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## RESEARCH ARTICLE

### EMPIRICAL ANALYSIS OF OPERATIONAL CHALLENGES OF NIGERIAN AIRLINES AND PASSENGER'S SELECTION CRITERIA

**\*Dosunmu, Victor Ayodele**

Department of Transport Management, Faculty Management Sciences, Ladoke Akintola University of Technology, PMB 4000, Ogbomoso, Oyo State

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#### ABSTRACT

This paper x-rayed the aviation industry in Nigeria with a view to examining the operational challenges of the airlines and to harness the gap with the criteria used by the passengers to select the airlines. This will ultimately provide an insight for the airline operators on how best to strategize in maximizing profits through customer satisfaction in a competitive industry. It also analyzed the various factors considered by air travelers for selecting a particular airline with a view to understanding operational principles used by the airlines to overcome daily operational challenges. Cost, safety record of aircraft, timeliness of flight, in-flight service and skill of personnel used by airlines were variables used for collected data from randomly selected experienced travelers to assess the preference of travelers in airline selection. Multiple regression analysis was used to analyze the collected data. Descriptive analysis was used to determine level of contributions of factors enhancing operational performance of an airline. Result concluded that, decrease in airline ticket price is one of the strongest factors in passenger's selection criteria. However, as timeliness of flight and perceived safety records increases; the more the increase in passengers for such airline.

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## INTRODUCTION

The initial development of air transportation took place in the 1920s and 1930s, and then it was not for commercial reasons (Graham, 1995). It was seen as a means of providing a national air mail service within (US) and of establishing long-haul air services to colonies and dependencies in (UK and France). Thereafter, airline companies were set up to provide these national goals, a trend that continued in the post-colonial period of the 1950s to the 1970s, which led to the establishments of many African, Asian and Caribbean airline companies while reserving them for specific markets and for specific routes. There is no transport organization that can operate profitably unless there is a demand for its services and the estimation of expected future demands is a key element in planning such transport operations. Transport is a service rarely in demand for its own characteristics and demand for public transport, road freight facilities or airline services are usually derived for the purpose of some other functions (Cole, 1998). Globally, prior to the era of privatization, commercialization or deregulation, airline business was a bit stable and even; fleet planning decisions were easier.

**\*Corresponding author:** Dosunmu, Victor Ayodele,  
Department of Transport Management, Faculty Management Sciences, Ladoke Akintola University of Technology, PMB 4000, Ogbomoso, Oyo State.

The cost of running air transport business can be predicted in those days with degree of confidence. There can be guarantee that lenders were sure that loans would be paid promptly. The funding of airline services was monitored with highly level of orderliness by the authorities concerned. In this case, the airlines were able to buy new aircraft despite high prices. The efficiency and operational performance of the engine, avionic cockpits and improved maintenance ability of these aircrafts make them seemed irresistible. The challenge of the industry began with the forays of people who are not experts in the industry and their attempt to run multi-million dollar aviation businesses without these specialized knowledge and skill has been the root cause of the chain of collapses in the industry throughout Africa (Kalu, 2015). Karen and Army (2011) argued that, optimal schedules are often disrupted during the course of normal operations. They noted that; the national level disruptions due to convective weather often call for the implementation of a ground delay program, a ground stop, or playbook reroute. At a lower level, airline responses to these same disruptions or a higher level disruption response, include flight delays, flight cancellations, the addition of new flight segments, and new flights. The Nigerian airline operators faced serious challenges arising from incessant aircraft crashes and accidents between the year 2003-2006. The demand for air transport was also increased as a result of increase in income

during Obasajo's civilian regime. Transportation by air is one of the challenges that directly affected the Nigerian economy in a negative way over the years. The aviation industry has witnessed several lost of lives and properties worth billions have been abruptly destroyed. Many researchers including (Gooday, 2012) attributed the crashes in Nigeria to inadequacy of qualified meteorologists to forecast the weather condition before the take-off plane and landing. Our so-called airlines operators are not ready to invest on trained pilots and engineers that would oversee all the defects of the aircrafts. It has been a recurring decimal of plane crashes. Some of these airline operators operate with genuine licenses but use old aircraft to convey their passengers to different destinations as one will then wonder the criteria for licensing. The prominent among the factors that are responsible for airplane crashes in Nigeria are lack of proper maintenance/usage of old aircraft, weather condition and lack of skilled workers in the industry. The withdrawal of subvention has been claimed to be responsible for the major reasons the airline charges are increasing. These challenges require governments to enhance regulation of aerospace management, consumer protection and safety of airlines. Lack of aviation experts and skills, high airport taxes and fees, the weak connectivity and restrictions on transit visas and facilities add to the many of impediments affecting Africa's aviation industry (ADB, 2015). The three factors according to (Chinedu, 2015) that have been adduced to these are that Nigerian airlines score very low in on-time performance; which means incessant flights delays and cancellations. Nigerian airlines cannot code-share with their international counterparts because of their poor on-time performance. However, the airlines from their part; accuse government of excessive taxes, harsh operational environment, poor infrastructure and inadequate supply of aviation fuel which comes in relatively high prices.

SDAR (2009) asserted that safety problem is more of pilot capability and safety administration than unsafe aircraft, though air traffic control facilities are admittedly poor mostly at some local airports in Nigeria. Unbelievably, to know that; revenues from airports and air traffic are probably high enough to finance the necessary infrastructures, but are not currently captured by the sector. The aircraft are more efficient for short- to medium-haul distances. Though the accident rates involving older, often Russian-built aircraft is the highest in the world, the portion of the seat kilometers flown in these aircraft on regularly schedules services is now very small. Limiting factors for traffic include the ability to enter or leave the runway via taxiways, the amount of apron space for parking, and the amount of terminal space for processing passengers. This study therefore, x-rayed the aviation industry in Nigeria with a view to examine the operational challenges of the airlines and to harness the gap with the criteria used by the passengers to select the aircraft. This will ultimately provide an insight for the airline operators on how best to strategize in maximizing profits through customer satisfaction in a competitive industry.

## **LITERATURE REVIEW**

The most crucial aspect of airline management according to Well, (1999) is to evaluate decisions on whether to buy new or used aircraft and what type. Apart from this, Meggason (2015) argued that among the challenges plaguing the airline operators include the Bilateral Air Services Agreements (BASA), the multiple designations of routes to foreign airlines

to operate inside Nigeria, capital flight, and multiple taxations by various regulatory agencies. Also; Nigerian insurance companies lack the financial wherewithal to insure aircraft in the system (Akah, 2013). The regulations governing airline operations are not followed to the letter when the incident they are to cater for arise in most developing economies. For instance, most airlines are having difficulties as a result of inability to understand the operational procedures and required technicalities involved in airline operations. Arising from Warsaw Convention is the balance of the rights of an airline with those of its passengers and in general terms, the carrier airline is liable for death, injury or damage occurring during the carriage by air without proof of cause or liability. There are also set monetary limits on the amount of compensation payable. In some airports, certain quotas of allocation are given to airlines during certain period. Some countries have kicked against flight departure before 7am and after 11pm as it affect their sound sleep (Well, 1999). Although; airline operation is international in nature, majorly the industry operational procedures may warrant political discretion to survive and have one's share in a deregulated economy. The fact has been revealed in that, you may not be licensed to operate unless you are politically influential and same political influence can make you not to operate or function effectively in the industry. Apart from this, to achieve in the industry requires that the management of a particular airline must be on their toe by ensuring they balance service efficiency in relation to safety, reliability, just in time and profitability. Simple as that may sound; every managerial position needs most importantly certain level of discretion for outstanding performance. Well, (2009) found that the determinants, which affect the passengers' choice of a carrier with reference to Canadian exporters, are cost of service, frequency, reputation and transit time. Brooks (1985) indicated that the decisions of the passengers were relied on the airport, delivery time, contract and reliability.

The avionics and aeronautical engineers observed certain operational problems associated with the existing aircraft and found ways of solving them. Notable among their observations was the issues relating to fuel efficiency which can bring about 10% in operating cost reduction especially in the 1970s (Well, 2009). There were situations whereby, single engine were replaced with double, 2-strokes, 4-strokes and multiple engines systems. Part of the aircraft were changed to accommodate new and latest developments in terms of carriage, loading, wings design, lighter weight components and electronic navigation systems (Whyte, 1993). The use of new electronic monitoring devices and navigational aids allow Boeing 757 to be flown by two (2) pilots (Well, 1999). There are aircrafts now with lower noise and emissions. Boeing 757 cockpit replaced mechanical gauges and control systems with video screens and computers. According to (Well, 1999), some aircrafts now are so advanced that the flight control systems begins shortly after take-off, the plane can fly and even land by itself. The major airlines are now rationalizing their routes by dropping low patronage routes and increase movement to high density routes. The major advantage of this is to improve efficiency (load factor and resource utilization which are very important in this competition. Under a code sharing agreement, as noted by (the airline that actually operates the flight (the one providing the plane, the crew and the ground handling service) is called the Operating carrier. The company or companies that sells tickets for that flight but do not actually operate it are called Market carriers.

The term “code sharing” or “code share” was coined in 1989 by Qantas and American Airlines and in 1990, the two firms provided their first code share flights between an array of Australian cities and U.S domestic cities. An airline revises the fare charged as seats are filled. The advent of sophisticated information systems allows an airline to offer seats at various prices, and to continue to vary these offers, as seats are purchased. Generally, leisure travelers are relatively sensitive to fares, but know in advance when they wish to travel and thus lower fares are offered well before a particular flight. As the departure date is approached, fewer cheap seats become available, as the focus is on attracting less price-sensitive business traffic that requires flexibility in its travel planning. The conditions pertaining to a „seat“ can also differ; for example, the ticket may be refundable, it may be upgradeable, or it may be at a particular location on a plane (e.g. a seat at an emergency exit row and prices are adjusted according to these quality factors (OECD, 2008). According to Well (1999) and Ayantoyinbo and Adepoju, (2019) to take decision, airline management needs to consider certain important factors like:

- The price of the aviation fuel
- Availability and price of used aircraft
- Resale value of a particular aircraft
- Price of new aircraft
- Cash flow
- Terms of purchase
- Debt/equity ratio
- Acceptance of issuance of Bonds, Debentures and Stocks
- Availability of money from lenders
- Interest rate
- Route Structure
- Competitive situations
- Strategies to be used
- Labour Cost e.t.c

Managing airline also requires that, the administrators must always and constantly put at the back of their minds the public perception especially the terms of safety. Nowadays, most Nigerian state governors are exploiting aviation by buying fleet of aircrafts into the existing market. Therefore, the increasing number of aircrafts is putting pressure on the revenue, existing staff's job, promoting high level of competition forcing managers to seek for opportunities elsewhere, increase their level of decision making and efficiency (ATAG, 2005). Airlines are typically classified according to ATAG (2005) as scheduled airlines or charter airlines. Scheduled airlines have a predefined flight schedule that is published through designated channels. In this schedule airline service, the airline specifies the markets it flies to and the departure time and capacity of each flight in the schedule. Charter airlines, on the other hand, do not have a predefined schedule and typically operate on a demand basis. Typically each scheduled airline has a predefined network structure. Selecting a network structure is considered one of the major strategic decisions of the airline. Most common network structures include 1) hub-and-spoke, 2) point-to-point, or 3) a combination of both. FAAN (2012) observed that; the followings are the local airlines in Nigeria: Arik Airline, Aero Contractor, Chanchangi, IRS, Overland Airways, Virgin and Bellview, Airpeace, Ibom Air among others. It has been reported that these airlines have one operational challenges or the other in the past.

It is somehow impossible however for airlines no matter how efficient it may be, not to experience operational challenge in the face of uncertain environmental conditions, internet network and human unforeseen circumstantial errors. Again, there are some constraints faced by the airlines which can make their strategies not to work because it may be beyond their control. Such constraints are:

- Facility requirements at the airports
- Runway capacity
- Gate capacity
- Terminal capacity (Parking, ground access, passenger processing and community noise)
- Government regulatory bodies may impose constraints on airline's operating strategies.

Apart from these, there are some other internal constraints that might militate against airline's objectives realities:

- Maintenance facility requirements
- Crew training facilities
- Economic realities of airline's profitability
- Capability of existing man power to implement fleet planning model.

Scheduling flight operations are most affected by the followings:

- Aircraft fuel capacity
- Airport runway length
- Weather
- Air traffic control and routine
- Crew time limit
- Agreements with employee

Airline management had to use keen judgment to fix fares that will generate traffic, discourage existing competition and promote revenue generation that will be capable of eliminating operational and other expenses and reasonable profits (Well, 2009). Principal among factors in airline operations is the load factor. A load factor is the ratio of the total air load acting on the airplane to the gross weight of the airplane (Pilot's Handbook, 2003)

**Ticketing and reservation issues:** Ticketing is a tool for the implementation of a pricing policy with the consideration of operational, commercial and social objectives. The ticketing system is the translation of fares into concrete means of payment (for the passenger) and fare collection (for the operator). Several types of tickets are used in public transport systems (ticket-based price discrimination). In other words, the price depends on the ticket type used. Ticket-based price discrimination is price discrimination in its purest form. It makes virtually no difference to an operator's production costs whether a passenger makes a trip using a single ticket, a carnet or a season ticket. Indeed, it costs the same for the operator to transport a student, an elderly or a passenger paying full fare. The use of differential pricing for such tickets is a way to segment the market and maximise revenue – ‘airline-style pricing’ (Mezghani, 2008). The identified reasons for new development and usage of Global Distribution System by ticketing officers nowadays as follows: 1) Faster System (2) Accuracy (3) Reliability (4) Informative (5) Reservations and cancellations from anywhere to any place.

A researcher in his analysis of "on line ticket booking" maintained that the problem confronting the ticketing officers can be traced to the type of network being used. Depending whether Virtual Private Network (VPN), Host-to-Host among others contributes to the challenges faced by the ticketing officers. Sultra (2008) opined that, the choice of the airlines and the Global Distribution Systems service providers is one of the major challenges a ticketing officer must overcome so as to make accurate and adequate decisions. Sometimes, is not about price, the interlining and intermediate stops on passenger's itinerary is very crucial. Consideration must be given to clients for more patronage and well treated passengers usually get satisfied with the travel agent or the airline. America envisioned a system that could match passengers seats; speed communications among airlines; contain seat availability on all carriers' schedules; print passenger itineraries; and issue boarding passes, with terminals located in the offices of travel agents. Of course, limitations on computer capacity and the avoidance of unnecessary communications costs also entered into that decision (Severin and Nancy, 2013). There are several forms of price discrimination deployed by airlines, but „yield management“ essentially dynamic temporal pricing – is the most potent (Dana, 1998). An airline revises the fare charged as seats are filled. The advent of sophisticated information systems allows an airline to offer seats at various prices, and to continue to vary these offers, as seats are purchased. Generally, leisure travelers are relatively sensitive to fares, but know in advance when they wish to travel and thus lower fares are offered well before a particular flight. As the departure date is approached, fewer cheap seats become available, as the focus is on attracting less price-sensitive business traffic that requires flexibility in its travel planning. The conditions pertaining to a seat“ can also differ; for example, the ticket may be refundable, it may be upgradeable, or it may be at a particular location on a plane (e.g. a seat at an emergency exit row) and prices are adjusted according to these quality factors.

Since the late 1940s, the goals for reservations systems have changed and expanded. At first, the primary incentive was to introduce clerical costs; it soon became apparent that an accurate count of the number and names of passengers for each flight was fundamental to controlling airline operations. Information captured through the reservations process was used to manage passenger service levels and aircraft capacity and to plan for ancillary requirements such as baggage handling, food, and fuel. Over time, however, fare structure grew even more complex with an increasing variety of advanced purchase durations (3,7,14 and 21 days being most common) discounts for low travel demand days or travel times, temporary price promotions, negotiated corporate discounts, upgradeable economy tickets and more recently, web-only, auction-determined and "buyer offer" prices (Belobaba, 1987). Keeler (1972) argued that high fares in conjunction with apparent normal rates of return to capital for airlines suggested that "airline regulation extracts high costs in inefficiency on high-density routes."

## METHODOLOGY

This study was carried out in Nigeria. Nigeria is a country which lies between Latitude 40<sup>N</sup> to 140<sup>N</sup> of the equator and Longitude 30E and 150E of the Greenwich Meridian (Fillani, 2005). The country has about 26 airports. The study administered questionnaires and data collected through

purposive sampling techniques at four major international airports and eight travel agencies in Lagos, Port Harcourt, Kano and Abuja Nigeria. Data were analyzed through multiple regression analysis. The airports are: Muritala Mohammed Airport, Ikeja, Port Harcourt International Airport, Nnamdi Azikiwe International Airport, Abuja and Kano International Airport, Kano. The choice of the airports was based on the fact that they are the most patronized international airports in Nigeria (Chinedu, 2015). The random selection of the traveler of Wakanownow, Gilber Air Travels, Albarika Travels, Golden Travel Ltd, Easy Air Travels Ltd, Sabrina Travels Ltd, Save Landing Air Travels and Easy Abroad Travels Ltd were used for the purpose of this research. The questionnaires were distributed across the airports and the selected travel agencies which 206 were retrieved out of 240 distributed. 160 was distributed to all the travel agencies with 20 per agency and also 20 per the Airport mostly at the safety, operations, marketing, security and personnel departments of the selected airports with 4 questionnaires each.

The following variables were used for the analysis from data collected from the travelers:

Y= Choice of Airline

X<sub>1</sub>= Cost of airline ticket

X<sub>2</sub>= perceived safety records of the airline

X<sub>3</sub>= time of flight

X<sub>4</sub>= in-flight service

X<sub>5</sub>= personnel skills

## RESULTS AND DISCUSSION

The result of this analysis indicated that there is significant relationship between the selected factors (independent variables: Personnel skills, Perceived Safety Records of airline, In-flight service, Time of flight and Cost of airline ticket and dependent variable Choice of airline with the value of R being 0.548. The R<sup>2</sup> is .30 which tells us the combined variables accounted for 30% of factors in airline selection. The remaining 70% may be attributed to taste, passenger's income and reliability among others. Table 1 shows the degree of relationship between dependent and independent variables, R- shows that the correlation between choice of airline and the identified variables (Personnel skills, Perceived Safety Records of airline, In-flight service, Timeliness of flight, Reduction of ticket price) is about 54.8% if converted to percentage. However, R<sup>2</sup> value indicated that; the combined variation accountable for all the independent variables in Carrier selection is just 30%.

This shows that, other factors that are not within the purview of the mentioned factors may still be responsible for passenger's selection criteria. Table 2 shows the Analysis of Variance (ANOVA) with F-ratio of 17.218 @sig <0.05 meaning the model for prediction is good. The indication of this is that the model is fit to the data collected. From table 3 above, it has been revealed that the factor considered most by airline passengers is cost of the airline ticket with the value of 0.362 at p <0.05 level of significance. A unit increase in the reduction of airline ticket price results in 0.362 increase in patronizing the airline. This probably justifies the reason most airlines reduce ticket cost which in the long run results in stiff competition and eventually endanger the business. A unit increase in timeliness of flight by airline also results in 0.236 increase in selecting the airline at p <0.05 level of significance.

**Table 1. Model Summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.548 <sup>a</sup>	.300	.282	1.28120

a. Predictors: (Constant), Personnel skills, Perceived Safety Records of airline, In-flight service, Timeliness of flight, Reduction of ticket price  
Source: Author's computation, (2018)

**Table 2. Analysis of variance**

ANOVA <sup>b</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	141.319	5	28.264	17.218	.000 <sup>a</sup>
	Residual	329.937	201	1.641		
	Total	471.256	206			

a. Predictors: (Constant), Personnel skills, Perceived Safety Records of airline, In-flight service, Timeliness of flight, Reduction of ticket price

b. Dependent Variable: Choice of Airline

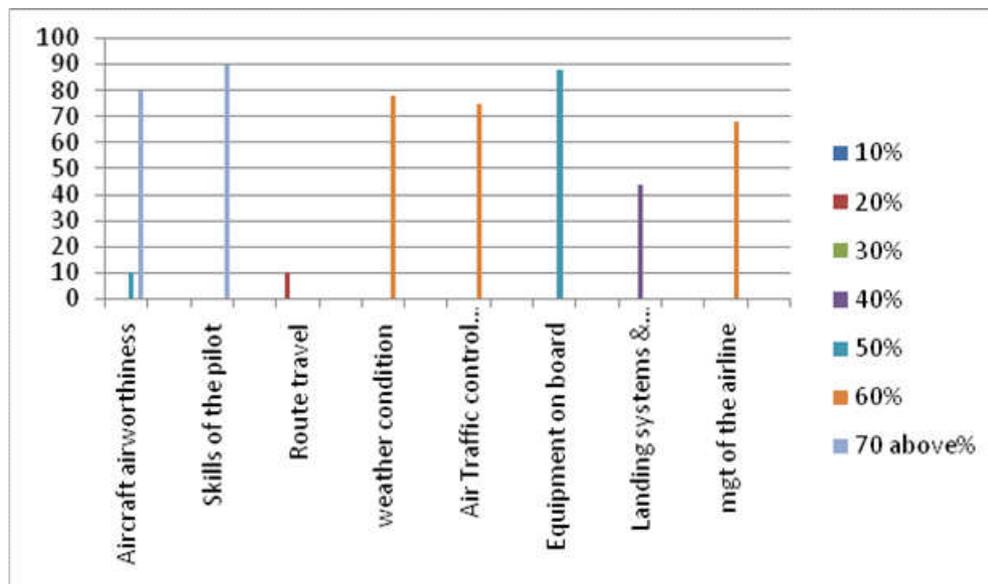
Source: Author's computation, (2018)

**Table 3. Coefficients of data**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.431	.357		4.007	.000
	Reduction of ticket price	.362	.057	.386	6.354	.000
	Perceived Safety Records of airline	.206	.061	.199	3.359	.001
	Timeliness of flight	.236	.063	.228	3.781	.000
	In-flight service	-.163	.059	-.165	-2.771	.004
	Personnel skills	-.168	.065	-.155	-2.583	.011

a. Dependent Variable: Choice of Airline

Source: Author's Computation, (2018)



**Figure 1. Factors to be considered in airline operations Field survey (2018)**

Apart from these two aforementioned factors, passengers' choice of airline is also based on the safety and historical records of the airline. A unit increase in the safety perception of an airline by passengers will attract about 0.206 in the selection of such airline at  $p < 0.05$ . In-flight service and personnel skills were almost considered by travelers with similar values of -0.163 and -0.168 respectively at  $p < 0.005$ . That is, a unit decrease in in-flight service will amount to 0.163 level of reduction in patronage of an airline. And also, a unit decrease in personnel skills will cause the airline to lose passengers by 0.168 level of reduction all at  $p < 0.05$  level of significance.

**Discussion of findings**

The findings from this survey revealed that; price should be the most considerable factor in airline operations to attract more passengers. However, due to the fact that there is stiff competition in the industry; each airline will always attempt to make profit which cannot be made below operational cost incurred. The choices left for airlines are to use cheap labour without compromising the skill and competency, pay lower tariff or surcharges and or use low-fuel consumption aircrafts. It is obvious however, that the last option of using low-fuel consumption aircraft is most suitable considering the fact that other options may not be feasible in this environment though

the cost of initial purchase may be high; it can be gained in the long-run. Other parameters also must be put into consideration simultaneously. The issues related to refund, claims and promotions are not part of the observed variables but can also add to the value of operations and generate more patronage.

**The field survey conducted rated the crucial factors to be considered in airline operations as follows:** Even though all the suggested factors are important in airline operations, the figure 1 above shows that above 70% rated factors should be given higher premium value as their defects or inadequacy can result in serious disaster. In the course of understanding the factors to be considered most in order of their preferences for safe navigation and passenger service enhancement; the figure 1 above was generated from the field survey. The pilot skill, equipment, weather and aircraft worthiness on board an aircraft were rated higher (above 70%). All identified factors are above 50% except route of travel. This is to say that, none of these factors must be considered not important in air travel management.

**Summary, Conclusion and Recommendation:** Although price serves as important factor in selecting an airline, this may lead to unhealthy competition among the airlines if they keep reducing price. The focus can be tailored to reduction of operational costs. The airlines are encouraged to use healthy aircraft so as to reduce maintenance costs. The most important aspect of vehicle utilization is maintenance. And of course in this case aircraft maintenance is often based on spare parts availability. The consideration must be given to the followings in evaluation decisions:

- Spare parts availability
- Technical records keeping of the aircraft
- Aircraft compatibility with rest of the fleet
- Training supports in terms of visual and audio visual aids
- Maintenance cost is also crucial over the expected service years.

Cultivating a good maintenance culture enhances safety perception of airline customers. Again, timeliness of movement in airline scheduling, in-flight service and training of personnel can improve the choice of airline. These are very low at the moment, but when it is considered like price, it may improve the choice of airline. Sultra(2008) said that the database management must be maintained and properly monitored in any ticketing operation for easy remembrance of passengers ticket sold and for records purposes. Airline mergers and the use of Hub and Spoke techniques (i.e lower route to connect another) ensure economies of scale.

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