). Statistics is the science of learning from data which enables stakeholders to make important decisions in business, industry, and public policy

(Batanero and Borovcnik, 2016). Abraham (2007) noted that the utilization of statistics can determine the future of a business. Statistics at the macro level can help in decision-making to improve macroeconomic concepts like Gross Domestic Product (GDP) and Gross National Product (GNP).

Statistics can also guide decision-makers in developing manufacturing and agricultural industries. Statistics in business can help in improving the quality of products and services that are offered by a company (Tahir, 2019). The company which will be studied in this paper is the Airbus group. Previously known as the European Aeronautic Defense and Space Company, the Airbus group is one of the two largest commercial aircraft manufacturers in the world. Airbus' major competitor is American Boeing (Beers, 2021). Airbus manufactures and sells civilian and military aircraft within and outside Europe. The headquarters of Airbus is at Leiden, Netherlands and the company is broadly divided into three departments which are Airbus Commercial Aircraft which is concerned with the production of commercial airplanes, Airbus defence, and Space which is concerned with the manufacturing of military jets and space equipment and Airbus Helicopter Sas which is concerned with the production of helicopters (Airbus, n.d).

Airbus, which is the largest Aircraft producer in Europe is a public company, controlled the Airbus Board of governance, employs over 130,000 workers across the world (Airbus, n.d). From the company's website, it is obvious that the company takes data seriously because of the specific form of information about the company that is open to readers. Airbus is the choice company for this paper because it is a manufacturing company that cannot afford to invest in producing airplanes that may not be in demand. This paper, therefore, examines how statistics can help Airbus' corporate government make the right decisions to make the company consistently profitable. The statistics which are analysed in this study show the types of passenger planes (based on size and capacity) purchased by five European countries with thriving aviation markets from 2010-2019. The data which is analysed gotten from the database of Eurostat and

the information can help Airbus plan for the future. The first objective of this research is to determine the types of passenger aircraft operating from Germany, Spain, France, Italy, and the United Kingdom which are 5 of the top aviation markets in Europe. The second objective is to examine how analysis of statistical data retrieved from the database of Eurostat can improve decision-making at Airbus. Lastly, the paper will provide recommendations based on the findings of this paper.

LITERATURE REVIEW

Radha and Balaji (2013) noted that statistics play a vital role in developing business strategies. Statistics can help a business figure the right steps the company has taken and also understand trends the company should perform better. Business statistics is so important because investors can be lured to invest in a business if they are shown credible statistics that can help them determine whether they can maximize profit by investing in the venture or not (Smart, 2021). Business statistics is also required by money lenders including Banks to determine the nature and estimate the profitability of a business (Smart, 2021).

Statistics in business also enable a company to plan for the future. It promotes research and encourages learning in a business. Business statistics is crucial because it is a prerequisite for developing a successful business model that can make a company efficient. According to Radha and Balaji (2013), the relevance of statistics in business include but are not limited to : (1) enabling comparison by the measure of central tendency of companies profit and losses in a period ; (2) enhancing decision making by the managers of a business who can determine the correlation of different variables, directly and indirectly, relevant to the business; (3) enabling the board of corporate

governance to estimate costs, fix prices and market the products and services of the business; (4) enabling the business executive to establish relationships between causes and effects in the area of supply and demand and (5) predicting trends, value, and success of product which is released into the market.

Bianca (2019) opined that statistics is important in managing performance in a business. This means that statistics can help a firm understand how it performs, why it is performing the way it performs, and how it can improve its performance. Yiga (2017) also confirmed that statistics in business improve performance management and eases evaluation. Statistics in business also enable a business to make a profitable comparison between alternatives. Business statistics aid research and development in a company because it provides a company with relevant data on how to improve their products and services to meet consumers' tastes (Yiga, 2017). Other benefits of statistics to businesses according to Yiga (2017) are that statistics help businesses plan for long-term expansion, promote strategic advertisement, project future events and collect factual data that will aid in the development of the business.

RESEARCH METHODOLOGY

A research design is a method for gathering, analysing, interpreting, and presenting data in research investigations(Creswell & Plano Clark 2007). This research is a mixed methods research. A mixed methods research makes use of both qualitative and quantitative data to conclude a study (Burke-Johnson et al., 2007). This research adopted both qualitative and quantitative methods to examine how statistics can improve decision-making in Airbus.The setting for this study which aims to examine how statistics can improve decision-making in Airbus is set in Europe. The particular European countries include Germany,

Spain, France, Italy, and the United Kingdom. The five countries were chosen because Mordi Intelligence (2021) forecasts that the United Kingdom, Spain, Germany, France, and Italy will remain top of the aviation market in Europe from 2021 -2026.

The tool used for data collection in this study is the Eurostat database. Data about passenger airplanes available in Germany, Spain, France, Italy, and the United Kingdom from 2010 - 2019 were extracted from the database site of Eurostat and statistically analysed in this research.The descriptive statistics method is used for this study to statistically describe, aggregate, and present the variables of interest or associations between these variables. The mean and standard deviation of the variables are the descriptive statistics tools used to examine the number of passenger airplanes in the European countries of interest between 2010 and 2019.

RESULT AND DISCUSSIONS

RESULT

The statistical software which is used for data analysis is calculating the mean and standard in this study is SSPS (version 20). The univariate analysis will be used to describe the study variables.

Table 1: showing Mean and Standard Deviation of all Passenger Aircrafts operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015 and 2019

Year	N	Minimum	Maximum	Mean	Std. Deviation
2010	5.00	269.00	811.00	03.4000	229.97130
2015	5.00	179.00	855.00	484.4000	264.76933
2019	5.00	176.00	837.00	493.4000	243.40357

Table 1 shows the distribution of all passenger aircraft operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015, and 2019. From Table 1, the information shows that more

passenger aircraft were operating in Germany, Spain, France, Italy, and the United Kingdom in 2010 (M= 503.4000; SD =229.97130) than in 2015 (M= 484.4000; SD= 264.76933). However, there was an increase in the number of passenger aircraft operating in Germany, Spain, France, Italy, and the United Kingdom in 2019 (M= 493.4000; SD=243.40357).

Table 2: showing Mean and Standard Deviation of Passenger Aircraft with 50 or fewer seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015 and 2019

Year	N	Minimum	Maximum	Mean	Std. Deviation
2010	5.00	5.00	97.00	44.2000	39.56261
2015	5.00	1.00	90.00	35.4000	36.98378
2019	5.00	.00	82.00	30.0000	34.11012

Table 2 shows the distribution of passenger aircraft with 50 or fewer seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015, and 2019. From Table 2, the information shows that more passenger aircraft with 50 or fewer seats were operating in Germany, Spain, France, Italy, and the United Kingdom in 2010 (M= 44.2000; SD =39.56261) than in 2015 (M= 35.4000; SD=36.98378). There was a further reduction in passenger aircraft with 50 or fewer seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2019 (M= 30.0000; SD= 34.11012).

Table 3: showing Mean and Standard Deviation of Passenger Aircraft with 51-150 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015 and 2019

Year	N	Minimum	Maximum	Mean	Std. Deviation
2010	5.00	68.00	264.00	141.4000	75.83403
2015	5.00	69.00	195.00	131.6000	46.64547
2019	5.00	65.00	155.00	123.6000	34.95426

Table 3 shows the distribution of passenger aircraft with 51- 150 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015, and 2019. From Table 3, the information shows that more passenger aircraft with 51-150 seats were operating in Germany, Spain, France, Italy, and the United Kingdom in 2010 (M= 141.4000; SD =75.83403) than in 2015 (M= 131.6000; SD= 46.64547). There was a further reduction in passenger aircraft with 50 or fewer seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2019 (M= 123.6000; SD= 34.95426).

Table 4: showing Mean and Standard Deviation of Passenger Aircraft with 151-250 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015 and 2019

Year	N	Minimum	Maximum	Mean	Std. Deviation
2010	5.00	124.00	420.000	208.20000	126.50771
2015	5.00	76.00	475.000	221.8000	159.99750
2019	5.00	71.00	450.000	228.0000	148.11313

Table 4 shows the distribution of passenger aircraft with 151- 250 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015, and 2019. From Table 4, the information shows that fewer passenger aircraft with 151-250 seats were operating in Germany, Spain, France, Italy, and the United Kingdom in 2010 (M= 208.2000; SD =126.50771) than in 2015 (M= 221.8000 SD= 159.99750). There was a huge increase in passenger aircraft with 151-250 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2019 (M= 228.0000; SD=

148.11313) which was higher than the figures in 2015 and highest in 9 years.

Table 5: showing Mean and Standard Deviation of Passenger Aircraft with more than 250 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015 and 2019

Year	N	Minimum	Maximum	Mean	Std. Deviation
2010	5.00	32.00	138.00	89.0000	48.88763
2015	5.00	33.00	150.00	95.6000	51.50049
2019	5.00	40.00	150.00	105.800	44.92438

Table 5 shows the distribution of passenger aircraft with more than 250 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2010, 2015, and 2019. The information in table 5 shows that there was a huge increase in the number of passenger aircraft with more than 250 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2015 (M=95.6000; SD= 51.50049) from 2010 (M=89.0000; 48.88763). There was a further increase in the number of passenger aircraft with more than 250 seats operating in Germany, Spain, France, Italy, and the United Kingdom in 2019 (M = 105.8000; SD = 44.92438).

DISCUSSION

Airbus is a company specializing in the manufacturing of aircraft. In this study of how statistical data from the database of Eurostat can help the company in decision making, the focus was on passenger planes operating from five of the top aviation markets in Europe. The passenger aircraft were classified based on their capacity and size at the website of Eurostat where the data were retrieved. The aircraft were classified into four groups which include aircraft with 50 seats or less, aircraft with 51- 150 seats, aircraft with 151-250 seats, and aircraft with more than 250 seats. After analysing the data about aircraft operating in European countries, particularly Germany, Spain,

France, Italy, and the United Kingdom, the result from the descriptive statistics showed that total passenger aircrafts operating from the five countries decreased in 2015 from 2010 but increased again in 2019.

The results suggest that as years passed, demand for small passenger aircraft (passenger aircraft with 50 seats or less) and medium-sized passenger aircraft (passenger aircraft with 51-150 seats) was decreasing. Demand for small and medium-sized passenger aircraft decreased in 2015 and further decreased in 2019. However, the demand for large-sized passenger aircraft (passenger aircraft with 151-250 seats and passenger aircraft with more than 250) was increasing. The result of the study can positively impact decision-making in Airbus. Statistics from other sources show that more people in Europe including the 5 of the top aviation markets in Europe are patronizing air transportation. The figures of the who travel by air in Germany, Spain, France, Italy, and the United Kingdom have consistently increased within the last decade. The bulk of passenger airplanes in Europe are commercial aircraft and are operated by airlines that make a profit (Wyman, 2019).

The increase in the use of large passenger aircraft (passenger aircraft with 151-250 seats and passenger aircraft with more than 250 seats) may not be unconnected with the increase in the number of people patronizing air transportation in Europe, particularly Germany, Spain, France, Italy and the United Kingdom which are five of the top aviation markets in Europe. However, the concern of this study was not "why" there were fewer small and medium-sized passenger aircraft operating in Germany, Spain, France, Italy, and the United Kingdom in 2015 and 2019 or "why" there were more large-sized passenger aircraft operating in Germany, Spain, France, Italy and the United Kingdom in 2015 and 2019. The concern of this

study was to discover what type of passenger aircraft by size were operating more in the five of the top aviation markets in Europe.

The result of the study which shows that aircrafts more passengers' seats are operating in Germany, Spain, France, Italy, and the United Kingdom in recent years can help Airbus plan for the future. The result of the study shows that it would be reasonable and most likely profitable for the board of corporate governance and decision-makers at Airbus to invest in research into the production of large-sized passenger aircraft. In the literature review of this paper, some of the benefits of statistics in business were stated to include helping a business make informed decisions, enabling a business plan for the future, enabling a business to understand the demand of consumers, and knowing how to increase supply and make long-term plans.

The result of this study can make the board of Airbus make the reasonable decision of investing in the production of large aircraft. It can also make Airbus understand that increase in large aircraft in operation means that more large passenger aircraft should be manufactured by the company. The study can also make Airbus understand that it is crucial to sponsor research on how to develop even larger and safe aircraft because of the high number of large passenger aircraft operating in the top aviation markets in Europe. A report made by Forbes in 2019 showed that aircraft manufacturers were investing in the production of passenger planes with more seats (Asquith, 2019). The major reason, according to Forbes, which motivated aircraft manufacturers to find ways of increasing aircraft seats was so to enable airlines to make more profits per route and generate more revenue per travel (Asquith, 2019).

CONCLUSION AND RECOMMENDATIONS

When statistics are mentioned, the first thing to think of is retrieving, analysing, and presenting data formally. Statistics is beneficial to governments, institutions, non-profit organisations, and businesses. This paper was concerned with the benefit of statistics in business. The benefits of statistics in business include guided decision making, long-term strategic planning, the revelation of consumers' demand and taste, and research for the future. This study analysed data retrieved from the database of Eurostat to determine what type of passenger aircraft (by size/capacity) were operating most in 5 of the top aviation markets in Europe.

The study revealed that there was a decrease in passenger aircraft with 50 seats or less operating in five of the top European aviation markets in 2019 than in 2015 and 2010 respectively. The operation of passenger planes with 51-150 seats was also decreasing in Germany, Spain, France, Italy, and the United Kingdom. However, the operations of passenger aircraft with 150-250 seats and passenger aircraft with more than 250 seats were increased in Europe in 2015 and 2019. From the discussion section of this paper, it is apparent that statistics can help Airbus make informed decisions about the type of passenger planes that are operated mostly in the top 5 aviation markets in Europe. Knowledge of the type of passenger aircraft operating mostly in Europe can help the Aircraft manufacturing company know the type of aircraft to produce more and research on making them better and improved. The following recommendations are made based on the findings of this study:

- i. Airbus should invest more in producing passenger aircraft with 150-250 seats and passenger aircraft with more than 250 seats.

- ii. Airbus should sponsor research to find new ways of making passenger aircraft with 150-250 seats and passenger aircraft with more than 250 seats safer and more comfortable.
- iii. Airbus should conduct inferential statistical research to determine the reason lesser passenger planes with less than 50 seats and passenger planes with 51-151 seats were operating in Germany, Spain, France, Italy, and the United Kingdom in 2015 and 2019 respectively.

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APPENDIX

Below is the link to the data that was analysed in this study:

https://ec.europa.eu/eurostat/databrowser/view/avia_eq_arc_typ/default/table?lang=en