

# Efficiency of Nigerian Transport System: Lessons Derived from the Developed Nations

Adeniran Adetayo Olaniyi (Master Student)\*

School of Management Technology, Federal University of Technology, Akure (FUTA) Ondo State, Nigeria

Shamusideen Ayinde Oniru (Master Student)

School of Management Technology, Federal University of Technology, Akure (FUTA) Ondo State, Nigeria

*The research is financed by Asian Development Bank. No. 2006-A171(Sponsoring information)*

## Abstract

Among other sectors in the modern society, the roles of transportation cannot be overemphasized. Transportation is mainly demanded to execute the objectives of every other sectors in the economy. An efficient transport system covering rail, waterways, air, and road, is a catalyst for economic growth and development. This paper is aimed at examining transportation sectors in the listed six developed countries (Japan, Germany, India, China, Egypt and South Africa) for the purpose of recommending the derived lessons for Nigeria. Rail transportation is the most dominant mode of transportation in the selected developed countries. Recommendations are made suggested to enhance efficiency of Nigerian transport system.

**Keywords:** Assessment, Transport systems, rail transport, developed countries, and Nigeria

## 1. Introduction

Transportation and telecommunication are sectors that epitomize globalization in an economic as well as in a socio-political sense worldwide. Among other sectors in the modern society, the roles of transportation cannot be overemphasized. Transportation is an essential part of economic development. It is one of the indices for measuring the development of a country. Nigeria's rural transport infrastructure has been identified as a crucial component for the economic development of the country by linking the rural communities to the urban areas FGN (2007). A good transportation network expands economic activities by improving accessibility and facilitates movement of goods including agricultural commodities in all the nooks and crannies of the country (Amba, 2013).

Transportation is demanded to execute the objectives of every other sectors in the economy. Not only does transportation provides mobility for people and goods, it helps shape an area's economic health and quality of life. Because of the high pertinence of transportation, it is expedient for a country or nation to embark on integrating man, material, money and machinery towards the realization of diversified modes of transport before such country will boast to have achieved a diversified economy and a sustainable development.

Mobility is fundamental to economic and social activities, including commuting, manufacturing or supplying energy. Movements of people, goods and information have always been fundamental components of human societies. Contemporary economic processes have been accompanied by a significant increase in mobility and higher levels of accessibility (Jean-Paul, Claude and Brian, 2006).

Moreover, transportation refers to the process of conveying or moving of goods and people from place to place (Ayanwu, et al., 1997). Transportation is a system for carrying passengers, raw materials and goods from one place to the other both internally and internationally, often through power driven machines (Good, 2015). It is commonly said to refer to movement of people and goods from one place to another (Okefor, 1998). Transportation service is the part of physical distribution activity which is concerned with the actual movement of goods to their various consumers (Good, 2015).

An efficient transport system covering rail, waterways, air, and road, is a catalyst for economic growth and development (Oyesiku, 2013). Transportation system ensures successful movement of passengers, cargoes, and mails from one point to another for social purpose, economic purpose or spatial purpose through different modes (unimodal, bimodal or multimodal). Transportation system is not a homogenous body of its own but it is made up of different interacting sub-systems working interrelated to ensure the performance of its objectives. The sub-systems are composed of complex set of relationships between the demand, the locations they service and the networks that support movements. Transportation system has several elements or essentials without which it cannot function, the elements are;

1. Infrastructure, which includes the transportation network (i.e. roads, railways, airways, canals, pipelines, etc);
2. Vehicles, such as automobiles, trains, airplanes etc. This generally moves on the networks;
3. Operations, which deal with the control of the system such as traffic, signal and ramp meters, rail-road switches, air traffic control, etc, as well as policies, such as how to finance the system, for instance, use of tolls or gasoline taxes in the case of highway transport and

4. Nodes or terminals (such as airports, railway stations, bus stations and seaports), they are points where there is an access to any specialized form of way (infrastructure). They facilitate interchange between one mode and the other, consolidation of passengers or freights for onward movement and fragmenting of freight to achieve production process (Adeniran and Yusuf, 2016).

The level of integrated, effective, efficient and reliable transport system is among other important indices or indicators in determining the development of a country. Societies have become increasingly dependent on their transport systems to support a wide variety of activities ranging, among others, from commuting, supplying energy needs, to distributing parts between factories (Jean-Paul, Claude and Brian, 2006). Developing transport systems has been a continuous challenge to satisfy mobility needs, to support economic development and to participate in the global economy.

The aim of this paper is to examine transportation system in the listed six developed countries (Japan, Germany, India, China, Egypt and South Africa) for the purpose of recommending the derived lessons for developing Nigerian transport system.

## 2. Literature review

### 2.1 Overview of transportation systems in Nigeria

The country Nigeria is a republic in western Africa, with a coast along the Atlantic Ocean on the Gulf of Guinea. Most of Nigeria consists of a low plateau cut by rivers, especially the Niger and its largest tributary, the Benue. Nigeria has 193,200 km (120,049 mi) of roads. Most Nigerians travel by bus or taxi both between and within cities. During the 1970s and 1980s federal and state governments built and upgraded numerous expressways and trans-regional trunk roads. State governments also upgraded smaller roads, which helped open rural areas to development. However, by the mid-1990s, lack of investment and sustainable culture had left most of the roads to deteriorate (Stock, 2008). Presently, most Nigerian roads have become death trap for many road users, newly constructed roads cannot meet up with the life expectancy five years not to talk of the normal twenty-five years. Nigeria has 3,528 km (2,192 mi) of operated railway track. The main line, completed in 1911, links Lagos to Kano, with extensions from Kano to Nguru, from Zaria to Kaura Namoda, and from Minna to Baro (Stock, 2008). Over the years, the development of railways for moving both passenger and freight traffic is in a crisis situation due to competition from the road network, political instability, policy inconsistencies, weak policies, corrupt tendency and peculiarities of Nigerians; recently, the government realized the need to develop an efficient rail transport, most especially to solve the challenges of congestion on Nigerian roads.

Nigeria's largest ocean ports are at Lagos (Apapa and Tin Can Island), Port Harcourt, Calabar, Sapele, and Warri. The main petroleum-exporting facilities are at Bonny and Burutu. Transportation along inland waterways, especially the Niger and Benue rivers, was very important during the colonial era. In the late 1980s the government upgraded river ports at Onitsha, Ajaokuta, Lokoja, Baro, Jebba, and Yelwa. Locks have been constructed at Kainji Dam to facilitate navigation. River transport is used mainly for shipping goods (Stock, 2008). Presently, Nigerian water transport is effective and not efficient because it is dominated by foreign vessels; despite the Cabotage Acts the cost of operating is very expensive for the domestic carriers, the Acts indirectly license foreign vessels most especially in the inland waterways.

The origins of the Nigerian aviation industry can be traced back to 1920, when a Royal Air Force aircraft landed on a polo field (serving as a military air base) in Maiduguri. By 1930, civil and military aircraft were transporting passengers across various destinations in Nigeria, such as Lagos, Kano and Sokoto (Airport Customer Satisfaction Report). Internal flights serve the majority of state capitals, of which Ilorin, Kaduna, Port Harcourt, and Enugu are the busiest which are now upgraded to international standard. They serve both domestic and international flight operations. Among the Nigeria registered airlines are Arik Air, Dana, Aero Contractors, Overland Air, First Nation, and others.

### 2.2 Transportation in Japan

Japanese depend heavily on rail transport. Railroad track in 2005 totaled 20,052 km (12,460 mi), of which about 71 percent was electrified. In the late 1950s Japan began constructing the Shinkansen, a high-speed rail network linking major cities. The Shinkansen runs sleek trains known as bullet trains. The first branch, linking Tokyo and Ōsaka, began operating in 1964. Later construction extended the Shinkansen from Fukuoka on the island of Kyūshū in the south to Hachinohe in the north and to several cities in the west (Cybriwsky, 2008).

Japan has 1,177,000 km (732,000 mi) of roads, of which 5,054 km (3,140 mi) are expressways. In 2004 Japan had 441 cars for every 1,000 people. Bridges or tunnels link all of Japan's main islands. In 1998 Japan completed construction of the world's longest suspension bridge, the Akashi Kaikyo Bridge. Linking Kōbe and Awaji Island over the Akashi Strait, the bridge has a center span of 1,990 m (6,529 ft). Japan has one of the world's largest merchant fleets, with 6,519 vessels totaling 12.8 million gross registered tons in 2007 (Cybriwsky, et al., 2008).

Japan Air Lines, established in 1951, provides international air service, while All Nippon Airways,

primarily a domestic service, has expanded its international operations in recent years. Tokyo is the nation's major hub for both domestic and international flights. Ōsaka is the second largest center for air travel, and important airports are also located in Nagoya, Sapporo, and Fukuoka (Cybriwsky, et al., 2008).

### *2.3 Transportation in Germany*

Germany has a highly developed transportation system including a limited-access superhighway known as the autobahn. There is no speed limit on the autobahns, but frequent construction projects and congestion keep the speed down. Since East German roads had not been upgraded and expanded much since the 1930s and the volume of motor vehicles on them rose greatly after unification, a large part of the funds transferred from the West have gone to expand the German highway system (Harrington and Merkl, 2008).

The country's extensive passenger and freight rail system played a major role in German economic development. Most of the railroads were government-owned until 1993, when legislation was approved to privatize them. They are now under private ownership as Bundesbahn A.G. High-speed intercity lines serve major German cities such as Hamburg and Munich, Frankfurt and Dresden, and Hannover and Bremen (Harrington and Merkl, 2008).

Germany has major navigable inland waterways and canals. The canals, such as the Mittellandkanal, supplement the traffic routes of the major rivers; some canals, such as the Kiel Canal and the Rhine-Main-Danube Canal, connect major bodies of water. Duisburg, Magdeburg, Mannheim, and Berlin are large inland ports, and Hamburg, Bremen, Bremerhaven, Emden, Lübeck, Rostock, and Stralsund are major seaports. An extensive underground pipeline system conveys petroleum products (Harrington and Merkl, 2008).

Air transportation of passengers and goods is served by several international airports, including Frankfurt and Munich, and many regional airports. There are hundreds of airports, including 13 major ones. Germany's principal airline, Deutsche Lufthansa A.G., was formerly operated by the government but is now privately owned (Harrington and Merkl, 2008).

### *2.4 Transportation in India*

India has a network of railroad lines that covers the entire country. The network is the largest in Asia and one of the largest in the world. The length of operated track is 63,465 km (39,435 mi). The network is badly in need of modernization. All railroad lines are publicly controlled, but some private-sector participation is being encouraged to help raise revenue. The system carries millions of passengers daily, but passenger traffic is heavily subsidized (Oldenburg, 2008).

By 2002 there were 3.4 million km (2.1 million mi) of roads in India, of which 47 percent were paved. Each state operates a publicly owned bus company. The major Indian ports, including Kolkata, Mumbai, Chennai, Cochin, and Vishākhapatnam, are served by cargo carriers and passenger liners operating to all parts of the world. The port system is operating beyond its intended capacity, although efforts are under way to modernize and expand port facilities. India has a large merchant shipping fleet. The shipping industry is dominated by the Shipping Corporation of India, which is partially government owned. A comprehensive network of air routes connects the major cities and towns of the country. In the 1990s India opened up domestic air service to private airlines for competition with publicly owned Indian airlines, and air service greatly improved as a result (Oldenburg, 2008).

### *2.5 Transportation in China*

The railroad is the most important mode of transportation in China. Since 1949 the total length of the country's railroads has more than doubled, reaching 62,200 km (38,600 mi) in 2005. The two major north-south routes (Guangzhou-Beijing and Shanghai-Beijing) connect with lines that extend into the northeast and southeast of China and into Mongolia and Russia. In 1995 a new Beijing-Kowloon railroad was completed, linking Beijing and Hong Kong. The major east-west line, from Lianyungang to Lanzhou, connects with a rail line to Ürümqi in far northwestern China and to Kazakhstan in Central Asia. The new rail lines have provided a dense network in the heavily populated and economically important regions of northeastern, central, and southwestern China (Clunas et al., 2008).

Road transport has become increasingly important in China. Before 1949, paved roads and highways only provided connections between the old coastal treaty ports (cities such as Shanghai and Tianjin that contained sections controlled by foreigners) and the surrounding countryside, but the road system now stretches well into the country's interior. Roads connect Beijing to the capitals of all provinces and autonomous regions, as well as to major ports and railroad centers. The network also extends into rural areas, making most localities accessible by road. In 2005 China had a total length of 1,900,000 km (1,200,000 mi) of highways. Most paved roads were in good condition. Motorized public transportation is well-developed in urban centers. Bicycles are popular for traveling short distances (Clunas et al., 2008).

Inland navigation on China's many rivers and canals accounts for a large proportion of the goods

shipped within the country, and its potential for increased development is great. The largest inland waterway is the Yangtze River, which has major ports at Chongqing, Yichang, and Wuhan. Some 18,000 km (11,000 mi) of the Yangtze and its tributaries can be traveled by steamboats. China's busiest inland waterway system, however, is the Grand Canal, which extends from Beijing to Hangzhou, near Shanghai. The southern portion of the canal is actually a network of many local canals and lakes. Such cities as Suzhou, Wuxi, and Changzhou are important inland ports in this region. In parts of rural China, peasants use irrigation and drainage canals as inland waterways (Clunas et al., 2008).

China's long coastline and the proximity to the coast of some of the country's most important industrial cities have long made coastal shipping an important mode of transportation. To accommodate and encourage the expansion of international trade, the government has invested in improving existing port facilities and constructing new ports. There are a number of major ports along China's coastline, including those at Shanghai, Hong Kong, Macao, Qinhuangdao, Guangzhou, Dalian, Ningbo, and Tianjin. China has a merchant fleet of 3,799 ships (2007) that visit ports around the world (Clunas et al., 2008).

China's largest international airports are at Beijing, Hong Kong, Shanghai, and Guangzhou. Provincial capitals and a number of other major cities have airports that handle domestic flights. China's national airline is Air China. A number of regional airlines have been established, and some of them also operate on international routes (Clunas et al., 2008).

### *2.6 Transportation in Egypt*

Egypt has 5,150 km (3,200 mi) of railroads, all of which are owned by the state. The principal line links Aswan and towns north of it in the Nile Valley to Alexandria on the Mediterranean coast. The inland waterways of Egypt are used extensively for transportation. These waterways include the Nile, which is navigable throughout its course in the country; about 1,600 km (about 1,000 mi) of shipping canals; and more than 17,700 km (11,000 mi) of irrigation canals in the Nile Delta (Goldschmidt et al., 2008).

Two highways connect Cairo with Alexandria. Other highways connect Cairo to Port Said, Suez, and Al Fayyūm. The total length of highways and roads in Egypt is 92,000 km (57,000 mi). International airlines provide regular service between Cairo and Alexandria and major world centers. Egypt Air, the government-owned airline, also provides domestic and foreign service. The country has about 80 airports and airfields. The major seaport is Alexandria, followed by Port Said and Suez, all of which are served by numerous shipping companies. The Suez Canal produces substantial annual toll revenues. In the early 2000s about 18,000 vessels used the canal each year (Goldschmidt et al., 2008).

### *2.7 Transportation in South Africa*

South Africa has by far the most developed transport infrastructure in Africa. The rail system, which links all major centers, is almost entirely administered by the state-owned Transnet through its railway division Spoornet. Passenger services are slow by Western European standards, but the provision of luxury and semi-luxury trains is an attraction (Lemon et al., 2008).

Car ownership is almost universal among whites and rising rapidly in the rest of the population, although less so in rural areas. Commuting for blacks is largely by public transport, including buses, kombi (minibus) taxis and, in the larger cities such as Cape Town, Durban, and Johannesburg, commuter railways (Lemon et al., 2008).

South African Airways provides an extensive network of air services between all major cities in South Africa, between Johannesburg and a variety of destinations in Africa, and between South Africa and major cities in Europe, the Americas, East Asia, and Australia. Smaller carriers also fly domestic routes. Johannesburg has the country's major international airport, but Cape Town has a number of direct overseas flights (Lemon et al., 2008).

The ports of Durban, Port Elizabeth, and Cape Town provide large container terminals. Durban is the busiest port for general cargo. East London is the only river port in South Africa. Saldanha Bay, northwest of Cape Town, is the largest port on the west coast of Africa. It was developed primarily for the export of iron ore from Northern Cape. Richard's Bay, one of the best artificial harbors in the world, was developed primarily to handle bulk cargoes, including coal (Lemon et al., 2008).

## **3. DISCUSSION**

### *3.1 Lessons derived*

The following are lessons derived after critical assessment of transport system in the six developed countries (Japan, Germany, India, China, Egypt and South Africa) as shown below;

1. It should be noted that rail transportation is the most dominant mode of transportation in all the selected developed countries. Rail transportation plays major role in the economic, socio-political and environmental development. Nigerian government should invest more in the construction of rail

transport infrastructures such that the heavy burden on road infrastructures will be shifted to road. Railway should be linked across all states and cities in the federation regardless of political sentiments.

#### *Emphasis on railway development*

In the late 19th and early 20th centuries, railways transformed the face of Africa by creating strategic corridors that opened the interior for the exploitation of mineral and other resources. But most lines in Nigeria remain isolated, with little network interconnection. Railway development was sluggish to compete for time-sensitive traffic (most especially the passengers) as compared with the development of road infrastructure. Also, new and larger trucks increasingly captured the higher-value general freight.

#### *Historical Overview of rail transportation in Nigeria*

The railway transportation system in Nigeria has been considered as the oldest and perhaps has the greatest carrying capacity in overland transport modes in Nigeria. The first Railway construction in Nigeria began in 1898 with the Lagos - Ibadan line that was completed in 1901. Its original conception by the colonial authorities was to open up the country to trade with England as well as an instrument of administrative control, regional growth and development, politics and military control (Robinson et al., 1961; Ademiluyi, 2006a; Amba and Danladi, 2013).

Generally, rail transport is the most suitable and cheapest mode of transportation for heavy traffic flows in Nigeria. Nigeria's single-narrow-gauge railway line constructed in the colonial period was for many years the only mode of freight movement between the northern and southern parts of the country. The Lagos - Ibadan line was extended to Jebba in 1909, and this line later joined the Kano - Baro line in 1915. In the East of Nigeria, the Port Harcourt line reached Enugu in 1916. Between 1916 and 1966, the railway line was connected to towns and cities like Jos, Kaduna, Zaria, Namoda, Nigwu, Ifo, Maiduguri and Gombe. Alesa Eleme oil refinery to Eleheruwa in Port-Harcourt was connected to Enugu line in 1966 (Ademiluyi and Dina, 2011; Amba and Danladi, 2013).

Similarly, it was reported that the Nigerian railway network comprises 3,505 kilometers of narrow gauge (1.067m), single track running parallel through north-west to south-west and from south-east to north-east of the country. 1,788km of this network is on 1,600 sharp curves between 4 and 10 degrees, and this has reduced the maximum permissible speed to 65km/hr (Amba and Danladi, 2013).

Unfortunately, after independence, there was no major track extension made by the government in the past five decades. Basically, the existing network is the colonial relics Nigeria inherited from the colonial administration. The total abandonment of the railway system by successive governments had plunged the railway system in Nigeria into a state of comatose. After twelve years of independence, the Nigerian Railway Corporation (NRC) began recording financial losses, a trend that has not only continued but has increased in enormity. In 1981 alone, the corporation recorded a loss of more than ₦83 million and since then the loss has been continuous. <sup>[18]; [1]</sup> Studies had revealed that there has been a persistent downward trend in Nigeria Railway's fortunes (Solarin, 2000; Abubakar, 2006; Ademiluyi, 2006a; Amba and Danladi, 2013). The rapid increase in the use of motorized transport has led to precipitous decline in railway patronage both in passengers and freights.

For decades, Nigerians had dreamt of an efficient transport system built around the railway technology like in the developed countries for mass movement. The dream is as good as coming to fulfillment now, as all hands are already on deck for the flag-off of commercial services of the Abuja-Kaduna railway project by President Muhammadu Buhari. The Minister of Transport, Rotimi Amaechi said the completion of the project which has suffered years of hiccups is a mark of full commitment by the present government towards the revival of the transport sector in Nigeria (Vanguard, 2016).

The Abuja-Kaduna railway project is already a leap in efforts towards revitalizing the national economy. Aside the capacity to open space for generation of more employment opportunities, the tendency to save costs for different categories of Nigerians on mass movement within the Abuja-Kaduna geographical sphere is unquantifiable. The train is expected to travel 154km/hr (Vanguard, 2016).

With the project, it would be easy henceforth for Nigerians to live in Kaduna and yet work in Abuja. Civil servants in this category no longer need to worry about the huge costs they often incur on transportation worsened these days by the increase in the price of fuel. The opportunity to take cheap train while they shuttle between Abuja and Kaduna has the tendency to encourage family binding with little need for population redistribution (Vanguard, 2016). It is expected that the project will be revisited in other regions of the country.

2. Rail transport operations in the selected developed countries are privatized and also operated by the state. They privatized operations involving the movement of goods and services to enhance revenue generation and the state operates the passenger rail movement to enhance subsidy. Nigerian government should develop sound policies towards concessioning of railway for conveying raw materials; agricultural produce, petroleum products and finished goods; this will improve operational efficiency, maintenance, job creation and generate revenue for the country. Also, the passenger rail should be controlled by state to enhance subsidy.

3. Partnering with the West African countries such that rail lines will connect those countries together. This will facilitate transcontinental trade, social integration and security efficiency.
  4. There has been recorded success of road concessioning in some part of Lagos state. The federal and state governments should totally key into the idea of road concessioning and railway concessioning. This will quicken the development of road and rail infrastructures and will also create jobs opportunities, enhance efficiency of road and rail management and maintenance.
  5. Construction of tunnels on highway will enhance effective security, vehicle monitoring and research data.
  6. Strict enforcement of transport research institutes for proper update of transport related data. This will enhance transport planning. For instance, in 2004, Japan had 441 cars for every 1000 people; meanwhile, such result is difficult to assess in Nigeria because the relevant data to analyze is not readily available.
  7. Huge investment in procuring Nigerian vessels and dockyard infrastructures and facilities to enhance competitiveness and job creation. This will effectively enhance the fulfillment of Cabotage Acts on Nigeria Inland Water.
  8. Upgrading and concessioning Nigerian Airports for better efficiency. Adopting the policy of Low Cost Carriers in Airline operation and Low Cost Airport operation. This will generate more traffic in the domestic flight operation and use of airport facilities.
  9. Efficiency of underground pipeline system for the conveyance of liquid and gaseous petroleum products.
- Finally, as a result of the below singular factor or combination of the factors in Nigeria such as intractable power crisis at the pinnacle, corruption tendency and vested interest, defect or weak transport policies, lack of mental magnitude among government stakeholders and policy makers, lack of good governance, lack of proper consultations from academic professionals and university research institutes, and mismanagement, there is decrease in revenues which delayed the operations, maintenance and replacement of deteriorating track and rolling stocks. Therefore, if the rail transport in Nigeria is efficient, the system will reclaim higher-value traffic and high quality of service which will compete with road transport system and the market share will not solely favour road competition.

## References

- Abubakar A.A. (2006). Nigerian Railways: Past, present and future perspectives. Rail News, 4(6): 4.
- Ademiluyi I.A. (2006a). Rail Transport System in Nigeria: It Contributions, Constraints and the Way Forward. Knowledge Review, 12(4): Pp.1-8.
- Ademiluyi I.A. and Dina O.A. (2011). The Millennium Development Goals and the Sustainable Future © Kamla-Raj 2011 J Hum Ecol, 33(3): Pp.203-209 for Nigeria's Urban Environment: A Railway Strategy.
- Adeniran, Adetayo O. and Yusuf, Temitope B. (2016). Transportation and National Development: Emphasis to Nigeria. Developing Country Studies [www.iiste.org](http://www.iiste.org) ISSN 2224-607X (Paper) ISSN 2225-0565 (Online) Vol.7, No.9. Pp. 93-104.
- Amba, Daniel A. and Danladi, Jonathan D. (2013). An Appraisal of the Nigerian Transport Sector: Evidence from the Railway and Aviation Sub-Sectors. Journal of Economics and Sustainable Development [www.iiste.org](http://www.iiste.org) ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.4, No.10, 2013.
- Anyanwu, J.C.A. Oyefusi, H. Oaikhenan and F. A. Dimowo (1997). The Structure of the Nigerian Economy (1960-1997). Onitsha: Joanee Educational Publishers Ltd.
- Clunas, Craig, et al. "China." Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Cybriwsky, Roman A., et al. "Japan". Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Good, Wilson and Jebbin, Maclean Felix (2015). Transportation and National Development. Journal of Economics and Sustainable Development [www.iiste.org](http://www.iiste.org) ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.6, No.9, 2015.
- Goldschmidt, Arthur, et al. "Egypt." Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Harrington, Joel F. and Merkl, Peter. "Federal Republic of Germany". Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Jean-Paul Rodrigue, Claude Comtois and Brian Slack (2006). Geography of Transport Systems. First published 2006 by Routledge.
- Lemon, Anthony, O'Meara, Patrick, and Winchester, N. Brian. "South Africa." Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Okeafor, S. Uche (1998). Physical Distribution and Transportation Management (2nd ed). Port Harcourt: Obohikel Publishers.

- Oldenburg, Philip. "India". Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Oyesiku O. (2013) Institute of Transport Administration of Nigeria.
- Robinson H. et al. (1961). The Economic Co-ordination of Transport Development in Nigeria. Stanford Research Institute, Menlo Park, California SRI.
- Stock, Robert. "Nigeria". Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Solarin A.M. (2000). An Appraisal of Rail Transport and Its Effect on Freight Mass Transit in Nigeria. M. Sc. Thesis, Unpublished Ago-Iwoye, Centre for Transport studies Ogun-State University, Nigeria
- The 2015 Domestic Aviation Industry September 2015 Customer Satisfaction Survey Report.
- Vanguard News: For Nigeria's Rail Transport, a New Day Beckons. 26<sup>th</sup> July, 2016.

#### Biography

ADENIRAN, Adetayo Olaniyi is a graduate of Ladoke Akintola University of Technology (LAUTECH), Ogbomoso, Oyo State, Nigeria where he bagged his first degree in Transport Management Technology, 2014. He is currently a Master student of the Federal University of Technology, Akure, Ondo state, Nigeria where he studies Transport Management Technology. He is an independent transport consultant.