

Research of Customer Satisfaction in Aviation

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Abstract: There has been a drastic increase in the number of people using air as a transport model across the world. Globalization has triggered rapid increase in the international travel which is offered by various airlines which has resulted to competition. This implies that customer satisfaction is key. The research aimed at establishing customer satisfaction in the aviation industry. Data from cross-sectional data from different airlines. The data is obtained from a Brazilian public dataset. The data has been analyzed using SPSS Software regression analysis, descriptive analysis, extraction method, and using ANOVA. According to the analysis, Age, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, seat comfort, cleanliness, food and drinks, Inflight WIFI Service, Inflight entertainment, and baggage handling have a positive R which is an indication that they have a positive relationship with the rating.

Keywords: Flight, Airline, Satisfaction, Regression, Anova.

1. Introduction

The number of people using air transport as the mode of transport has increased significantly over the years. Initially, air transport was used for international travel, however, the aviation industry has evolved and there has been an increase in the number of flights domestically and internationally for pleasure and business. The rapid growth of the aviation industry is majorly attributed to economic globalization which opened borders and openness. Globalization led to the expansion of economic, educational, and tourism activities across the world.

There are numerous airlines offering air transport services. However, some airlines are preferred compared to others based on customer satisfaction. Customer satisfaction is based on getting 'value for your money'. Travelers will always choose airlines that offer quality services based on what they want. There are numerous factors that people consider when selecting the plane that they want to board. Therefore, airlines need to understand the factors that are considered by travelers when choosing airlines. This helps them to tailor their services based on the requirement of the travellers and enable them to understand the market. According to part et al. (2004), the decision of passengers on the choice of airline to use is based on service value (price), service perception, service expectation, the reputation of the airline, and passenger satisfaction. Park et al. (2014) stated that customer satisfaction determines whether the customer will use the plane again or not.

The airline industry has become competitive due to the presence of numerous airlines. The main points of competition are the prices and services offered. Airlines constantly upgrade the services that they offer to increase customer satisfaction. In a report by Stern (2020), the major determinants of the

market base of an airline are the prices and services offered. Many people prefer to board airlines with lower prices and at the same time, all the people prefer to board planes that offer quality services that make them satisfied. Therefore, this study aims to determine the factors that determine the quality of services and satisfaction of passengers using air transport since if an airline provides quality services it remains uncompetitive, unlike the airlines that provide satisfactory quality services.

2. Literature Review

The airline industry is highly competitive hence it has attracted numerous studies in the past which focused on the competition determinants and quality of services. In a research titled 'Key drivers of airline loyalty', Sarah et al. (2017) established that passengers usually establish personal attraction to airlines if the quality of services offered to them is great and satisfactory. Personal attraction results in airline loyalty making them prefer using a particular airline irrespective of the underlying circumstances like prices. Sarah et al. (2017) stated that customer loyalty is built based on factors such as trust, satisfaction, service recovery, price, and how workers operate. The research also indicated that the growth of a company is based on retained/ loyal customers. An airline that has a high number of passengers loyal to it will grow fast as compared to an airline with low customer loyalty. This is because customer loyalty comes as a result of quality services that are satisfactory to the customers and therefore the customers will not just use the airline again but will also recommend their friends and relatives to use the airline.

The center of competition in the airline industry is the provision of services. According to Pellman and Xu (2011), if the prices of different airlines are the same for a particular route, the customers will prefer the airline with high-quality services. Pellman and Xu (2011) also state that the first consideration for customers will always be the price since many people will choose airlines with lower prices as compared to airlines with higher prices. Chang and Hong (2013) however argued that the quality of services and customer satisfaction supersedes the prices of air tickets. They state that quality services come with prices and therefore airlines with high-quality services tend to have high prices while those with low prices have low-quality services. However, Akamavi et al. (2011) stated that sometimes price does not matter and that customers will go for high-quality services irrespective of price.

According to Sarah et al. (2017), airline customers can be separated into the rich and the middle class. In their research, they stated that rich customers will always go quality instead of price while the middle class who are mostly board economy class tend to consider ticket price before quality. The research by Sarah et al. (2017) provided insight into the behavior and financial spending of rich and middle-income earners when choosing airlines and their level of expectation of the quality of services.

Fourrie and Lubbe (2016) conducted a study to determine the factors that contribute to the satisfaction of customers before and after boarding a plane for South African Airlines. The research was aimed at understanding the factors that Business travelers in South Africa consider before they book a flight ticket. In their research, they surveyed using a questionnaire at the Johannesburg International airport in 2016 and used the data to make conclusions. The structured questionnaires were issued to passengers who had arrived at the airport from other airports and the travelers who were waiting to board their planes. Their research separated local travelers and international travelers on one side and the type of airlines that they were using which were low-cost or full-service. The goal of their research was to determine the factors that make air transport satisfactory for a different group of travelers. The results of the study identified the factors that contribute to quality services and satisfaction to travelers including; Flight delay, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, gate location, seat comfort, cleanliness, food and drinks, leg-room service, in-flight WIFI, and in-flight entertainment. The results

of the study were similar to the study conducted in Brazil by Evangelho et al. (2005) and the one conducted at Heathrow Airport, the UK by Mason (2011).

2.1. Determination of Airlines Customer Satisfaction

This research uses the evidence obtained from the research by Fourrie and Lubbe (2016) in the determination of satisfaction ratings by customers. The satisfaction rating parameters include; Flight distance, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, gate location, seat comfort, cleanliness, food and drinks, leg-room service, in-flight WIFI, and in-flight entertainment. There is no other study that uses this parameter apart from Fourrie and Lubbe (2016). However, the research by Fourrie and Lubbe focuses on the South African market only. It is acknowledgeable that other research focused on customer satisfaction and quality of services in the aviation industry. The previous researches are mentioned in this research since they are used in formulating the research objectives and the variables to be used in this research.

2.2. Research Objectives

- Determination of factors that influence customer satisfaction in flight.
- Determination of how factor analysis can be used to reduce the dimension of variables.
- Determination of the predicted performance and how factor analysis can be used.
- Determining the level of dissatisfaction of travelers in the airlines.

2.3. Research Questions

- What factors can significantly influence customer satisfaction on a flight?
- How to use factor analysis to reduce dimensions for variables?
- What is the predicted performance, and how to use factors after dimension reduction to predict by logistic regression?
- What is the level of dissatisfaction of travelers with the airlines?

3. Research Methodology

3.1. Type and Source of Data

The research uses cross-sectional data from different airlines. The data is obtained from a Brazilian public dataset. The dataset includes information from different airports in Brazil ranging from low-cost carriers and full-service carriers. The data is based on raw information collected from travelers and through published reviews. The idea behind the data is that passengers like to give reviews based on the quality of services offered by an airline and their satisfaction. Therefore the Brazilian public dataset provides all the information based on the review of the travelers.

The ratings are based on different services such as flight delay, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, gate location, seat comfort, cleanliness, food and drinks, leg-room service, in-flight WIFI, and in-flight entertainment. The rating is based on individual factors. The rating ranges from 1 to 5 where 1 is the lowest rate while 5 is the highest rate.

The data is also based on the gender and age of travelers since traveling is not preserved only for a particular age group. The data contains a review of 2999 travelers who provided a review of airlines based on the set factors. The aim of this research is therefore to analyze the data and obtain a conclusion based on customer satisfaction. As noted before, this research uses cross-sectional data.

3.2. Variable Description

Satisfaction is the dependent variable in this research since it is the one that is affected by the quality of services. The ratings of variables ranging from 0 to 5 where 0 is low quality while 5 is the highest quality. The rating of an airline helps travelers choose the airline with better quality than the rest. The data also shows the level at which the travelers are dissatisfied with the services of a particular airline. The information is important since it enables the airlines to understand the areas that they need to improve in the services that they provide Akamavi et al. (2011). The variables include; Flight distance, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, gate location, seat comfort, cleanliness, food and drinks, leg-room service, in-flight WIFI, and in-flight entertainment.

3.3. Figures and Tables

3.3.1. Statistical Description

The following is the statistical description of the variables analyzed:

Table 1: Statistical Description.

	Mean	Std. Deviation	N
Rating	4.2583	1.44809	2999
Age	41.15	.85172	2999
Flight distance	1103.15	.79005	2999
Departure delay	3.1179	.75045	2999
Arrival delay	3.7292	.78154	2999
Departure and Arrival Time Convenience	3.5311	.72857	2999
Ease of online booking	3.6252	.71572	2999
Check-in service	3.5217	.69327	2999
Online boarding	3.4194	.62651	2999
Gate location	3.3151	.65741	2999
On board service	3.3279	.59341	2999
Seat comfort	3.1573	.53715	2999
Leg-room service	3.5236	.64291	2999
Cleanliness	2.9712	.75342	2999
Food and drinks	2.5337	.54851	2999
In-flight WIFI services	3.2174	.71834	2999
In-flight entertainment	3.1826	.61739	2999
Baggage handling	3.0423	.61739	2999

Table 1 presents the descriptive statistic of the data. The total number of travelers who gave a review of airlines is 2999. It can be seen that the mean age of the participants is 41.15years. This is an indication that the majority of the people who travel using airlines are middle-aged people. Based on the ratings, it can be seen that 0.6 of the total population showed that they are satisfied while 0.4% were neutral or dissatisfied. The difference in satisfaction and dissatisfaction of travelers can be caused by boarding different airlines.

3.4. Regression Result

SPSS was used in regression analysis.

Table 2: Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.414 ^a	.171	.102	.42460	.171	2.478	3

Table 3: Coefficientsa.

Model	Unstandardized	Coefficients	Standardized	t	Sig.
	B	Std. Error	Beta		
(Rating)	2.699	.586		4.608	.000
Age	.291	.207	.292	1.404	.169
Flight distance	-.017	.155	-.021	-.109	.014
Departure delay	.251	.159	.161	1.215	.005
Departure and arrival time convenience	.231	.128	.138	0.954	.001
Ease of online booking	.192	.165	.176	1.339	.006
Check in service	.091	.195	.192	.852	.016
Online boarding	.271	.129	.136	1.528	.012
Gate location	-.052	.182	-.042	-.042	.162
On-board service	-.129	.217	-.122	1.278	.051
Seat comfort	.351	.254	.347	.853	.002
Leg-room service	-.028	.274	-.026	.975	.173
Cleanliness	.196	.159	.162	.921	.005
Food and drinks	.275	.276	.283	.127	.001
Inflight WIFI Service	.192	.153	.163	.953	.045
In-flight entertainment	.219	.162	.179	.901	.152
Baggage handling	.139	.150	.181	.925	.361

The regression analysis indicates the relationship between the satisfaction variables and the rating. The value of R is .414 which is an indication that all the variables in the model have a significant relationship with the rating.

The coefficients of this model present the relationship between the satisfaction variables and the rating. Based on the output, it can be seen that Age, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, seat comfort, cleanliness, food and drinks, Inflight WIFI Service, Inflight entertainment, and baggage handling have a positive R which is an indication that they have a positive relationship with the rating. This also means that any increase in the quality of the variables increases the satisfaction of travelers while their decrease decreases the satisfaction of travelers. However, Flight distance, leg-room service, gate location, and onboard service do not affect rating highly since they have a negative value.

Table 4: Extraction Method.

Model	Communalities	
	Initial	Extraction
Age	1.00	.421
Flight distance	1.00	.682
Departure delay	1.00	.782
Departure and arrival time convenience	1.00	.702
Ease of online booking	1.00	.488
Check-in service	1.00	.468
Online boarding	1.00	.640
Gate location	1.00	.644
On-board service	1.00	.634
Seat comfort	1.00	.872
Leg-room service	1.00	.505
Cleanliness	1.00	.705
Food and drinks	1.00	.871
Inflight WIFI Service	1.00	.621
In-flight entertainment	1.00	.721
Baggage handling	1.00	.829

The extraction method provides the strength of the relationship between satisfaction variables and customer satisfaction. Based on the extraction analysis, it can be seen that Food and drinks and seat comfort have the strongest relationship with customer ratings as compared to other variables.

- a) Dependent Variable: Rating
- b) Predictors: flight delay, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, gate location, seat comfort, cleanliness, food and drinks, legroom service, in-flight WIFI, and in-flight entertainment.

Table 5: ANOVA.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.340	3	.447	2.478	0.047 ^b
	Residual	6.490	36	.180		
	Total	7.831	39			

4. Results and Discussion

The research aimed at determining the factors that affect the satisfaction of travelers when using airplanes. The data for the research has been extracted from the Brazilian public dataset. The data has been analyzed using SPSS Software regression analysis, descriptive analysis, extraction method, and using ANOVA. The research and analysis have been done based on the findings in the literature review. The main objective of the study has been achieved. Factor analysis has been used to reduce the number of factors from a huge number of variables. According to factor analysis, seat comfort is the variable with the highest rating for customer satisfaction as compared to other variables.

The regression table presents the relationship between the dependent variables and independent variables. According to the analysis, it can be seen that Age, departure delay, departure and arrival time convenience, ease of online booking, check-in service, online boarding, seat comfort, cleanliness, food and drinks, Inflight WIFI Service, Inflight entertainment, and baggage handling have a positive R which is an indication that they have a positive relationship with the rating. This also means that any increase in the quality of the variables increases the satisfaction of travelers while their decrease decreases the satisfaction of travelers. However, Flight distance, leg-room service, gate location, and onboard service do not affect rating highly since they have a negative value.

The extraction method shows that the main factor that affects the satisfaction of customers in airplanes is food and drinks, departure and arrival time convenience, seat comfort, and baggage handling respectively. It also indicates that flight distance and Inflight WIFI Service affect the satisfactory of customers the least.

The Sig. value of the ANOVA analysis is 0.047 which is an indication that the model is statistically significant.

5. Conclusion

The purpose of this research was to determine the factors that affect customer satisfactory in aviation industry. The aim of the airline industry is to ensure that the passengers get quality services before they board the plane and on board the planes. In every business the customer is always right hence in the aviation industry the airlines have to maintain quality services that satisfy the passengers to attract them again or recommend them to their friends and relatives. The customer rating has been used to represent the customer satisfaction based on different services offered by the airlines.

This research helps to understand the level of satisfaction of passengers and provides the most important factors that affect customer satisfaction. Therefore, airlines should understand all the factors that affect customer satisfaction as mentioned in this research and ensure that they provide

services that satisfy the customers. The research has confirmed that the factors that affect customer satisfaction are that departure delay, departure and arrival time convenience, ease of online booking, check-in service, online-boarding, seat comfort, cleanliness, food and drinks, Inflight WIFI Service, Inflight entertainment and baggage, handling Flight distance, leg-room service, gate location and onboard service.

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