International Journal of Social Sciences and Scientific Studies
Thesis Vol-1 Issue-1, November 2021
Published by Hillcross Publications
ISSN: 2787-0146

LANGUAGE; ENGLISH

Publication type: Thesis

FRESH INSIGHT ON ECONOMIC AND SOCIOECONOMIC DETERMINANTS OF AIR TRAVEL DEMAND IN NIGERIA

Ezechi Chinda Chijioke

Girne American University (Golden Valley Alsancak Girne Northern Cyprus)

Received; 30/10/2021
Accepted; 20/11/2021
Online Published; 22/11/2021

ARTICLE INFO

Keywords:

Demand
Air Travel
Factors
Effect
Economic Growth
Inflation
Population

ABSTRACT

This study aims to investigate the effect of air travel demand determinant in Nigeria in respect to economics, during the specified period (1980 to 2017) by using a simple linear regression model with two dependent variables and seven independent variables. The unit root test and Co-integration test was observed, which shows there is a long-run relationship running between the selected variables. Ordinary least square (OLS) was estimated. The R- square indicated there is a better fit of the model, while adjusted R-square showed that there is a better improvement of the model both in the first dependent and the second dependent variable. The empirical result reveals that air transport's registered carrier departures worldwide is the most important variable which determines that air travel demand both in first and second results, which showed a positive impact on air travel demand with a significant probability. The result stipulates that a one percent increase in air transport' registered carrier departures worldwide will increase air transport passengers carried. This stipulates that there is a high demand for air transport in Nigerian but the supply was not enough.

INTRODUCTION

Air travel concerning other methods of transportation performs an important role in the economic growth of any nation. The air traveling sector has accomplished high level of development since the last few years, this was as a result of high growth in traveling opportunities and deregulation of movements. As time goes on, we have been witnessing ups and downs as a result of market-driven or political problems which has changed consumer's behavior in respect to traveling. In all, growth of air sector have been seen to have strong effects of which air travel has its own impact on the environment, also on transportation networks and prediction of subsequent demand for air travel, awareness of its discovering elements are a very important ingredient in the creation of policies for transportation Hanly and Dargay(2001). The forecasts for air travel demand in respect to airport shows a high impact on airport plane, like the maestro plan for land-side (waiting rooms, boarding-landing area, etc.) air-side (taxiways, technological devices, runways, and aprons).

Because of the liberalism and inception of the market, an important dimension has been initiated in the ecology of the environment of transportation which generates a wide system of growth in economies that gives a response of it on the web system. (Faizal, 2016). Africa recognize the civil aviation sector as a necessary intermediary of extension and socio-economics. So many outcomes have been made to annulment sectorial development arrangements for aviation and economic problems have promoted difficulty. In 2007, air travel generated 425billion US Dollars, which directly employed more than 5.6 million people worldwide. This direct job includes those pilots and cabin personnel in the air, designing, customer service, security officers, and others on the ground, building and maintaining aircraft, air traffic controllers, and customer service.

All through, air travel has enhanced the standard of life by increasing the quality of health care, education, market, jobs also leisure, and social undertaking (Daw, 2013). It supplies nation-wide network transportation that encourages it to be easier for enhancing tourism and also doing business globally. It also assists in other necessary assisting characters in regional, economic growth, and international. Proper management of the air travel sector is paramount to decide the current and future development within the sector (ATAG, 2007; Well, 2005). These activities include such as investment decision, airport development plans, etc. this plans may not be carried out properly without understanding the level of determinants which is connected with it and the level of demand for the service provided.

The demand for air travel in Nigeria originates from its large size of population which is about two-hundred million, is

located in West Africa and a leading channel of business in West Africa, coupled with the fact that the citizens are willing to leave the country as a result of the up and down economy. They have always been high growth in travel demand because of the economic development of cities in different parts of the regions across the country. A lot of economic activities were seen in regions such as Lagos in the South-west region, Port-Harcourt in the South-South region, and Enugu in the South-East region, Abuja in North-Central and Kano in North-East.

In 2007, passenger traffic airport stood at 8,409,944. And in 2018 it rose to 17,230,438. In 2009, passenger traffic international stood at 3,102,726 and as of 2015, it rose to 4,812,420 which were recorded as the highest passenger traffic international from 2009 till 2017. In 2017, it reduces to 3,936,424 and it was as a result of 77 percent of the citizens that leaves the country never returns. Not only the passenger traffic but also the mail and cargo movement through the air had been on regular demand. To greatly assist the aviation industry, to accommodate or welcome future demand for air transport services in Nigeria, it is important to plan for it.

Statement of Problem

Air travel demand has always been a wanted study, which has been of upgraded interest to government institutions, airports, airlines, and scholars; hence the air travel plays an important parting new world development activity and the feature. The presence of efficient air transport service increases economic transport service, increases economic among countries, and improve the level of competitive by facilitating access to the world market. It also alleviates labor mobility and tourism. Nearly 3.6million passengers in 2015 were carried by the world's airline, and nearly 63million jobs are generated worldwide in the aviation and the tourism sector. More than 9.9million people work directly in the aviation sector, which involves air transport carrying about 0.5percent of the volume of the world shipping trade. It is over 35percent by value (ATAG, 2015) which means that shipping by sea is less value compared to air transport, as transport is majorly used in shipping perishable goods. The air industry transport is a vital engine of global socio-economic growth. It is of greater importance for creating direct and indirect employment, stimulating foreign investment and international trade, economic development, supporting tourism, local business, Economic growth, market liberalization, airport congestion, the growth of low-cost carriers, technological changes, oil prices, and other barriers.

It a visible fact that the Nigeria aviation industry only contributes three percent to the country Gross Domestic Product (GDP), and can equally be upgraded in the nearest future

to seven and nine percent as a result of surplus potentials and the plentiful possibility that abound in the sector, jointly with the high inhabitants which have been estimated to about 200million in 2018.When compared to the aviation sector of Nigeria to other African countries and beyond, aviation in Nigeria is still in a creeping form of the sector to the economy (New Telegraph, 2017). This was a result of weak transport policy and the absence of mismanagement of resources. The air passengers carried consist of all international and domestic air carriers registered in Nigeria plus aircraft passengers. According to the International Civil Aviation Organization (ICAO), the value for air transport; passengers carried in Nigeria as of 1970 was 173,000 minimum and a maximum value of 8,169,193 in 2018. The value showing enormous progress in terms of demand by passengers. Also, airlines are been selective by passengers in terms of safety, service, and even in search of a better network in Africa.

Research Significance

The study is significant in locating the major determinants that influence air transport passengers carried, the percentage of air transport to total population demand in Nigeria by bringing empirical evidence using data analysis. To explain more, the study is also significant in that it incorporates additional important variable (e.g location area and population) by determining the air transport performance of the country which have not been discussed in other previous researchers or recent studies in Nigeria. Furthermore, the study uses current and old data for empirical analysis, also identifying the economic and socioeconomic determinate of air travel demand will assist in getting insight for policymakers and help them to come out with an appropriate policy regarding the development of the aviation sector and economy of the country as a whole and assists in broadening the understanding of air passenger demand as determined.

LITERATURE REVIEW

Background and Conceptual Model

This chapter presents the related literature on socioeconomic determinants of air-travel demand. We first present a conceptual model on literature related to the determinants of air-travel demand, while the empirical literature follows.

In the literature, conceptual issues on the determinants of air travel demand have rested on two factors, the geo-economic and service-oriented factors. The geo-economic factors fall outside the air-lines control which is often associated with the country's economic situation, the country's geographic and locational characteristics. The service-oriented factors are more related to the service

quality of the air-lines Calderon (1997). We deal with these factors in turns.

TABLE 0NE; Determinants of air travel demand

As we can see from the above table that the Determinants of air travel demand is divided into two types, the geo-economic factor, and the service-oriented factor. Geo-economic is being split into two acts and locational, under activity it has cultural, economic, and political attributes with the inhabitants and service where is being transported, which later be calculated as population and gross domestic product (GDP), while one of the most ordinary locational factors is distance. The service-oriented is equally divided into two-part product quality and service price, under quality' it has load factor, aircraft size, and frequency of departures, which will be seen as substitutes, while under service price we have a cost which depends on the airline.

Related Determinants of Geo-Economic Factors

The geo-economic factors can also be rested on two parts, which are activated and locational factors. The Activity factors depend on the cultural economic and political characteristics of the population where the transportation takes place. The most common determinants related to the activity in the literature are population and income (e.g., Abrahams, 1983; Akinyemi, 2019; Ba-fail et al, 2000; Calderon 1997; Ghobrial, 1994; Monday& Mathew 2015; Nwaogbe, 2015).

All these variables are useful to themselves in all other factors that have to do with activity. However, many researchers furthermore in details involving other employees with full-time percentage and other percentages of university degree holders, which include other economic and sociological variables Fleming and Ghobrial (1994) characteristics of the regional productive structure.

In locational factors, distance is the most common, which affects demand in two opposite directions by (e.g., Calderon, 1997; Grosche et al, 2007; Gillen, 2013; Sivrikaya & Tunc, 2013; Valdes, 2015 ;). Firstly, because of the small commercial and social interconnection among the two landing-place, which involves negative out-turn as distance upgrade. Secondly, assistances upgrade the correlative agonistic of air transport growing following travel time, there is a positive effect. There is another part of locational factors, which is the direction of one airport challenging with another airport on other routes.

Airport with a higher-ranking service level is been predicted by the number of frequency departures, which can generate more traffic as there is greater frequency than payback for the additional traveling time to station access time or airport. All through, factors like locational have been used as a control for

competitiveness, contesting with other airports in some other different cities and a lot of articles have put in place and explain it on details.

Related Determinants of Service-Oriented Factors

All service of an airline is made up of both prices, which the passenger most opting in other to pay for it and the quality of the product. There are three main variables in the literature, which have described the classification of airline service: Frequency of departures, aircraft size, and load factor are proxies according to, Arasan (1992), Fleming and Ghobrial(1994), Gillen(2013) Hashai(2005),Johnson (2019), Kaemmerle (1991), Picrell (1988), Rendaraju, Weibel, & Garimella (2015), Safford, Steel &Viers (2015), Any hold up taking place because of the dissimilar between the nearest departure time available and the customers preferred departure time, this means that the frequency of service is been determined by what Dougles and Miller (1974) labeled frequency hold up. The smaller awaiting frequency hold up and the larger number of departures.

If there is any hold up increasing from the present flight which has been fully booked, it is a result of load factors determine the stochastic delay. The substitution or changes to upcoming flights may involve further disuse to the passenger, this means frequency has again demonstrated to be a very important determinant of air traffic design, proof on presuming pessimistic effect on traffic of high load factors residue equivocal. When aggregated with frequency delay, the variable performs significantly Abrahams (1983) and if added with price (Kraus& Anderson, 1981). If in anyway proved either the wrong positive sign with statistically significant (Agarwall& Talley, 1985).

Aircraft size, powered aircraft Jet, or prophase done well in the area of investigating the factors of demand when explained even as in magnitude Peter, Oleg, Brent, Martin, and Jim (2003), when is been empowered for the distinctive effect on the frequency of the two technologies. The systems have been compatible with Canadair's Regional Jet and all props (Hollingshead &Russon, 1989), have had a higher seating capacity even more than any other commercial Jet. Because of higher relaxes and in terms of cabin space, a sizeable aircraft could be expected to perform or surrender a very higher level of standard, understanding of particularly in the difference between props and jets, higher safety, and less noise and vibration.

Lastly, throughout the literature, as determined by fares, the money cost of traveling, has consistently proven how important it is on the descriptive variable of airline traffic. The greater the money paid for a journey on public transport, the lesser the awaiting volume of traffic, in this case' every

other thing becomes equal. In the short run, as the price policies change, it equally changes with demand purely through an upgrade in frequency and supply, on the other hand that is to know that airlines do not adjust.

The General Theoretical Review

All through the past three decades, researchers and academics have deep into the study of air travel demand. A lot of literary works have been done and appear in other to examine the determinants of air travel demand. Some work done in this area are, (Poore, 1993; Saudi, Arabian & Bechtel, 1979) tested the hypothesis which forecasts the future of air transportation demand offered by aviation regulators and airplane manufacturers. The determinant of air transportation is been expressing as "the element of determinant that makes an individual movement to be feasible" by Graham (2000). According to Monday, Mathew, Victor, and Nwaogbe (2015) supported also saying that the explanation is okay, but that is not all. Why because, the determinants are not always productive elements which empowering or making traveling practicable, but however they also upgrading traveling inclination.

The impacts of globalization on international airport activity the USA, explain the importance of globalization and how the aviation industry has contributed to the globalization of today's economy Button, (2008). (An analysis of the impact of the air transportation sector to economic development in Nigeria) the work shows how the aviation industry plays an important role in the aspect of leisure and work to people, reducing poverty, economic growth, increasing revenues, providing job opportunities and explain how it can create opportunity using supply chain management(Nwaogba, 2017).

Research Empirical Review

Aderamo (2010) analyze the demand for air travel in Nigeria and also focused on it, the result showed that among the selected variables, Inflationary Rate, Consumer Price Index and Gross Domestic Product are important in the explanation of the demand for air transport in Nigeria. Rothengatter (2011) focused on the economic crisis and the consequences for the transport sector. The paper concluded that the economic crisis hit the industrialized countries badly and had a sizeable impact on freight transport. Rothengatter freight transport is particularly dependent on trade activities, while passenger transport is mainly driven by the disposable income of consumers. Usually, GDP is used as an explaining variable for both, but very limited to explanatory power.

Mckinnon and Piecyk (2010) as a derived demand, argue that expansion in the economy of any region or the national economy results in increases in the overall demand in terms of

volume for goods and services. Jasimuddin, Abed, and Ba-Fail (2010) the study findings reveal a positive correlation between domestic air travel expansion and individuals in common growth.Yildirim and Karagulle (2014) concluded that the decrease in the volume of transported goods affected the transportation industry negatively. Reveal that as the global crises affect world economies, the transportation industry cannot be kept differently considering its importance in commercial movement.

Valdes (2015) assesses the effect of the determinant of air transportation for middle-income countries, which built a panel dataset from 2002 to 2008 with 32 countries. Mattew, Monday, and Omoke (2016) the study analyzed domestic air travel demand of passengers in Nigeria, focused on the duration from 2002 to 201, which used multiple regression to evaluate the various determinant of domestic air travel demand in Nigeria and show the independent variables and a positive effect on domestic air travel demand of passengers in Nigeria. The result shows that the independent variable shows 93.624 percent, and has a correlation with demand for domestic air travel of passengers. Seraj, Abdullah and Sajjad(2010) has conducted a case study using regression analysis in Saudi Aradia, they found out that the population size has a greater effect on international air travel demand and hold other things the constant. This means, when population size upgrades by 1%, the average demand for international air travel upgrade by 0.021 million passengers. Also the average demand for international air travel upgrades by 0.395 million passengers, the total expenditure upgrade by 1% point, and other things the same.

Fredrik (2008) domestic air travel in Sweden estimates the price elasticity of demand, nationally aggregated data on passenger quantities, and the money paid for a journey on public transport (fares) price elasticity's of demand are estimated with an unequal, in terms of stationary. The explanation equally estimated cross-price elasticity's for the main transport substitutes to air travel, road, and rail. The result is enforced by a primitive division of leisure travelers and business, also shows the aggregated demand for domestic air travel in Sweden, elastic (-1.13) in the long run, and elastic (-0.84) in the short run. In the end, the cross-price elasticity between air and rail travel is seen to be 0.44.

Hanly and Dargay (2001) use airfares, income, domestic price level, and exchange rates to discover the factors which have been influencing UK air transport in terms of demand in and outside. The study uses pooled time series and cross-section approach of panel data in other to investigate it, which in the end it came out to have the country specified result. A panel system was introduced for non-residents and UK residents, leisure business trips in the outside

UK, in which 20 countries were trips. Due to the restricted number of inspection for the time series model and the authors decided to use pooled time series and cross-section. Considering the results, it clarifies that income has a useful result on it in the UK market for air transport while fares harm passengers. Never the less' income elasticity is to be 0.43 in the short run resolute to be UK international leisure of air travelers, while 1.05 in the long run, which shows that a percent unite loose change in the income pilot figures of air travel to upgrade by 1.05 and 0.43 units.

Machnes and Alperovich (1994) related their studies on the insufficiency of the addition of wealth variables in the area of air transportation for demand models. According to the two researchers, they discovered out that time series forecasts may have an auto-correlation issue in terms of error. The researcher brings up that the auto-correlation may as out-turn of model misinterpret on the foregoing research, which was as a consequence of how income was explained. The present-day income as a determinant of a wealth of an individual was not used, instead' Machnes and Alperovich used permanent income. In the end, they underline that (this practice at P.163, in this case, at odd apart from the economic conjecture which proposes that lasting rather than present income is the current variable which determines demand). Permanent income incompletion, the wealth variable in their time-series style answered the auto-correlation in term errors. The research model includes monetary assets, airfares, average wage, non-financial assets, and CPI as controls of passenger demand they weary to involve percentage change on GDP, family size, and percentage change on CPI, this variable seems to have irrelevant coefficients and also pull out from the model. Based on the result, the international air travel of Israel based on income elasticity differs between 1.55 and 2.06 that means, on total passenger numbers, income changes have a useful result.

Winston and Morrison (1989) researched the effects of on-time performance on customers, willingness to pay. The research shows that air passengers have a high value of travel time, which (In 1989 dollars) is close to 35D an hour. (In 1989 dollars) if there is a one percent increase in on-time performance usually valued at 1.21D on average per round trip. The researchers conclude that if the most untrusted carries improved their on-time performance to 25 percent, it would have the same value passengers as a one hour lower on time travel. However different determinants have been considered by so many researches', to determine the effect of demand for air transport, different countries with their measures.

RESEARCH METHODOLOGY AND DATA SPECIFICATON

Research Data Specification

This chapter will be discussed in detail of the research method, which involves discussing the methods used as well as analyzing the economic and the socioeconomic determinants of air travel demand, followed at the duration of this study and how these methods involve data collection, interpretation, and analysis.

Research data and variables

Collecting quality data and selection of relevant variables are very important in conducting and making any specified approach. Since we wished to assess demand over time within the country Nigeria and involving a combination of social and economic factors, we decided to evaluate it by using data covering from 1980 to2017, which was obtained from the world development indicator World Bank (2019) mother nature of data used in this study shall be single data since it has to do with one county, the variables include: gross domestic product per capital which will be used for the economic growth of the country and measured in US dollars, population growth annually which will be described as the entire number of native inhabited within Nigeria for some time and population in total, inflation and consumer price will be measured by a consumer price index, while real effective exchange rate index shall be the nominal effective exchange rate. Air transport variables include: air transport/traveler carried which include both international and domestic aircraft passengers, air transport/freight (million ton-km) which will be measured in metric tons time kilometers traveled, air transport/registered carrier departures worldwide, and air travel to transport service which will be seen as a percentage of commercial service both export and import. This work observed 37 years of data vary from 1980 to 2017. Generally, the following table illustrates more about the variables.

Research Objectives and Aims

The general objective of this study is to analyze the economic and socioeconomic determinates of air travel demand in Nigeria.

Specific Objectives

The specific insight of the study are:

1) To evaluate the air transport industry.
2) To identify the top airport and the high percentage of demand for it by using air travel demand.
3) To determine the factor that affects the economic and socioeconomic of air travel demand in Nigeria.

Research Question

1) Is there any relationship between economic and socioeconomic to air travel demand?
2) Considering the air travel demand in a country like Nigeria: Is economic and socioeconomic a major factor that predicts the demand for air travel?
3) Does the total population affect air transport demand?

Research Hypothesis

H0: There is no nexus between economic and socioeconomic to air demand.

H1: There is a nexus between economic and socioeconomic to air demand.

H0: There is no strong nexus which proves that economic and socioeconomic predict air travel demand in Nigeria.

H1:There is a strong nexus which proves that economic and socioeconomic predict air travel demand in Nigeria.

H0; There is no tendency that the total population affects air transport demand.

H1: There is every tendency that the total population affects air transport demand.

TABLE TWO; Specification of Selected Variables

Selected Dependent Variables

The conceptual issues that determine air travel demand rested on two factors which are; geo-economic and service-oriented factors Calderon (1997) as illustrated in chapter two of the literature review. Now, we tried to assess air travel demand only in Nigeria by using a similar approach but from a different perspective with two dependent variables which are:

1. Air transport, passengers carried (AT_PASS): is a service factor that includes both international and domestic aircraft traveler of air carriers registered in Nigeria. According to International Civil Aviation Organization (ICAO) 2018, recorded that the value for air transport, passengers carried in Nigeria reached a maximum value of 8,169,193 in 2018, which was the highest for over 48 years.
2. Percentage (%) of air transport to the total population (AIR_PASS_POP): This second dependent variable derived from the first variable AT_PASS by dividing it with "population, total (POPT)" multiple by hundred, which gives us "percentage (%) of air transport to the total population (AIR PASS_POP).

$$\frac{AT\_PASS}{POPT} * 100 = AIR\_PASS\_POP$$

International Civil Aviation Organization discloses that there is a strong connection between AT_PASS and AIR PASS_POP, as it determines the number of international scheduled passenger traffic domestic scheduled passenger traffic, a low-cost carrier, and freight traffic within a country and the world at large. ICAO preliminary compilation of annual global statistics in 2018 shows that the total number of travelers carried on scheduled services rose to 4.3 billion, and which is higher than the previous year with an estimation of 6.4 percent while the number of departures rose to 37.8 million, with a 3.5 percent increase.

Research Independent Variables

The independent variables shall be grouped into geo-economic factors and service factors since they have been the key piloting forces for air travel demand in modern years. Also, we included local factors as it involves distance which falls under, as one the branches of geo-economic factor (Valdes, 2014). For more description and a better understanding, we decided to describe the independent variables by grouping them into three factors.

Related Determinants of Geo-Economic Factor

Gross domestic product per capita (constant 2010 US$ (GDPC) World Bank (2019): the measure of country economic output that accounts for its number of people by dividing the country gross domestic product by its total population. This GDP per capital is been split by the midyear population, and also the sum of gross value with all residents that dowel in the country and producers in the economy added with taxes. We calculated our GDP without making deductions for depletion and degradation of natural resources or depreciation of the fabricated asset. This data are in constant 2010 U.S dollars, according to Adekunle (2010) GDP per Capital would be encouraging to aircraft movement, beneficial, and also in air travel as it reflects the wealth of the nation positively.

Real effective exchange rate index (2010=100) (RER) World Bank (2019): we calculated this by using the nominal effective exchange rate divided by a price index of costs or deflator (a measure of the country value of a currency against other several foreign currencies). PER is an important factor in terms of the development process of an economy at its level, private investment and also stability are important in the area of increasing exports. Example, in today's global economy mostly in Nigeria, the oil price has always been a significant determinant of the country economic performance. Mathanel and Victor (2012) state that the measure of the direct effect of a given oil price increase rested on the share of the cost of oil in national income.

Population, total (POPT) World Bank (2019): this total population is based on the De facto explanation of population, which involve and counts all resident regardless of citizenship or legal status. Also, the values shown are midyear estimates. That is to say, the population estimation in Nigeria is been determine by census surveys. Moreover, the population is constantly changing every day so rapidly, census surveys do not contain and keep up to date statistics on the total population required for planning purposes Olorunfemi (1982). Apart from the recurring every ten years nature of censuses, data delivery is usually lag period which occurs between the actual publication of the results and physical collection.

Population growth (annual %)(POP_GRWTH): is about the annual population growth rate for years. These similar to POPT and equally make use of De facto explanation of population, the only difference here is the annual growth rate and we be expressed as a percentage World Bank (2019).

Inflation, consumer prices (annual %)(ICP): this is been calculated by the consumer price index and also reflects the annual % change in the cost to the average consumer of purchasing a basket of goods and services that may change at specified intervals or may be fixed, such as yearly World Bank (2019). A question was asked, why are the cost of living changes so difficult to measure? The problem is that we all know that there are millions of goods and services available in the modern-day market. One single supermarket may contain 50,000 differently priced items and a Lema store over 60,000 new products are being sampled all the time and others leave the market while existing ones improved. Goods and services with relative prices change frequently (annually). Michael, Ellen, Robert, Zvi, and Dale (1998) explain, that in other factors affecting quality and cost is related to technology, which leads the buying patterns of consumers to change. As time updates, we get richer, the demand has increasingly shifted to services away from goods and to the attribute of goods and services such as quality relieve greater convenience and varieties.

Locational Factor

Air transport, freight (million ton-km) (AT_FREIGHT) World Bank (2019): is the size of freight and diplomatic bags carried on each flight stage (which involves the performance of an aircraft from takeoff to its next destination of arrival) and been calculated in metric tons times kilometers moved. Syed, Qianli, Wei, Khalid, and Zhang (2017), examine AT_FREIGHT in another form by using transport services, railways transportation, travel, and air transportation on international outbound and inbound tourism. They further explain that the main constructs of the inbound tourism index they

used include international tourists' receipts of traveler, arrival, transports items, travel items, and tourism receipts. While the constructs of the outbound index include international tourists' expenditures for traveler transport tourism expenditures, travel items, and departure.

Related Determinants of Service Factor

Air transport, registered carrier departures worldwide (AT_REG): is the domestic takeoff and takeoff abroad of air carriers registered in Nigeria World Bank (2019).

Air travel to transport service (AIR_TRV) World Bank (2019): this involve a percentage of commercial services exports and imports, which includes all transport services (land, sea, internal waterways, air, pipeline, and space) carried out by those leaving in one particular economy with in the country, for those of another and involving the carriage of passengers movement of goods "freight", related support and auxiliary services, and rental of carriers with the crew.

Research Methodological Technique

To realize the main purpose of this study, the methodology used is drawn from several other studies on determinants of air travel "transport" demand across firms by (Amanuel 2016;Akinyemi 2019; Calderon 1997;& Valdes 2014). On determinants which includes geo-economic factors, local factors, service factors, and other related market structure of the aviation industry. The understanding characteristics and determinants of air travel demand require an empirical framework that can be applied for long time purposes. Now, to examine the economic and socioeconomic of air travel demand as determined in Nigeria, the study considers most of these factors by using two variables for the robustness of the thesis as follows:

- **$AT\_PASS = (GDPC_{it}, RER_{it}, AT\_FREIGT_{it}, AT\_REG_{it}, AT\_TRV_{it}, CPI_{it}, POP\_GRWTH_{it})$**

- **$AIR\_PASS\_POP = (GDP_{it}, RER_{it}, AT\_FREIGT_{it}, AT\_REG_{it}, AT\_TRV_{it}, CPI_{it}, POP\_GRWTH_{it})$**

Where **AT_PASS** represents air transport passengers carried as first dependent variables, while **AIR_PASS_POP** represents the percentage of air transport to the total population as a second dependent variable. **GDP** represents gross domestic product per capita**, RER** represents real effective exchange rate index, **AT_FREIGT** stands for air transport freight, **AT_REG** represents air transport registered carrier departures worldwide, **AT_TRV** represents air travel to transport service, **CPI** stands for inflation

consumer prices (annual), and **POP_GRWTH** represents population growth (annual). **"I**" represents sample' which is Nigeria. **"T"** represents the time period. It may be possible to oppose that the above model for determinants of air travel demand does not comprise all the variables that affect the demand. For example, it is possible to argue that there is a need for us to include data that has to do with aircraft size, product quality, and service price as we explained in chapter two "conceptual model". But this was a result of the unavailability of data. Nevertheless, looking at the available data set, this model is expected to give a better insight concerning the economic and social-economic determinants of air travel demand in Nigeria.

The methodology used here shall be defined and explain in a short sentence without using any form of equation formula.

Unit Root Test (URT)

It is necessary to test for the presence of unit root in other to avoid the problem of illegitimate regression since we are using one single country. A variable can be non-stationary if it involves unit root, except it merge with some other non-stationary succession to form a stationary co-integration correlation. On till then, regressions require the succession that can untruly imply the extant of significant relationships (Sock and Watson 1988).To test the order of integration is very important for each variable, in other to know how many variables that need to be transformed, we need to know whether the resulting stationery or whether it is non-stationary. The non-stationary can be tested by using Phillis Perron (PP) and Augmented Dickey-fuller (ADP).

Johansen Co-integration Test (JCT)

After confronting the order of Co-integrations, someone must observe if there is an economically significant correlation existing within the variable, then remove the illegitimate regression problem and no if the data has a co-integration equation or not. Two variables are said to be co-integrated when there is a long-run correlation. Note, all variable involve would be tested for co-integration and then decide the existence fora long-run relationship "which will we solve" between the variables (Johansen & Juselius, 1990).

Ordinary Least Square (OLS)

We need to approximate the unknown parameter in the regression model, which will help in focusing on understanding the result. "In an OLS regression, relationships hold everywhere equally in the study area (Garcia & Suarez, 2007)" in our study, AT_PASS and AIR_PASS_POP is our dependent variable.

TABLE THREE; Variables and Description

Variables	Description of the Variables
Air transport, passengers carried (AT_PASS)	It is a service factor that includes both international and domestic aircraft passengers of air carriers registered in Nigeria.
Air transport, freight (million ton-km) (AT_FREIGHT)	The Airfreight here is the size of freight which shows diplomatic bags carried on each flight stage (which involves the performance of aircraft from takeoff to its next destination of arrival) and been measured in metric tons times kilometers moved.
Real effective exchange rate index (2010 = 100) (RER)	We calculated this by using the nominal effective exchange rate divided by a price index of costs or deflator (a measure of the country value of a currency against other several foreign currencies).
GDP per capita (constant 2010 US$) (GDPC)	The measure of country economic output that accounts for its number of people by dividing the country's gross domestic product by its total population. This GDP per capital is been split by the midyear population, and also the sum of gross value with all residents that dowel in the country and producers in the economy added with taxes. We calculated our

	GDP without making deductions for depletion and degradation of natural resources or depreciation of a fabricated asset. This data are in constant 2010 U.S dollars.
Air transport, registered carrier departures worldwide (AT_REG)	Are domestic take-off and take-off abroad of air carriers registered in that country.
Air Travel to transport service (AIR_TRV)	this involvesa percentage of commercial services exports and imports, which includes all transport services (land, sea, internal waterways, air, pipeline, and space) carried out by residents of one economy for those of another and involving the carriage of passengers movement of goods "freight", related support and auxiliary services, and rental of carriers with the crew.
Inflation, consumer prices (annual %) (ICP)	This inflation is been measured by the consumer price index and also reflects the annual percentage change in the cost to the average consumer of purchasing a basket of goods and services that may change at specified intervals or may be fixed, such as yearly.
Population growth (annual %) (POP_GRWTH)	Is an annual Population growth rate for years is based on

	the de facto definition of population, which counts all residents regardless of legal status or citizenship and expressed as a percentage.
Population, total (POPT)	This total population is based on the De facto explanation of population, which involve and counts all resident regardless of citizenship or legal status. Also, the values shown are midyear estimates
Percentage(%) of air transport to total population (AIR_PASS_POP)	Where derived from the first variable air transport, passengers carried by dividing it with "population, total (POPT)" multiple by hundred, which gives us "percentage (%) of air transport to the total population.

Source: World Development Indicator (2020)

DATA ANALYSIS AND RESEARCH DISCUSSION

Empirical Results and Discussion

This chapter shows the descriptive and econometric results acquired from this study, which starts with the interpretation of the result and the implications of the findings shall be discussed.

Result Unit Root Test (URT)

The unit root test is significant in examining if the test is non-stationary or stationary. Which involves the need to test for the existence of unit root in other to steer clear of bogus or fake regression. "When we talk about bogus or fake regression, we simply mean providing misleading statistical evidence of a linear spurious regression between independent non-stationary variables". It can be proving that the standard assumption for asymptotic analysis will not be valid if the variables in the regression

model are not stationary. In this study, the unit root is tested using: Phillips-Perron (1988) and the Augmented Dickey-Fuller (1979) test. The unit root test presents the result below in tables one and two.

TABLE FOUR; Unit Root Test for all variables used in this paper at level (Augmented Dickey-Fuller Test Equation) NULL HYPOTHESIS

TABLE FIVE; Unit Root Test for all variables used in this paper at level (Phillips-Perron Test Equation)

Based on the selected variables from tables one and two, the method we use for the unit root test by Augmented Dickey-fuller and Phillips-Perron. At level, we discovered that our variables are not stationary at level, both the Augmented Dickey-fuller and Phillips-perron method. But at first differences, both the Dickey-fuller and Phillip-perron methods, we now discovered that the selected variables became stationary at first differences, which makes our data good and strong to be used for empirical analysis.

Result of Johanson Co-integration

The moment the result of the stationary test has been recognized, remember our mean aim is to checkmate whether the data has a co-integration equation or not. The upcoming move will be to inspect whether there is any linear amalgamation that will be okay to receive the data. But when combined, it presents an absorbing element like example; there is a long-term correlation keeping them in a similar area. The null hypothesis (H0) to be tested indicates a given number of co-integrating equations.

Approximating the long-run correlation between economic and social-economic determinants of air travel demand using Johanson co-integration test, this technique is choosing due to its performance in producing a consistent approximation of Long-run variables, which could be tested. To examine if the variable are co-integrated and the amount of co-integrating equations are good to go. This study used both Trace and Max-Eigen test, which presented the result of the Johanson co-integration test in table three and four.

TABLE SIX; Johanson Co-integration Test (Trace and Max)

The Johansonco-integration equation shows that the first dependent variable and the independent variable, the second dependent variable, and the independent variable. Shows that there is a long-run co-integration equation in the variable reason because we discover a four co-integration equation in each of these dependent variables under the Trance statistic and Max-Eigen statistic. Because there are four co-integration equations under the Trace statistic and Max-

Eigen statistic and there are also four non-co-integration equations, we now discovered that in general, the data has a long-run co-integration running between it.

Ordinary Least Square (OLS)

When OLS is applied to any simple linear regression, it creates high quality. Stimson (1985) claims that autocorrelation is virtually "inherent" in pooled data. The ordinary least square methods are to estimate the coefficients of the input variables in linear regression. The OLS estimator is the best linear unbiased estimator in a linear regression model by (Gauss and Markov 1960). In this method, we will discuss the empirical analysis of the result.

TABLE SEVEN; First Dependent Variable Ordinary Least Square

TABLE EIGHT; Second Dependent Variable Ordinary Least Square

Based on the OLS empirical output, our first and second dependent variables stipulate that the r-square of 0.98, which is 98 percent fit our model in the first dependent variable and 0.95, which is 95 percent also fit our model in the second dependent variable which is to say that the r-square can only explain 98percent of this model to us. Generally, e.g; a higher r-square indicate a better fit of our model, it is higher because our r-square is greater than 0.5 and it's less than 100 percent which is to say that the 98 percent and the 95percent r-square indicate a better fit for the model.

The adjusted r-square here is to improve the model we are working on. The first dependent variable shows that the adjusted r-square is 97 percent while the second dependent variable shows that adjusted r-square is 94 percent, this is to say that the adjusted r-square improves variables in our models, while the Schwarz Criterion is just to shows the number of lags that we used in the model, and Durbin-Watson indicates how venerable our data are. According to OLS results on the outcome, we discover that our Durbin-Waston result is less than 2.0 both in the first dependent variable and in the second variable. The first dependent variable shows that our Durbin-Watson is 1.0, this indicates positive autocorrelation value. While the second dependent variable Durdin-Watson is 0.8, this 1.0 is also indicating a positive autocorrelation which requires attention. So if it was greater than 2.0 to 4 points, it will indicate a negative autocorrelation. But in our case or model, it has a positive autocorrelation.

Research Discussion

The results of the OLS regression are reported under the table (8) and (9). All variables are significant for the table (8) except RER. However, in table (9) RER, AT_FREIGHT, AT_REG, and AIR_TRV are positive and

statistically significantly different from zero. We now discuss the results of coefficients in turns based on relevance to policy.

The Relationship between GDPC and AT_PASS / AIR_PASS_POP

Results from the dependent variable show that all variables are significant except for the real exchange rate. For instance, the coefficient of GDPC is positively associated with AT_PASS which is also significant at 1% (P=0.000), which however is not significant in the second dependent variable (AIR_PASS_POP). This outcome indicates holding other variable constants when per-capital income (GDPC) rises by 1 Naira, the number of passengers carried increase by 1023 people. This result is in line with the findings of Tolcha (2017) for Ethiopia which also found that GDPC and AIR_PASS are positively related, the results show that after ten years of positive changes in air traveler demand causes upgrade in GDPC by approximately 60%, of percentage change and a significant figure. In the context of Nigeria, an increase in GDPC may signify rises in productivity and income which indeed drives demand for air travel. Thus, any increase in income of an individual, leads to an increase in their level of spending which further corroborates with rises in income level of expenditure increase. In the line we can easily say that AT_PASS will increase due to the level of increase in per-capital income.

The Relationship between RER and AT_PASS/AIR_PASS_POP

While RER is statistically insignificant in explaining AIR_PASS, it however significantly explains AIR_PASS_POP. Holding other factors constant, as RER increase is associated with an increase in the proportion of the population demanding for air travel. This result is also in line with (Suryan 2017). In introductory economics, an increase in RER between a country's currency and other signifies that domestically produced goods are relatively more expensive compared to other countries. This further implies that foreign goods are more attractive over domestic goods generally. In the light of this research, as the value of Naira increase against other currencies, it provides a great incentive for Nigerians to demand to travel by air while also discouraging domestic travel, a study for the USA (Day 1986). Also in the content of Nigeria, the magnitude of the RER coefficient is very minimal which informs of the nature of the economic event in Nigeria due to structural changed and year of deregulation (Nwaka etal., 2015).

The Relationship between AT_FREIGHT and AT_PASS/ AIR_PASS_POP

AT_FREIGHT and AT_PASS are positively related. Holding other factors fixed, a million ton-km increase in AT_FREIGHT is associated with about 10514, increase in

AIR_PASS which is statically significant at a 1% level of significance. This result is in line with (Syed, Dong, and Wei & Yu-Zhang 2017). This suggests that the demand for air travel also means an increase in the volume of freight express and diplomatic bags carried on each flight stage.

The same relationship also applies to the second dependent variable (AIR_PASS_POP). Thus AT_FREIGHT increases in the proportion of the population demanding for air travel. This result signifies diplomatic bags carried on each flight either taking off or landing, including checking in and check out and been measured in metric tons times kilometers traveled within and out of the country. This illustrates that as air transport freight increases, the percentage of those living in the country will decrease. We can equally expatiate on it byusing the law of demand (Dennis 1985). Involving distance (Kilometers) from city to city, seen the result from the first dependent variable AT_PASS and the second dependent variable AIR_PASS_POP, also looking at the fact that AIR_PASS_POP is been derived from AT_PASS.

The Relationship between AT_REG and AT_PASS/AIR_PASS_POP

From the empirical result, the first dependent variable indicates that AT_REG is associated with a positive coefficient and a significant probability, this outcome signifies that upgrade in AT_REG will increase AT_PASS by 53 passengers, and holding other variables constant. This means that as the number of domestic take off and take off of abroad of air carriers registered in Nigeria increase (AT_REG) air passenger travel also rises. This outcome also supports the work of (Syed, Dong, Wei, and Yu-Zhang 2017), a positive and statistically significant effect on passenger flow and positive relationship between AT_REG can be seen as a high rate of passenger and airline traffic flying in and out of Nigeria on daily basis. Lagos being the commercial hub of Nigeria attracts a significant number of flights and travelers. In that line, we can cheerfully say that AT_PASS will increase due to the level of increase in registration of aircraft and air traffic. Based on our outcome, looking at the second dependent variable we discovered that AT_REG also has a positive coefficient and significant in explaining AIR_PASS_POP. We can also say an upgrade in AT_REG will upgrade AIR_PASS_POP. These findings explain that as AT_REG increase AIR_PASS_POP also increase. Emphasizing on AIR_REG, with the Nigerian passenger traffic in the airport from 2007 till 2018 and Nigeria passenger traffic in an international airport from 2009 till 2017 by Ejem (2019), as it was discussed in chapter three.

The Relationship between Air_Trv and At_Pass/Air_Pass_Pop

Considering the relationship between AIR_TRV and AIR_PASS also shows they are positively related. As AIR_TRV increases by 1%, AIR_PASS also rises by 73802 passengers. This implies that as the percentage of commercial services exports and imports, which includes all transport services (land, sea, internal waterways, air, pipeline, and space) rises, a significant rise in air travel demand is seen. We also observe the same nature of relationship on the second dependent variable AIR_PASS_POP. It is important to note that the commercial service of import and export is being carried out by residents of the country to other countries, which is proxied by AIR_TRV. We can relate the result with air travel to other transportation services in the country, like the water transport, land transport, etc. see that 1% increase in air travel to other transport services "pipeline, land, sea transportation" in the country will reduce AT_PASS Heejun Chang (2008) of South Korea illustrate more. In other to understand the AIR_TRV to AIR_PASS_POP, we need to look shortly into the transportation sector as we did in chapter two. Nigeria has become so important due to various views of researchers with a better formulation of policy that will promote the transport sector positively. For the past few years, the demand for transport services has increased while supply for transport services has decreased (Zhang and Song 2008). Now we can say that AIR_TRV has a positive and significant relationship with AIR_PASS_POP. These indicate that any increase in AIR_TRV will increase AIR_PASS_POP by 0.7%. Never the less our first dependent variable AT_PASS concerning AIR_TRV in line with the result and the second variable AIR_PASS_POP result, also concerning the research of Zhuang and Song in an empirical analysis of China titled "transport infrastructure, Growth, and poverty". We can say that there are similarities between the two variables.

The Relationship between CPI and AT_PASS/AIR_PASS_POP

CPI evaluates the part of separate factors such as price-level, demand relative to supply, exchange rate, government sector borrowing, private sector credit, adaptive inflation expectation, and support price in explaining inflation. Looking at the OLS empirical result, the first dependent variable signifies that CPI is positively associated with AT_PASS. According to (World Bank, 2019) on a statistic of poor nations with their annual average income per-person, how the population shifted towards developing countries like Nigeria, the government sector borrowing more in other to subsidizing the cost of goods and services which may affect AT_PASS positively (Ojonugwo & Muhanned 2018).The second dependent variable indicates that CPI is positively associated with AIR_PASS_POP, with

insignificant probability in Pakistan (Khan, Ahmed, Masood and Kalim 2009).

The Relationship between POP_GRWTH and AT_PASS/ AIR_PASS_POP

Based on the result, looking at the first dependent variable we discovered observe that an increase in population is driving the passenger's demand for air travel down which is statistically significant at a 1% level of significance. This implies that a 1% increase in population reduces the demand for AT_PASS. Even though this result may be counter-intuitive, it may be associated with a possible ripple effect of population growth rate on local demand over the years. This result can be linked to a review or a research study that was carried out by Ademola, Abdulsalam, Badiru, and Abdullahi in the year 2016 in Nigeria which agreed with them based on their discussion which states that; annual % change in population resulted from a surplus of births over deaths, number of migrants entering and leaving the country, this stipulates that it can be negative or positive coefficient. According to the OLS empirical result, the second dependent variable indicates that POP_GRWTH is not associated with AT_PASS

It is worthy of note that Note: the population growth in Nigeria has amounted to 83 million annually, 1.1% per year and the global population has grown from 1 billion to 7.616 billion 2018. The current population of Nigeria is 200 million, expected to increase by 2.54% (source CIA world fact book 2019), and for the fact that (%) of air transport to total population variable is related to population growth. We can simply say that the negative result of AT_PASS has a lot of meaning which indicates that no matter the POP_GRWTH, AT_PASS will keep on decreasing and AIR_PASS_POP will also keep on decreasing if associated with AT_PASS.

RESEARCH CONCLUSION AND RECOMMENDATION

Research Conclusion

The main objective of this study is to analyze the economic and socioeconomic determinants of air travel demand in Nigeria within the identified period by using simple linear regression model analysis (1980 to 2017). These determinants include some major factors such as; geo-economic and service factors, in which our variables are been derived from Victor Valdes (2014). The unit root test was used to examining if the test is stationary or non-stationary by using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP). At level, the test was not stationary but at the first difference, the variables became stationary, which makes our data good and strong to be used for any empirical analysis. The next step was to check if the data has a co-integration equation or not by using the Johanson Co-integration

equation test. In the long-run, we found out there is a co-integration equation in the first dependent and independent variables, also in the second dependent and independent variables under Trance and Max-Eigen statistic. The result shows that the data has a long-run co-integration running between it.

The empirical analysis started with Ordinary Least Square (OLS), estimating coefficients of input variables in linear regression Gauss and Markov (1960). The result shows the first dependent variable air transport passengers carried; GDP per-capital with a positive impact on air travel demand during the study period and significant probability, it stipulates that an upgrade in GDP per-capital will increase air transport passenger's carried Tolcha (2017). While in the second dependent variable percentage of air transport to total population; GDP per-capital shows a negative and insignificant impact on air travel demand "this negative sign is as a result of mismanagement of policy and resource" during the study period. This shows that the percentage increase in GDP per-capital will decrease the percentage of air transport to the total population.

Another result shows Air transport registered carrier departures worldwide with a positive coefficient and a significant probability in the first dependent variable, the outcome signifies that 1% upgrade in air transport registered carrier departures will automatically upgrade air transport passengers carried by 53.9% (Syed, Dong, Wei & Yu-Zhang 2017), Second dependent variable, we discovered air transport registered carrier departures has a positive coefficient with significant impact on the percentage of air transport to total population, 1% increase in air transport registered carrier departures will increase air transport passengers carried by 3.1%. Air transport registered gave a better summary and conclusion of the result which sate that.

Although, this study has found out that there is a high demand for air transport in Nigerian but the supply was not enough. Nigeria air aviation sector contributes only 3% of the country's economy when compared to the aviation sector of the economy (New Telegraph, 2017). This was a result of weak transport policy and the absence of mismanagement of resources.

Recommendation for Further Research

Looking at the analysis in this study, some crucial and related areas could be recommended for further researches. The economic and socioeconomic of air travel demand as determined in Nigeria have been investigated from the aspect of economic until the demand for air travel. The data sets considered analysis also represent the demand for air transport and the impact of air travel demand in Nigeria could include the contributions of all air transport activities,

together with the tourism sector. The combined effects of all air transport activities and the tourism sector on the economy of Nigeria will be a gripping area for further research.

The next area this paper will look at, for future researchers, is the relationship between socioeconomic and air transport sector particularly with the tourism sector in the country. Some researchers like Adeniran (2017), suggested that in the future, private airline companies will dominate the domestic market in Nigeria with a classic level of activity. So future researchers need to investigate the impact of private airline company's on the domestic market. Also, a related issue to argue is on the sustainability of air transport contribution to the economic growth of Nigeria, enhance there is a high rate of miss management in the airport system and continue increase in corruption.

Policy Implementation and for Further Research

At this point based on the finding of the study, the following recommendation has been given.

since the socioeconomic factor is involved such as; education attainment, average income, household size, occupation, and other related key reported from environmental ill health like; vomiting, typhoid, and malaria, stomach ache, etc., that equally determine the air travel demand. This indicates that the government has a long role to play in making sure that the environment is sound for aviation activity.

Since the airport is effectively deregulated, it is recommended to design detailed policy guidelines regarding the route, price entry, etc. which will encourage the private sector to invest in a better environment for competition and to expand the availability of public choice service at large.

It is recommended that any policies which will help in encouraging more air travel demand should be put into consideration. For example; maintainers of airports, encouraging domestic flights, paying workers' salaries, etc. will have a positive impact.

Research Limitation of the Study

While conducting this study, the researcher faced several limitations such as:

One of the limitations of the study is that we are unable to capture the historical development of the airline industry in Nigeria especially from 1920 to present, the only available data is from 1980 till 2017.

Inability to adopt a time series analysis in other to investigate the relationship between air travel demand and socioeconomic factors.

LIST OF TABLES

TABLE 0NE; Determinants of air travel demand

Geo-economic factor		**Service-oriented factor**	
Activity	Locational	Product quality	Service price
Populations(GDP)	Distance	Frequency of departures, load and Aircraft size	Cost

Source: Developed by Victor, Valdes. (2015).

TABLE TWO; Specification of Selected Variables

VARIABLES	ABBREVIATION	SOURCE
Air transport, passengers carried	AT_PASS	World development indicator
Air transport, freight (million ton-km)	AT_FREIGHT	World development indicators
Real effective exchange rate index (2010 = 100)	RER	World development indicator
GDP per capita (constant 2010 US$)	GDPC	World development indicator
Air transport, registered carrier departures worldwide	AT_REG	World development indicator
Air Travel to transport service	AIR_TRV	World development indicator
Inflation, consumer prices (annual %)	ICP	World development indicator
Population growth (annual %)	POP_GRWTH	World development indicator

Population, total	POPT	World development indicator

Source: Word Development Indicator (2020)

TABLE FOUR; Unit Root Test for all variables used in this paper at level (Augmented Dickey-Fuller Test Equation) NULL HYPOTHESIS

Variables	1% level	5% level	10% level	t-Statistic	Probability
LNAT_PASS	-3.621023	-2.943427	-2.610263	-0.223161	0.9266
LNGDPC	-3.626784	-2.945842	-2.611531	-0.558801	0.8674
LNRER	-3.626784	-2.945842	-2.611531	-2.808488	0.0671
LNAT_FREIGHT	-3.621023	-2.943427	-2.610263	-2.246604	0.1941
LNAT_REG	-3.621023	-2.943427	-2.610263	-1.018451	0.7366
LNAIR_TRV	-3.621023	-2.943427	-2.610263	-1.618840	0.4631
LNCPI	-3.621023	-2.943427	-2.610263	-2.948075	0.0495
LNPOP_GRWTH	-3.626784	-2.945842	-2.611531	-3.013826	0.0431
LNAIR_PASS_POP	-3.621023	-2.943427	-2.610263	-1.275426	0.6306
Unit Root Test for all Variables Used in this Paper at First Difference (Augmented Dickey-Fuller Test Equation)					
D(LNAT_PASS)	-3.626784	-2.945842	-2.611531	-5.325827	0.0001
D(LNGDPC)	-3.632900	-2.948404	-2.612874	-3.085100	0.0370
D(LNRER)	-3.626784	-2.945842	-2.611531	-4.174928	0.0024
D(LNAT_FREIGHT)	-3.626784	-2.945842	2.611531	-6.783084	0.0000
D(LNAT_REG)	-3.626784	-2.945842	-2.611531	-5.358408	0.0001
D(LNAIR_TRV)	-3.632900	-2.948404	-2.612874	-5.408084	0.0001
D(LNCPI)	-3.632900	-2.948404	-2.612874	-6.056816	0.0000
D(LNPOP_GRWTH)	-3.632900	-2.948404	-2.612874	-8.006071	0.0000
D(LNAIR_PASS_POP)	-3.626784	-2.945842	-2.611531	-5.424555	0.0001

Source: Self Developed Data from Eviews 10

TABLE FIVE; Unit Root Test for all variables used in this paper at level (Phillips-Perron Test Equation)

Variables	1% level	5% level	10% level	Adj. t-Stat	Probability
LNAT_PASS	-3.621023	-2.943427	-2.610263	-0.319801	0.9123
LNGDPC	-3.621023	-2.943427	-2.610263	-0.645199	0.8480
LNRER	-3.621023	-2.943427	-2.610263	-1.953480	0.3053
LNAT_FREIGHT	-3.621023	-2.943427	-2.610263	-2.240627	0.1961
LNAT_REG	-3.621023	-2.943427	-2.610263	-1.113812	0.7001
LNAIR_TRV	-3.621023	-2.943427	-2.610263	-1.622280	0.4614
LNCPI	-3.621023	-2.943427	-2.610263	-2.818216	0.0654
LNPOP_GRWTH	-3.621023	-2.943427	-2.610263	-3.537051	0.0124
LNAIR_PASS_POP	-3.621023	-2.943427	-2.610263	-1.330202	0.6052
Unit Root Test for all Variables Used in this Paper at First Difference (Phillips-Perron Test Equation)					
D(LNAT_PASS)	-3.626784	-2.945842	-2.611531	-5.301154	0.0001
D(LNRER)	-3.626784	-2.945842	-2.611531	-4.182598	0.0023
D(LNAT_FREIGHT)	-3.626784	-2.945842	-2.611531	-6.924571	0.0000
D(LNAT_REG)	-3.626784	-2.945842	-2.611531	-5.339318	0.0001
D(LNAIR_TRV)	-3.626784	-2.945842	-2.611531	-4.664825	0.0006
D(LNCPI)	-3.626784	-2.945842	-2.611531	-11.25905	0.0000
D(LNPOP_GRWTH)	-3.626784	-2.945842	-2.611531	-4.303692	0.0017
D(LNGDPC)	-3.626784	-2.945842	-2.611531	-4.433102	0.0012
D(LNAIR_PASS_POP)	-3.626784	-2.945842	-2.611531	-5.417827	0.0001

Source: Self Developed Data from Eviews 10

TABLE SIX; Johanson Co-integration Test (Trace and Max)

First Dependent Variables and Independent Variables for Johanson Co-integration Equation

Hypothesized No. of CE(s)	Trace Statistic	Hypothesized No. of CE(s)	Max-Eigen Statistic
None *	291.0865	None *	100.2238
At most 1 *	190.8627	At most 1 *	72.65156
At most 2 *	118.2111	At most 2 *	47.50453
At most 3 *	70.70660	At most 3 *	23.16815
At most 4	47.53845	At most 4	19.84990
At most 5	27.68855	At most 5	17.25112
At most 6	10.43743	At most 6	9.187391
At most 7	1.250038	At most 7	1.250038
Trace test indicates 4 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level			

Second Dependent Variable and Independent Variables for Johanson Co-integration Equation			
Hypothesized No. of CE(s	Trace Statistic	Hypothesized No. of CE(s	Max-Eigen Statistic
None *	302.2476	None *	141.9782
At most 1 *	160.2694	At most 1 *	51.53744
At most 2 *	108.7320	At most 2 *	39.62467
At most 3 *	69.10729	At most 3 *	28.49734
At most 4	40.60995	At most 4	21.41347
At most 5	19.19647	At most 5	13.42708
At most 6	5.769389	At most 6	3.680557
At most 7	2.088832	At most 7	2.088832
Trace test indicates 4 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values			

Source:Self Developed Data from Eviews 10

TABLE SEVEN; First Dependent Variable Ordinary Least Square

Dependent Variable: AT_PASS				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

GDPC	1023.208	193.9269	5.276255	0.000
RER	284.397	433.4396	0.656139	0.517
AT_FREIGHT	10514.36	4250.286	2.473801	0.019
AT_REG	53.90462	5.261288	10.24552	0.000
AIR_TRV	73802.90	37293.90	1.978954	0.057
CPI	4484.600	2450.350	1.830188	0.077
POP_GRWTH	-770183.8	137677.4	-5.594118	0.000

R-squared	0.981844	Mean dependent var	1816692.
Adjusted R-squared	0.978330	S.D. dependent var	1533296.
S.E. of regression	225711.4	Akaike info criterion	27.65672
Sum squared resid	1.58E+12	Schwarz criterion	27.95839
Log likelihood	-518.4778	Hannan-Quinn criter.	27.76405
Durbin-Watson stat	0.974495		

Source: Self Developed Data from Eviews 10

TABLE EIGHT; Second Dependent Variable Ordinary Least Square

Dependent Variable: AIR_PASS_POP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPC	-0.000	0.000221	-1.001774	0.324
RER	0.001	0.000495	3.504408	0.001
AT_FREIGHT	0.009	0.004853	1.966782	0.058
AT_REG	3.12E-05	6.01E-06	5.191560	0.000
AIR_TRV	0.155	0.042580	3.631677	0.001
CPI	0.001	0.002798	0.363262	0.718
POP_GRWTH	-0.008	0.157192	-0.052044	0.959

R-squared	0.948006	Mean dependent var	1.458722
Adjusted R-squared	0.937942	S.D. dependent var	1.034481
S.E. of regression	0.257704	Akaike info criterion	0.290810
Sum squared resid	2.058749	Schwarz criterion	0.592471
Log likelihood	1.474605	Hannan-Quinn criter.	0.398139
Durbin-Watson stat	0.844568		

Source: Self Developed Data from Eviews 10

REFERENCES

Adekunle J. Aderamo (2010). Demand for Air Transport in Nigeria. Department of Geography, University of Llorin Nigeria. *Journal of economics.* 1(1):23-31.

Adele Schwartz (2002). Airports Essential for Business Growth. In Aviation Week and Tours Magazine,2-5.

Artar, O., Uca, N., & Taşçı, M. E. (2016). The impact of the airline freight transportation on GDP in Turkey.*Journal of international trade, Logistics and law*. Vol 2

Akinyemi, Y. C. (2019). *Determinants of domestic air travel demand in Nigeria*: cointegration and causality analysis. *GeoJournal*, 84(5), 1239-1256.

Abeyratne, R. (2002). Events of 11 September 2002-ICAO's Responses to the Security and Insurance Crises, The. Air & Space L., 27, 406.

Aderamo, A (2010), *Demand for Air Transport in Nigeria*. Department of Geography. University of Ilorin. Ilorin. Nigeria.

Amanuel Sofany (2016). *The Determinants of Domestic Air Transport Demand in Ethiopia*. The Department of Economics.

Akin. A., Alan. C., Ravnit. G., Locunda. A., Catherine. R., Ciara. S., Carmen. S. and Beverly, R. (2013). Challenges of Biobanking in South Africa to Facilitate Indigenous Research in an Environment Burdened with Human Immunodeficiency Virus, Tuberculosis, and Emerging Noncommunicable Diseases. Dec 1; 11(6): 347–354.

Adeniran, Adetayo Olaniyi1 &Kanyio, OlufuntoAdedotun. (2018). Long Term Forecasting of International Air Travel Demand in Nigeria (2018-2028). American International *Journal of Multidisciplinary Scientific Research* Vol. 1, No. 2

Adeniran, A. O. & Adeniran, A. A. (2017). Econometric Modeling of Passenger Demand for International Air Transport in Nigeria Airports. *American journal of traffic and transportation engineering*,2(4), 39- 44.

Arros, C.P., Nwaogbe, O. R., and Ogwude, I.C. (2015). Performance and Heterogeneity of Nigeria Airports, Proceeding of the 19th Air Transport Research Society (ATRS) World Conference, Singapore.

Abrahams, M. (1983). A service Quality model of air travel demand:an empirical study. 17A (5), 385-393

Atonko, M. (2020). Aviation safety and security under the Nigreian civil aviation act 2006: a critique. *International Journal of comparative law and legal philosophy* (ijocllep), 1(2).

Button, K. (2008, November). The impacts of globalisation on international air transport activity. In Guadalajara: Global Forum on Transport and Environment in a Globalising World.

Ba-Fail, A. O., Abed. S. Y., and Tasimuddin, S. M. (2000). The determinants of domestic air travel demand in the kingdom of South Arabia. *Journal of air transportation worldwide*, 5(2).

Chen, X. Weibel, J A. and Garimella, S V. (2015) Exploiting Microscale Roughness on Hierarchical Superhydrophobic Copper Surfaces for Enhanced Dropwise Condensation. *CTRC Research Publications*. Paper 247.

Caglar Demirsory (2012) Analysis of Stimulated Domestic Air Transport Demand in Turkey. *Journal of Business and Economics.*

Dargay, J and Hanly, M (2001). The Determinants of The Demand for International Air Travel To and From the UK. 9th world conference on transport research. Scotland, May 2001.

Dioha, M. O., & Kumar, A. (2020). Sustainable energy pathways for land transport in Nigeria. Utilities Policy, 64, 101034.

Day, A. E. (1986). Impact of exchange rates on air travel. International *Journal of Hospitality Management*, 5(3), 115-119.

Dennis Epple. (1985). "The uncompleted argument: Du Bois and the illusion of race" Critical inquiry. 12, No:1 21-37

Dargay, J., & Hanly, M. (2001). The determinants of the demand for international air travel to and from the UK. In 9th World Conference on Transport Research, Edinburgh, Scotland.

Ejem A. Ejem. (2019) Air travel demand model for domestic network in Nigeria. Essebtials of transportation and logistics, publisher. University of port Harcourt, pp.145-155. https://www.researchgate.net/publication/330764940

Elizabeth A. Wentz, and Patricia Gober (2007). Determinants of Small-Area Water Consumption for the City of Phoenix, Arizona. Water resour management 21: 1849-1863.

Fredrik, K. (2008) A Demand Model for Domestic Air Travel in Sweden. Centre for Transport Studies. Royal Institute of technology.

Fleming, K., & Ghobrial, A. (1994). An analysis of the determinants of regional air travel demand. Transportation Planning and Technology, 18(1), 37-44.

Faizal, M. A. (2016, September). The effects of conversation-gambits visual-novel game on students' English achievement and motivation. In 2016 International Electronics Symposium (IES) (pp. 481-486). IEEE.

García, P. E., & Suárez, D. A. A. (2007). Community structure and phenology of chironomids (Insecta: Chironomidae) in a Patagonian Andean stream. Limnologica, 37(1), 109-117.

Johnson N. L (2019). System of Frequency Curves Generated by Methods of Translation. *Journal of statistics,* Vol (36), 149-176.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with appucations to the demand for money. Oxford Bulletin of Economics and statistics, 52(2), 169-210.

Johansen, S.,and Jtiselius, K. (1990) "Maximum likelihood estimation and inference on cointegration with applications to the demand for money" *Oxford Bulletin of economics and statistic.* Vol. 52, No. 2, PP. 169-210

Jane W. Kiboi, Prof. Paul Katuse, and Prof Zachary Mosoti (2017). Macroeconomic Determinants of Demand for Air Cargo Transport Among Selected Airlines. *European Journal of Business and Strategic Management,* Vol. 2, Issue(6)20-37

Jorge-Calderon, J. D. (1997). A demand model for scheduled airline services on international European routes. *Journal of Air transport management.* Vol.3. No: 1. 23-35

Johanson, S. (1988). "statistical analysis of cointegration vector" *Journal of economic dynamics and control* Vol. 12, 231-254

Karagülle, A. P. A. Ö., & Yıldırımlı, R. A. M. (2014) *The Effects Of Global Crisis On Turkish Air Cargo Industry.*

Khan, A., Ahmed, A. Masood, Q., and Kalim, H. (2009). Determinants oF Recent Inflation in Pakistan. MPRA Paper No. 16254

Muhammad, A., and David. (2001). Residential Energy Demand in Australia: An application of dynamic OLS. The Australian national university. Centre for Resource and Environmental Studies Ecological Economics Program Working Papers in Ecological Economics.

Michael. J. Boskin, Robert. J. Gordon, Ellen. R. Dulberger, Dale. W. Jorgenson, and ZviGriliches (1998). Consumer Prices, the Consumer Price Index, and the Cost of Living. *Journal of Economic Perspectives* Volume 12, No; 1 page 3-26.

Mahnes, Y and Alperovich, G (1994). The Role of Wealth In the Demand for International Air Travel. *Journal of transport economics and policy,* 28(2), 163-173.

Nathanael O. Eriemo and Victor E. Oriavwote (2012). Oil Prices and the Real Exchange Rate in Nigeria. *Internation Journal of Economics and Finance,* Vol. 4.6;

Nwaka, I. D., Uma, K. E., & Tuna, G. (2015). Trade openness and unemployment: Empirical evidence for Nigeria. The Economic and Labour Relations Review, 26(1), 117-136.

Nwaogbe, O. R., Pius, A., Balogun, A. O., Ikeogu, C. C., & Omoke, V. (2017). As assessment of airline service quality in a category one nation: focus on Mallam Aminu Kano International Airport. *International Journal of Aviation, Aeronautics, and Aerospace*, 4(1), 7.

Olorunfemi, J.F (1982). Application of Aerial Photography to Population Estimation in Nigeria. Department of Geography, University of Ilorin Nigeria. Geography *Journal*, 6.3 225-230

Okşan, Kibritci. A (2016). The impact of the airline freight transportation on GDP in Turkey. *Journal of International Trade, Logistics and Law*, Vol. 2, No. 2, 143-148

Ojonugwo, U. Muhammad, S. M. (2018). Revisiting exchange rate pass-through to consumer price inflation in Nigeria: A cointegrated Vector Autoregression approach. *Academic journal of economic studies.* Vol 4, No. 1, pp. 60-67

Ogbeidi, M. M. (2006). *The Aviation Industry in Nigeria*: A Historical Overview. Lagos historical review, 6.

Oluwole S. Matthew, Obioma R. Nwaogbe, Adebayo Monday, and Victor Omoke. (2016). Demand Analysis for Air Travel in Nigeria–an Expository Study. *Department of transport management technology. Federal University of Technology, Nigeria*.

Peeters, P., Higham, J., Kutzner, D., Cohen, S. & Gössling, S. (2016). Are technology myths stalling aviation climate policy? Transportation Research Part D: Transport and Environment, 44, 30-42, DOI: 10.1016/j.trd.2016.02.004

Piecyk, M. I., & McKinnon, A. C. (2010). Forecasting the carbon footprint of road freight transport in 2020. *International Journal of Production Economics*, 128(1), 31-42.

Philip, Ifeakachukwu. (2014). Government Expenditure, Unemployment and Poverty Rate in Nigriea. Department of Economics, Accounting and Finance, *Bells University of Technology, Ota, Nigeria*; ISSN 1596-8308

Peter, F. Oleg, D. Brent, H. Martin, G and Jim, H (2003). Comparison of Aerosol Size Distributions, Radiative Properties and Optical depths Determined by Aircraft observations and Sun Photometers During SAFARI 200. *Journal of geophysical research,* Vol (108) D13-8471

Rothengatter, W. (2011). Economic crisis and consequences for the transport sector. In Transport Moving to Climate Intelligence (pp. 9-28).

Ruwantissa. A. (2002). The events of 11 September 2002-ICAO's responses to the security and insurance crises. Air & Space law.

Safford H. D, Steel Z. L, and Viers, J. H (2015). The Fire Frequency-severity Relationship and the Legacy of Fire Suppression in California Forests. Ecosphere 6(1) 8.

Stimson James (1985). “Repression in space and Time: A Statistical Essay”. American *Journal* 29: 914-47

Stock, H., James, and Waston, M. W. (1988). “Variable trends in economic time series”. *The journal of economic perspectives.* Vol. 2, No 3 147-174.

Seraj Y. Abed, Abdullah O. Ba-Fail, Sajjad M. Jasimuddin (2010). An Econometric Analysis of International Air Travel Demand in Saudi Arabia. *Journal of Air Transport Management* 7(2001) 143-148.

Syed .K, Dong .Q, Wei .S, Khalid .Z, and Yu-Zhag (2017). Travel and Tourism competitiveness index: The Impact of Air Transportation, Railways Transportation, Travel and Transport Services on International Inbound and Outbound Tourism. *Journal of Air Transport Management* 58, 125-134.

Suryan, V. (2017). Econometric forecasting models for air traffic passenger of Indonesia. *In Journal of the Civil Engineering Forum* (Vol. 3, No. 1, pp. 33-44).

Sivrikaya, O., &Tunç, E. (2013). Demand forecasting for domestic air transportation in Turkey. *The Open Transportation Journal*, 7(1).

Tassew, D. Tolcha (2017). *Air transport demand and economic growth in Ethiopia* (co-integration and causality analysis)

Tamber, A. J., &Oladejo, O. M. (2020). Passengers' Traffic Forecast of the Nigeria Airports using the Holt-Winters Additive Model. NIGERIAN ANNALS OF PURE AND APPLIED SCIENCES, 3(2), 210-217. Babatunde, I. A. (2020).The Policy Institutional Approach to Transport Failure in Nigeria.*Open Access Library Journal*, 7(1), 1-18.

Viktor, Suryan. (2017).Econometric Forecasting Models for Air Traffic Passenger of Indonesia. *Journal of the Civil Engineering Forum* Vol. 3 No. 1- 33

Victor, Valdes. (2014). Determinants of air travel demand in Middle income Countries. *Journal of air transport management.* 42 75-84

Winston, C, and Morrison, S.A (1989). Enhancing The Performance of the Deregulated Air Transportation System. *Brooking papers on economic activity. Microeconomics* vol: 1, pp. 61-123.

Yingigha Chioma Akinyemi (2018) *Determinants of Domestic Air Travel Demand in Nigeria Geography Journal*, 18: 1239-1256

Yang, S. A., Bakshi, N., & Chen, C. J. (2020). *Trade credit insurance: operational value and contract choice. Management Science*

Zizi, H. (2016). An Analysis of the Issues and Challenges of Transportation in Nigeria and Egypt. *The Business and management review, volume* 7(2), 222-342.

Zou, W. Zhang, F. Zhuang, Z, and Song, H. (2008). Transport Infrastructure, Growth and Poverty Alleviation: Empirical Analysis of China. Annals of Economics and Finance 9(2), 345-371