

An Analysis of the Impact of Air Transport Sector to Economic Development in Nigeria

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Abstract: *This paper describes the significance and the catalytic nature of air transport/aviation sector for the nation and global economic development through job creation, tourism and facilitation of global trade. The objective of this paper is to examine the impact of air transport to economic development via- income generation, trade and other social opportunities to Nigeria. The air transport sector supports Gross Domestic Product and the employment of Nigerians through four different routes: direct route, indirect route, induced route and catalytic route. Airlines contribute over NGN58 billion to the economy of country and support 61,000 jobs in Nigeria. Furthermore, air freight may only account for 0.5% of the tonnage of global trade with the rest of the world and in value terms it makes up around 34.6% of the total freights.*

Keywords: *Air transport, global economy, passenger and development.*

I. Introduction

Air transport is one of the world's most important industries. Its development and technical service achievements make it one of the major contributors to the advancement of modern societal development. The growth in the aviation sector cannot be matched by any other major form of transport due to its technicality and new innovations that is going on in the sector. The above has helped so much in economic and tourist development of the nation and the globe. Demand for air transport services has increased the influence of air transport in the nation and global economy, thereby enhancing rapid movement of passengers, goods and services to the domestic and world market. This in effect helps to generate higher revenue to the economy by way of fast in and out flow of goods and services. The aviation industry plays an important role in the aspect of work and leisure to people around the globe. The sector helps to promote and improve quality of life, living standards of people within the nation. All this helps to generate economic growth and poverty alleviation by way of providing employment opportunities, increasing revenues from taxes. The employment opportunities would be generated through supply chain transformation from the airports.

Air transportation is a major industry in its own right and it also provides important inputs into wider economic, political, and social processes. The demand for its services, as with most transport, is a derived one that is driven by the needs and desires to attain some other final objective. Air transport can facilitate, for example, in the economic development of a region or of a particular industry such as tourism, but there has to be a latent demand for the goods and services offered by a region or by an industry. Lack of air transport, as with any other input into the economic system, can prevent efficient growth. But equally, inappropriateness or excesses in supply are wasteful (Button, 2008).

Economies, and the interactions that exist within the globe, domestic and the air transport system, are in a continuous state, although economists' notions of equilibrium have some very useful intellectual content, and validity in the very short-run. In reality the world is dynamic. This dynamism, of which the particular thrust of globalization is the concern here, has implications for industries such as air transport that service it. But there are also feedback loops, because developments in air transport can shape the form and the speed at which nations' development, globalization and related processes take place. The demand for air transport is a derived one; the institutional contexts in which air transport services are delivered have knock-on effects on the economic system. These feedback loops may entail direct economic, political, and social effects that, for example, the system may enhance trade and personal mobility, but they may also be indirect, as for example through the impacts of air transport on the environment (Button, 2008).

Air transport system is fully driven by the global economy; it is an important catalyst to the global economy. International Air Transport Association (IATA) noted that air transport directly employs four million people worldwide and generates \$400 billion in output. The efficiency and quality improvements in air passenger services contribute to the growth in government sectors such as hotel, tourism, etc. The free flow of people and information, together with improved air cargo operations, promote trade and improve the efficiency of the overall economy. That is to say that aviation sector imposes significant positive externalities to other industries, contributing to economic and employment growth to the nation (IATA, 2005). Researchers examined the link between high technology employment in a region and whether the region is served by a hub airport

(Button, Lall, Stough and Trice, 1999). Button (2006) pointed out that in United States and Europe; more than 40% of air travels are for business purposes. The remaining trips are either for leisure or for visiting friends and relative trips provides the basis upon which social ties are retained and, as such, allow for an efficient and integrated labour market.

Air transport is ideal for the coordination of supply chains, and thereby, improves the overall efficiency of the economy. Hummels (2006) observed that the elasticity of air shipping costs, with respect to distance declined dramatically from 0.43% to 0.045% in 2004. That is doubling distance shipped cause a 43% increase in air shipping costs in 1974, but on a 4.5% increase in air shipping costs in 2004. Furthermore, Aizenman (2004) and Schaur(2006) argued that air shipping may be an effective way to handle international demand volatility. Because air shipments takes hours rather than weeks, organizations can wait until the realization of demand shocks before deciding on quantities to be sold. Air transport shipping provides real option of smooth demand shocks for organizations or firms.

An efficient air transport system and shipping modes helps in quality improvement of the air transport system and also elevate international and domestic trade, business and economic growth of a nation. Limao and Verables (2001) observed that a 10% increase in transport costs reduces trade volume by 20%. Furthermore, recent studies were observed that a 10% increase in time reduces bilateral trade volume by between 5% and 8% (Hausman, Lee and Subramanian, 2005; Djankov, Migiel, Qian, Roland and Zhuravskaya, 2005). Aviation is fully superior to other shipping modes of transport in the terms of its fastness (time) is at the high pace. But its main disadvantage is that of high cost of transportation.

Moreso, Swan (2007) observed that since 1970, both price and production cost for air travel have been declining at about 1% annually. As shipments are of higher value and lighter weight, the *ad valorem* cost of air freight, ie. the transport cost need to move a dollar of cargo or consignments of air transport has declined by 40% between 1990 and 2004. This is due to air cargo is of growing importance in cargo logistics, accounting for about 40% of international trade by value. Many countries have chosen to locate special economic zones and high technology parks near airports.

Air transport has a unique advantage over all other modes of transport if speed, time and distance are major considerations. Air transport is of high value in relation to weight. It is also preferred where accessibility by other modes is a problem (especially in riverine or mountainous regions). Air transportation is a system with many inter-related parts. Each airport is connected to the system through the airways and other airports with which it exchanges flights. Its share of the GDP is however, still legible in Nigeria (Aderamo, 2010).

In Nigeria, the demand for air transport services has been on the increase within the past three decades. There has been growth in passenger, aircraft and freight traffic as a result of physical and economic development of cities in different parts of the country. The creation of states and the need to develop state capitals for them to perform their socio-economic responsibilities has fuelled the tempo of physical development in the country. Fast connections between the diverse economic spaces of Nigeria are better achieved through air transportation. According to Ogunbodede (2006), the diversity in the resource endowment between the North and the South is an important factor in the growth of air transport in Nigeria. Also, the new civilian administration regards the air transport subsector as a critical focal point in the effort to open up the country to foreign investors and thereby narrow the gap between available and required levels of domestic investment capital (Adeyemi 2001).

Although the air mode is recent in Nigeria when compared with the road and railway modes, its contribution to the development of transportation in Nigeria is very significant. For instance, domestic passenger traffic stood at 3,093,000 in 1988. It rose to 4,618,000 in 1998 and 6,424,000 in 2004 (Aderamo 2006a). Similarly, both cargo and mail transportation by air had been on regular demand (FMT 2004). All these are indications of increasing demand for air transport services in the country. In order to accommodate future demand for air transport services in Nigeria, it is expedient to plan for it. More development on the issue of passenger travel demand will greatly assist the aviation industry. The long run success of any aviation organization is closely related to how well management is able to foresee the future and develop appropriate strategies. The objective of this paper is to examine the impact of air transport to economic development in Nigeria and also to encourage the organizations that are operating in the aviation sector.

II. Impact Of Air Transport On Economy

The air transport sector has contributed immensely to the economic development of Nigeria and the entire globe in two other ways. Firstly, through the taxes levied on Gross Value Added (recall that it is equal to the sum of profits and wages). The aviation sector helps to support the government in terms of revenue generation, and the public services that are needed for movement of goods and services all over the world. Secondly, through its lumpsum investment and its use of higher advanced technology systems for its operations and maintenance. The aviation sector generates more Gross Value Added per employee in the economy as a

whole, raising the overall productivity of the economy. The air transport sector comprises of two different operational activity, they are:

2.1 Airlines

The airlines responsibility is to transport passengers and freight from one geographical location to another, there by rendering efficient interaction of a country with the international world. This also helps in economic investment through tourism and trade (Oxford Economics, 2012).

2.2 Ground-Based Infrastructure

The ground-based infrastructure of the aviation industry includes all airport facilities. The services provided for the airline and their aircraft starting from the entry-gate of the airport to the out-gate, the services provided for the passengers on-site at airports [such as baggage handling, ticketing and retail and catering services], together with essential services provided off-site [such as air navigation and air regulation].

The air transport or aviation sector supports Gross Domestic Product and the employment of Nigerians through four different routes. They are:

2.2.1 Direct Route

This is the operation/production output and employment of the companies that are under the aviation sector.

2.2.2 Indirect Route

This is transformation output and employment supported through the aviation sector's Nigerian based supply chain, such as the travelling agencies etc.

2.2.3 Induced Route

This is the employment and output supported by the spending of those directly or indirectly employed in the aviation sector.

2.2.4 Catalytic Route

This includes the spillover benefits that are associated with the aviation sector. Some of these include the activities supported by the spending of foreign visitors travelling to Nigeria via air, and the level of trade directly enabled by the transportation of merchandise (Oxford Economics, 2012).

TABLE 3.1: AVIATION'S CONTRIBUTION OF OUTPUT AND JOBS TO NIGERIA

	Direct	Indirect	Induced	Total	% of Whole Economy
Contribution to GDP (NGN Billion)	Contribution to GDP (NGN Billion)	Contribution to GDP (NGN Billion)	Contribution to GDP (NGN Billion)	Contribution to GDP (NGN Billion)	
Airlines	29	17	11	58	0.2%
Airports and Ground Services	29	16	16	61	0.2%
Total	58	34	27	119	0.4%
Catalytic (Tourism)	40	24	15	78	0.3%
Total including Catalytic	98	57	42	197	0.6%
Contribution to employee (000s)					
Airlines	7	33	21	61	0.1%
Airports and Ground Services	37	31	30	97	0.2%
Total	44	64	51	159	0.3%
Catalytic (tourism)	64	37	29	130	0.2%
Total including Catalytic	108	101	80	289	0.5%

Source: IATA, ACI, Nigerian National Bureau of Statistics, Oxford Economics 2012

From the table above, it shows that the economic contribution of the aviation sector for each of the four routes express the contributions in GDP form and employment in billion naira and as well there percentage of whole economy. Furthermore, the table analyzed the contribution of the various areas of air transport sector through these routes; Direct, Indirect, Induced and Total % of whole economy Contribution to GDP (NGN billion). Airlines contributed 29, 17, 11, 58, and 0.2%; Airports and Ground Services contributed 29, 16, 16, 61, and 0.2%; then total of 58, 34, 27, 119, and 0.4%; Catalytic (tourism) also contributed 40, 24, 15, 78, and 0.3%. The total including catalytic are 98, 57, 42, 197, and 0.6%. While the contributions to employment (000s) are

Airlines 7, 33, 21, 61, and 0.1%; Airports and Ground Services contributed 37, 31, 30, 97, and 0.2%. The total for airlines, airports and ground services are 44, 64, 51, 159, and 0.3%; Catalytic (tourism) contributions are 64, 37, 29, 130, and 0.2%; for the total including catalytic are 108, 101, 80, 289, and 0.5% (Oxford Economics, 2012).

These airlines industries operating in Nigeria, directly contributed around NGN 29 billion to the Nigerian economy (GDP). The sector contributes indirectly another NGN 17 billion through the output it supports down its supply chain. A further NGN 11 billion comes from the spending of the employees of the airlines and their supply chains. Overall, these airlines contribute over NGN 58 billion to the economy and support 61,000 jobs in Nigeria. The Aviation's ground-based infrastructure employs 37,000 people and supports through its supply chain a further 31,000 jobs. These indirectly supported jobs include, for instance, construction workers building or maintaining facilities at airports and other ancillary services. A further 30,000 jobs are supported by the spending of those employed by the aviation industry's ground-based infrastructure and its supply chain. The ground-based infrastructure directly contributes NGN 29 billion to the Nigerian economy (GDP). It contributes indirectly another NGN 16 billion through the output it supports down its supply chain. A further NGN 16 billion comes through the spending of those who work in ground-based facilities and its supply chain ((Oxford Economics, 2012).

Murtala Muhammed International Airport is Nigeria's principal airport with the highest aviation operations and largest productivity output. As a hub airport for intercontinental passenger traffic, Murtala Muhammed International can offer Nigerian residents and businesses a better offer in terms of access to their various destinations, at a higher frequency and at lower price in terms of fare charges. With such hub and spoke network, its benefits are to enhance the country's various connectivity in terms of air transport system, which in the other way round contributes to high global, and nations' overall international trade and economic levels of productivity and Gross Domestic Product of Nigeria (Nwaogbe Obioma, 2013).

III. Catalytic Nature Of Air Transport To The Nation

The air transport industry's most important economic contribution is through its impact on the performance of other industries and as a facilitator of their growth. It affects the performance of the world economy, improving the efficiency of other industries across the whole spectrum of economic activity – referred to as catalytic or “spin-off” benefits.

3.1 Air Transport Facilitates World Trade

Air transport helps countries participate in the global market by increasing access to main markets and allowing globalisation of production. Air transport also encourages countries to specialize in activities in which they have a comparative advantage and to trade with countries producing other goods and services.

3.2 Air Transport Is Indispensable To Tourism, Particularly For Remote And Island Destinations

Tourism directly supports jobs in airlines and airports, and expense of visitors arriving by air creates a substantial number of jobs in the tourism industry.

3.3 Air Transport Boosts Productivity Across The Global Economy

Improved transport links expand the market in which companies operate. As a result, companies are better able to exploit economies of scale thereby reducing costs, and to specialize in areas of comparative advantage. By opening up markets, air services expose companies to stiffer competition, encouraging them to become more efficient.

3.4 Air Transport Improves The Efficiency Of The Supply Chain

For example, many industries use air transport to shorten delivery, as part of their just-in-time delivery systems, enabling them to deliver products to clients quickly and reliably and to reduce costs.

3.5 Air Transport Is An Enabler Of Investment Both Into And Out Of Countries And Regions

Viable air transport links is one of the key considerations that influence where international companies choose to invest.

3.6 Air Transport Can Act As A Spur To Innovation

By encouraging effective networking and collaboration between companies located in different parts of the globe. A good transport infrastructure can also encourage greater spending on research and development by companies. For example, increasing the size of potential markets allows the fixed costs of innovation to be spread over larger sales.

3.7 Air Transport Provides Consumer Welfare Benefits To Individuals

In terms of the increased availability of travel connections, and for local airport communities must be taken into account when considering environmental impacts on, for example, air quality, noise and congestion in the vicinity of airports. There is a clear distinction between these ‘catalytic’ impacts and the direct, indirect and induced economic impacts of air transport. In simple terms, the economic value of the direct, indirect and induced effects is related to the total revenues of the air transport industry, whereas the catalytic impacts are “spin-off” effects on other industries (ATAG, 2005).

IV. Consumer Benefits For Passengers And Shippers

According to Oxford Economics (2012), visiting family and friends to shipping high value products, 8.3 million passengers and 181,000 tonnes of freight travelled to, from and within Nigeria. More than 15,200 scheduled international flights depart Nigeria annually, destined for 32 airports in 30 countries. Domestically, more than 66,800 flights make over 7.5 million seats available to passengers, destined to 18 airports. Air passengers resident in Nigeria comprise approximately 4.2 million of the passenger total. For the 8.3 million passenger flights in total, passengers pay NGN 866 billion (inclusive of tax), with Nigerian residents paying around NGN 438 billion. This expenditure is likely to significantly understate the value passengers actually attach to the flights they use. Calculations by Oxford Economics suggest the value of the benefit to travelers from flying, in excess of their expenditure, is worth NGN 785 billion a year (NGN 397 billion for Nigerian residents). Air transport is crucial for the distribution of high value to weight products. Air freight may only account for 0.5% of the tonnage of global trade with the rest of the world, but in value terms it makes up around 34.6% of the total freights. Shippers pay airlines NGN 89 billion annually to carry 181,000 tonnes of freight to, from and within Nigeria. The benefit to shippers, in excess of this expenditure, is estimated as NGN 37 billion. Based on the share of exports in total merchandise trade, Nigerian shippers receive nearly 60% of this benefit (NGN 22 billion).

V. Significant Social Benefits Of Air Transport

There are various significant benefits of air transport operation in the world, they are

5.1 Air transport improves quality of life by broadening people’s leisure and cultural experiences. It provides a wide choice of holiday destinations around the world and an affordable means to visit distant friends and relatives.

5.2 Air transport helps to improve living standards and alleviate poverty, for instance, through tourism.

5.3 Air transport may provide the only transportation means in remote areas, thus promoting social inclusion.

5.4 Air transport contributes to sustainable development. By facilitating tourism and trade, it generates economic growth, provides jobs, increases revenues from taxes, and fosters the conservation of protected areas.

5.5 The air transport network facilitates the delivery of emergency and humanitarian aid relief anywhere on earth, and ensures the swift delivery of medical supplies and organs for transplantation (ATAG, 2005).

VI. Impact Of Air Transport On Business Operations In The Globe

Air transport enables companies to service and meet clients, and promotes the efficient organisation of production.

6.1 Servicing And Meeting Customers

Air services allow better contact and more effective communication between buyers and sellers, which contributes to companies making new sales and to meeting the needs of their existing customers.

6.2 Production Efficiency

Some 50% of businesses rely on air services for production efficiency. Passenger services enable managers to visit overseas sites and other sub-sections of their business in other countries, enable a choice of the best suppliers from a range of competitors, facilitate the spread of new production techniques and make it easier for companies to attract high quality employees. The global supply chain is becoming increasingly dependent on the rapid and reliable movement of high-value low-weight goods such as computer parts (ATAG, 2005).

Air transportation facilitates such movements by:

6.2.1 Providing Fast And Reliable Delivery Of High-Value Products

Especially relevant to modern-dynamic industries, such as the pharmaceutical/ biotechnology and telecommunication equipment sectors;

6.2.2 Increasing The Range Of Product Markets

The development of e-business helps companies identify low-cost suppliers and air transport helps connect buyers and suppliers;

6.2.2.1 Improving Companies' Handling Of Returns And Complaints

For example, allowing a quick turnaround of repairs or delivery of replacement parts

6.2.2.2 Facilitating The Development Of E-Commerce

Enabling, for example, companies to transport online shopping orders quickly and reliably between countries, allowing products to be stored in large warehouses reducing retail and distribution costs.

6.2.2.3 Facilitating Improved Stock Management And Production Techniques

Reducing companies' storage costs, losses due to stock outages and disruption caused by failure of machinery on production lines; and

6.2.2.4 Facilitating The Development Of The Express Carrier Industry

Which provides guaranteed, rapid, door-to-door delivery services and increasingly offers logistics support for companies (ATAG, 2005).

VII. Aviation Tax Contribution To Nigeria

The air transport sector (Aviation) makes a substantial contribution to Nigerian public finance account. When you estimate the corporation tax paid by companies under the aviation sector, the income tax paid by all their employees, social security payments (both employer and employee contributions), and the revenue generation through aviation sector taxes, these estimates reflect the direct tax payments of the aviation sector. All these provide an indication that taxes paid by the aviation sector's supply chain and taxes raised through induced spending channels. They do not include increases in the overall Nigerian tax base driven by aviation's contribution to investment and productivity growth in the wider economy (Oxford Economics, 2012).

TABLE 3.2 AVIATION CONTRIBUTIONS TO NIGERIA

TAX	NGN billion	NGN billion
Taxes on Aviation Sector's GVA		8.5
Corporation Tax	1.4	
Income and SS	7.1	
Value Added Tax (VAT)		17.0
Aviation Sector's direct tax contribution		25.5
Tax generated through the aviation sector's indirect and induced impact		16.0
Total tax attributable to the aviation sector's Economic foot print		41.6

Source: IATA Nigerian National Bureau of Statistics, Oxford Economics.

The table above show that the aviation sector contributed over NGN 8.5 billion in taxes through corporation tax and the income and social security contributions (both employee and employer contributions). Air passengers paid a further NGN 17.0 billion in VAT on domestic and international flights originating in Nigeria, bringing the total tax contribution to NGN 25.5 billion. This contribution is likely to increase further, if there is more aviation infrastructural development, and if the sector recovers a good number of difficult years that many firms operating in it suffered losses. Very indicatively, it is estimated that a further NGN 16.0 billion of government revenue is raised via taxation through the indirect (NGN 8.9 billion) and induced (NGN 7.1 billion) route (Oxford Economics, 2012).

VIII. Investments By The Aviation Sector

Apart from the transformative effects of aviation sector on the wider economy, air transport services – the airlines, airports and ancillary services, such as air traffic control – form a capital intensive sector that invests heavily in aircraft systems and other advanced technology (Oxford Economics,2012).

TABLE 3.3 INVESTMENTS BY THE AVIATION SECTOR

	Investment as % Value for Output
Air transport Services	58.4
Nigerian Economy	26.5

Source: IATA, ACI, Oxford Economics.

TABLE 3.4 LABOUR PRODUCTIVITY IN THE AVIATION SECTOR

	Productivity GVA for Employee
Air transport Services	NGN 3,549,000
Nigerian Economy	NGN 527, 000

Source: IATA, ACI, Oxford Economics.

The TABLE 3.3 explains the investment intensity of the aviation sector, as measured by its investment as a proportion of GVA. Investment in air transport services is equal to 58.4%, which is over twice that of the Nigeria economy average.

Productivity as the conventional approach to analyzing the sources of economic growth has been to focus on increases in the quantity and the quality of the inputs used to produce outputs. Gross Domestic Product is the most commonly used measure for the productivity. GDP is the sum of all goods and services produced within Nigeria borders, measured as the number of workers times the output, or production, per worker. Growth in GDP will come from three sources; Changes in population, growth of the labour force, and growth in productivity.

Table 3.4 provides an indication of the productivity of the aviation sector versus the rest of the economy. Measured as GVA per employee, the productivity of air transport services (the airlines and the ground-based infrastructure excluding retail and catering services at airports) is estimated at NGN 3.5 million. This is nearly 7 times higher than the average productivity for the economy as a whole (NGN 527,000). This high level of productivity implies that, where the resources currently employed in the aviation sector is redeployed elsewhere in the economy, and then this would be accompanied by a fall in overall output and income. For example, if productivity in the aviation sector was the same as the average productivity for the economy as a whole, then the level of Nigerian GDP would be around 0.11% lower than it is (about NGN 36 billion in current prices) (Oxford Economics,2012).

IX. Conclusion

In conclusion, the paper shows that aviation industry plays an important role in the aspect of work and leisure to people around the globe. Helps to promote and improve quality of life, and living standards of people within the nation. All these impacts of the air transport helps to generate economic growth and poverty alleviation by providing employment opportunities, and increasing revenues from taxes. The employment opportunities would be generated through supply chain transformation from the airports. Furthermore, the paper analyses the contribution of the various areas of air transport sector through these routes; Direct, Indirect, Induced and Total % of whole economy Contribution to GDP (NGN billion). The contributions are as follows; Airlines contributed 29, 17, 11, 58, and 0.2%; Airports and Ground Services contributed 29, 16, 16, 61, and 0.2%; then total of 58, 34, 27, 119, and 0.4%; Catalytic (tourism) also contributed 40, 24, 15, 78, and 0.3%. The total including catalytic are 98, 57, 42, 197, and 0.6%. While the contributions to employment (000s) are Airlines 7, 33, 21, 61, and 0.1%; Airports and Ground Services contributed 37, 31, 30, 97, and 0.2%. The total for airlines, airports and ground services are 44, 64, 51, 159, and 0.3%; Catalytic (tourism) contributions are 64, 37, 29, 130, and 0.2%; for the total including catalytic are 108, 101, 80, 289, and 0.5%. These airlines operating in Nigeria, directly contributed around NGN 29 billion to the Nigerian economy (GDP). The sector contributes indirectly another NGN 17 billion through the output it supports down its supply chain. A further NGN 11 billion comes from the spending of the employees of the airlines and their supply chains. Overall, these airlines contribute over NGN 58 billion to the economy and support 61,000 jobs in Nigeria. The Aviation's ground-based infrastructure employs 37,000 people and supports through its supply chain a further 31,000 jobs. These indirectly supported jobs include, for instance, construction workers building or maintaining facilities at airports and other ancillary services. A further 30,000 jobs are supported by the spending of those employed by the aviation industry's ground-based infrastructure and its supply chain. The ground-based infrastructure directly contributes NGN 29 billion to the Nigerian economy (GDP).

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