IMPACT OF TRANSPORTATION ON THE PERFORMANCE OF THE NIGERIAN ECONOMY FROM 1986-2015

[1]HAMZA A. PATE AND [2]YUNUSA N. BELLO

[1]department of Management Technology, [2]department Economics,
School of Management and Information Technology
Modibbo Adama University of Technology Yola, Adamawa State, Nigeria
[1]hamzapate@ymail.com; [2]yunusabuba82@gmail.com

ABSTRACT

This paper investigates the impact of transportation on the performance of the Nigerian economy from 1986-2015. Data was sourced from CBN bulletin and national bureau of statistics. The properties of time series variables were examined through the application of Augmented Dickey-Fuller technique and Jonhansen co-integration test of long term relationship between the variables was also adopted. The results of the OLS revealed that transportation impacted positively on the performance of the Nigeria economy. The results of unit root suggest that all the variables of the model are stationary at first difference I(1). The results of co-integration revealed that there is long term relationship between GDP and expenditure on transportation in Nigeria. Moreover, this paper found that, there is a link between economic performance and expenditure on transportation in Nigeria, implying that if government increase spending on transportation system it will boost economic performance of Nigeria. Therefore, this paper recommends that concerted effort be made by policy makers and the government to increase expenditure on transportation. If this is done will improve performance of the Nigerian economy. Government and private individuals should provide adequate transportation facilities in terms of road signs, traffic lights, street lights, medians, drainages, and functional mass transit vehicles so as to minimize traffic congestion and accidents.

Keywords: Capital, Expenditure, Recurrent, Transportation, Unit root

1. INTRODUCTION

It is universally recognized that transportation is a crucial factor for sustained economic growth and modernization of a nation. The adequacy of this vital infrastructure is an important determinant of the success of a nation's effort in diversifying its production base, expanding trade and linking together resources and markets into an integrated economy. Olebune (2006), define transportation infrastructure as the arteries for the flow of people, goods and information which are necessary in a manufacturing and export economy. For Nigeria to be able to reverse the consequences of economic meltdown, it is necessary to improve on its Gross Domestic Product (GDP). However, the achievement of higher GDP (measure of economic growth) is threatened by inadequate and diminishing connections to national and global markets by air, sea, rail and road. As population grows geometrically, the transportation infrastructure has not been developed to the extent that it can effectively address the problems of accessibility and mobility needs for the movement of people and goods.

Moreover, one of the key factors that play a pivotal role in a region's economic growth is the presence of a reliable and efficient transportation system, this is mainly due to the fact that a well-developed transportation system provides adequate access to the region which in turn is a necessary condition for the efficient operation of manufacturing, retail, labour and housing markets.

Transportation is a critical factor in the economic growth and development. It is a wealth creating industry on its own inadequate transportation limits a nation's ability to utilise its natural resources, distributes foods and other finished goods, integrate the manufacturing and agriculture sectors and supply education, medical and other infrastructural facilities. There is the need therefore to maintain and improve the existing transportation and build new infrastructures for a national wealth. The national wealth is the growth domestic products (GDP) which is an indicator or measures of the rate of economic growth. Transportation infrastructure is critical to sustain economic growth because people want to improve their standard of living and they see increased income as the way to achieve that goal, transportation system enhancement are in turns a means of maintaining or improving economic opportunities, quality of life and ultimately income for people in a particular region Lucas (1998)

Transportation also has a broader role in shaping development and the environment. Policy concerns in the next millennium will increasingly focus on the effects of transportation on where people live and on where businesses locate; and on the effects that these location decisions have on land use patterns, congestion of urban transportation systems, use of natural resources, air and water quality, and the overall quality of life Issues of urban sprawl, farmland preservation, and air and water quality have already pushed their way to the forefront of policy debates at both the national and local levels. To make prudent decisions, policy makers must be equipped with the best information and analysis possible about the interactions among these various factors. Transportation becomes the back bone of any economy, especially countries like Nigeria, as such an anatomy of aspects relating to inefficiencies and lack of good transportation network in Nigeria coupled with low rate of economic growth (GDP) is crucial, attached to this is the poor government policy on transportation (Lack pf regulation of fees charged by private transporters, inadequate fuel. Lack of spare parts and above all the prevalence of bad roads and lack of security have succeeded in trimming down the transport system in Nigeria which have a negative effect on the economic growth. Investment in transportation infrastructure is critical to sustained economic growth. Mobility studies show that transportation is absolutely essential to economic productivity and remains competitive in the global economy. An international study found every 10 percent increase in travel speed; labour market expands 15 percent and productivity by 3 percent (Barrister and Berechinan. 2000).

It is universally recognized that transport is crucial for sustained economic growth and modernization of a nation. Adequacy of this vital infrastructure is an important determinant of the success of a nation's effort in diversifying its production base, expanding trade and linking together resources and markets into an integrated economy. It is also necessary for connecting villages with towns, market centres and in bringing together remote and developing regions closer to one another. Transport, therefore, forms a key input for production processes and adequate provision of transport infrastructure and services helps in increasing productivity and lowering production costs.

The provision of transport infrastructure and services helps in reducing poverty. It needs no emphasis that various public actions aimed at reducing poverty cannot be successful without adequate transport infrastructure and services. It is difficult to visualize meeting the targets or universal education and healthcare for all without first providing adequate transport facilities. All sectors, including transport, operate within the socioeconomic framework provided by the State. Specific policies are designed within the framework for each sector in order to, meet national goals and objectives. Currently, the main objective of development planning in India

is higher growth in Gross Domestic Product (GDP). The aim is to achieve a target of 8 percent growth in GDP by 2007, i.e. by the end of Tenth Five Year Plan. The higher rate of economic growth must also be accompanied by wider dispersal of economic activity and has to go together with the objectives of reduction in poverty, provision of gainful and high-quality employment, improvement in literacy rates, reduction in the growth of population, reduction in gender inequality in illiteracy and wage rate, reduction in infant mortality, etc. As a service industry, transport does not exist for its own sake. It serves as a means to achieve other objectives. In formulating policy for the development of the transport sector, various macro objectives mentioned above therefore have to be taken into account. Some of these are economic in character while others are of a socio-political nature. Economic and non-economic objectives are not always consistent. However, their mix is one of the important factors which determine the pattern of investment and its funding in various sectors of economy (Mustafa 2011)

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK.

One of the first systematic attempts to link transport infrastructure indirectly to economic growth was made by John Maynard Keynes in 1936. In the General Theory of Employment Interest and Money, Keynes argues that in an economy characterized by depression and market failure, high public expenditure is necessary to adjust the economy back to high levels of employment. This implies that high public investment in infrastructure would increase national income, employment and the welfare of people.

However, existing empirical studies on the contribution of transportation infrastructure on economic growth are essentially based on the production framework. Following Pravakar, Ranja, and Nataraj (2010), This study will be assuming a generalised Cobb-Douglas production function and extending the Neo-classical growth model to include transport infrastructure stock (i.e output of the transport sector) along with capital stock (i.e investment on transport infrastructure) as the input of the production function and the gross domestic product as the output.

The generalised form of Cobb-Douglas production is open to the possibility of constant return to scale as suggested by Solow-type model (Solow, 1956). On the other hand – the model also admits the possibility of constant or increasing return to capital as suggested by some endogenous growth model.

Economic Growth Theory Perspective.

In this session, the study explores the historical and intellectual evolution in the scholarly thinking about how and why growth does or does not take place. The classical theories of economic growth have been dominated by major strands of thought such as:

The Solow Neoclassical Growth Model

This theory is an alternative to Harrod-Domar model line of thought without its crucial assumption of fixed proportion in production. He postulates a continuous production function linking output to the inputs of capital and labour which are substitutable. In the process, it assumes that there are diminishing returns to the use of these inputs. The aggregate production function, Y=f(K, L) is assumed characterised by constant return to scale, for example, in the special cases of Cobb-Douglas production function , at any time t we have Y(t)=K(t){A(t)L(t). where Y is gross domestic product, K is the stock of capital (which may include human capital, physical capital etc), L is labour, and A(t) represents the productivity of labour, which grows over time at an exogenous rate. Because of constant returns to scale, if all inputs are increase

by the same amount then output will increase by the same amount, That is yY=f(yK,yL), here y is some positive amount. This implies that the Generalised Cobb-Douglas production is open to the possibility of constant return to scale it becomes Solow-type models. On the other hand, if the model admits the possibility of constant or increase in return to capital it refers to Romer (1987) endogenous growth model which addresses technological spill-overs that may be present in the process of industrialization

Empirical literature

Canning and Bennathan (2000), cited in Boopen (2006) estimated Cobb-Douglas production function for a panel set of 89 countries; using annual cross-country data for the period of 1960-1990 and reported a positive rate of return for the case of paved roads (0.048-0.083).

Zhu (2009), applied production function approach on panel data covering the period between 1992 and 2004 to compare transport-economy linkage of developed countries and developing countries. His results indicate that physical units of transport infrastructure are positively and significantly related to economic growth and the output elasticity with respect to physical units for developed countries is higher than developing countries.

Boopen (2006), analyzed the contribution of transport capital to growth for a sample of Sub Saharan African (SSA) and a sample of Small Island Developing States (SIDS), using both cross sectional and panel data analysis. In both cases, the analysis concluded that transport capital has been a contributor to the economic progress of these countries. Analysis further revealed that in SSA case, the productivity of transport capital stock is superior as compared to that of overall capital while such is not the case for the SIDS where transport capital is seen to have the average productivity level of overall capital stock.

For research of transport investment and growth in developing economies, Demurger (2001) cited in Zou (2008) examines data of 24 provinces of China in 1985-1998 and points out that the inequality of transport infrastructure is one of the main factors leading to growth inequality across provinces. Using a time series analysis for the investment into road infrastructure and economic growth in South Africa, Fedderke et al. (2006) cited in Moctezuma (2008) find that road infrastructure does indeed lead to economic growth in South Africa both by boosting GDP directly and by raising the marginal products of other production factors.

In Nigeria, Imobighe and Awogbemi (2006) regressed private capital stock, non-military, net investment, time to capture the effects of the technical changes in economic growth, one-year lag GDP and electricity supplied against Gross Domestic Product to assess the impact of capital stock in Nigeria's economic growth from 1980-1998. They found gross domestic product to be positively related to private capital stock by one-year lag $GDPt_{-1}$ and electricity supply was negatively related to recurrent and capital expenditure, except expenditure on defense and technical change. They further found that while lagged value of gross domestic product significantly increases output in Nigeria, other explanatory variables were, individually insignificant in explaining output in Nigeria. Loto (2006) also found that infrastructure, when measured in physical sense, impacts positively on economic growth

Some researchers explored the impact of public capital on the growth rate of output. Canning et al. (2004) cited in Zhu (2009) used physical measures like kilometers of paved road to investigate "the long run consequences of infrastructure provision on per capital income in a panel of countries" covering the period between 1950 and 1992. His estimate results suggested that for paved road the sign of the impact of an increase in provision on GDP per capital varies

across countries. Some studies also show that public capital can lead to economic growth by raising total factor productivity of all inputs. Aschauer, (1989 cited Rosik 2006) find evidence that a one percent increase in public capital stock lead to a 0.39 percent increase of total factor productivity. Yamaguchi, (2008) conducted a regression analysis on panel data of five nations between 1992 and 2004 to identified road investment impact on macro-economic multi factor productivity growth (MFP) and reported that physical improvement of the road capital stock has positive effect. He obtained a coefficient of 0.1782.

Other studies reported that the importance of infrastructure on economic development has been over emphasized. For instance, Neuser (1993) using public data from Ford and Poret (1991) for the GT countries over the period 1970-1987, applied total factors productivity growth and co-integration techniques to the sample. He reported insignificant and unstable results. Atom (1991) also confirmed that public sector capital investment has no significant effect on output of the private sector and investment.

Duranton and Turner (2008) estimated the effects on major cities of major roads and public transit on the growth of major cities in the US between 1980 and 2000 and found that a 10 percent increase in city's stock of roads causes about a 2 percent increase in its population and employment and a small decrease in its share of poor households. Zou, et al (2008) in their own study of transport infrastructure, growth, and poverty alleviation in East and central China with panel data of 1994 to 2002 and a time series data of 1978-2002 reported a higher growth level from better transportation. Since increase in road safety is related to increasing socio-economic development, Garg and Hyder (2006) studied the trends in injury and death rates in India and analyzed these trends in relation to economic and population growth. Using linear regression models to test 'a priori' hypothesis of a positive relationship between net domestic product (NDP) and death rates from road crashes, they reported an inverted U-shaped relationship between injury, death rates and NDP authenticating Kuznets phenomenon for within-country level comparisons. He therefore recommended a state investment in road safety in addition to any overall national efforts.

Njimante and Mbohjim (2012) researched on traffic congestion and economic growth and found out that traffic congestion affects productivity and hence, economic growth in Cameroon. Aschauers (1989) used annual time series data to measure road infrastructure and productivity, growth and output. In 2012, the study by Research Digest shows that the midpoint estimate of the elasticity of GDP with respect to road infrastructure lies around 0.15 for developed countries, implying that doubling of infrastructure raises GDP by 15%. Finally, Smith (1994) observed in her empirical study that pavement quality of road network has significant relationship with income growth which is a strong indicator of the level of economic growth of a nation.

Harper (1977) concluded by looking at correlation between transportation and development of a nation. He notes "A nation" type and level of economics on the quality, quantity and cost of transportation services and availability. According to Harley Fear (2013) there is no economy which has developed to high level of productivity without heavy investment in transportation facilities. This shows that economics progress inevitably ties to transportation since trade or commerce cannot flourish without an adequate transport action system at reasonable cost. Harper buttressed his point on the relationship between transportation and economic development by acting U.S transportation expenditure and sector contribution to the country's Gross National Product (GNP) 1995. The United States spent 14 billion dollars on the movement of freighter transportation and related industries (such as transport equipment

manufacturing) also in 1976, employment was provided for 11% of the approximately 15% of the federal taxes collected and 25% of the state taxes collection 1975.

Also, Onakomaja and Ekanem (1977) in their paper titled "Nigeria transportation" noted that for there to be an efficient transportation system in the country, they should be a data base system, while could assist the research planning and development of transportation network. The water shares the view of these eminent scholar on this particular point. In sitting any industry or establishment in an economy one of the factors that should be considered as transportation whether it is accessible; transportation also creates employment for the populationand it also creates revenue for the government, it is argued that public enterprises should at least "breakeven" by recovering their cost, Nnama (1989) this ascertain is justified in terms of either the incentives such retirement given to efficient management or the need to void the burden of subsidization groom general tax revenue. World Bank report (1983).

According to Floyed (1978) the total profitability of the enterprises becomes affected when such loans are wholly or partially exempted from taxation which tends to make profitability an inappropriate measure of financial performance. Another writer asserted that a comparison of public and private enterprise should be restricted to two types of institutions during similar types of output but more generally where difference exist, the differences should be related and attributed to ownership rather than other factors. Reel (1976). Changes in prices and profitability of public enterprises are sometimes tracked to the mechanization of macroeconomics policy. Nnann (1898). After subsidizing for other factors, it has been opened that in United States of America, prices are lower and output higher in public firms than in private. Firms are more geared to maximizing their ownerswealth and loss geared to the ballot box as such more price discrimination might be expected in private enterprises. Avoy (1979).

In the words of Beafo (1982) to overcome the problem, one must consider special distribution further research should concentrate on the existence of marginal cost pricing equilibrium if public deficit is financed by taxes in goods and factors in inelastic supply or by two-point tariffs where the fixed parts aggregated overall customers, must be such as to cover the differences between total cost and the revenue which will result from marginal cost pricing.

According to Page Black (2013). Talked about mobility and he say that it is one of the most fundamental and important characteristics of economic activity as it satisfies the basic need of going from one location to the other, a need shared by passengers, freight and information. All economies and regions do not share the same level of mobility as most are in a different stage in their mobility transition towards motorized forms of transport. Economies that possess greater mobility are often those better opportunities to develop than those with scarce mobility. Reduced mobility impedes development while greater mobility is a catalyst for development. Mobility is thus a reliable indicator of development. Providing this mobility is an industry that offers services to its customers, employs.

Zahir et al (2011) in their study of transportation, telecommunication and economic development of Pakistan employed the technique of autoregressive model in the analysis of time series data. The outcome shows univariate association in terms of labor and gross domestic product (GDP); labor and capital; labor and telecommunication and capital and telecommunication. Bivariate relationships are exposed between capital and GDP and telecommunication and GDP. Multivariate analysis shows that capital (gross fixed capital formation) and transport infrastructure (roads) are significant cause of higher GDP in Pakistan.

Egert et al (2009) empirically examined the relationship between infrastructure and economic growth. The time series results showed, among others a positive effect of infrastructure investment on growth. The result also varies across countries and sectors and further showed infrastructure investment in telecommunication and the electricity sectors has robust positive effect on long-run growth unlike railways and road network.

Zou et al. (2008) employed panel and time series data to investigate the effect of transport infrastructure on economic growth and poverty alleviation in China and found that high growth rate in East and Central China was to a great extent from improved transport infrastructure. Besides, transport investment on road was a good source of growth; in comparison of road and railways public investment in region, they also found that public investment on road construction in poor areas is of great importance to growth and poverty alleviation.

Adegbemi et al. (2012) investigated the effect of infrastructure on economic growth of Nigeria using a multivariate model of simultaneous equations. The results revealed that infrastructural investment has significant impact on output of the economy directly through its industrial output and indirectly through the output of other sectors. Agricultural sector was not affected by infrastructure, but there was a bi-directional causal relationship between infrastructure and economic growth.

Transportation and Economic Growth

Transportation also contributes to the economy by providing millions of jobs. It allows men and women to earn their living by manufacturing vehicles and by driving, maintaining, and regulating them to allow for the safe and efficient movement of goods and people. One out of every seven jobs in the United States is transportation related Transportation jobs in transportation industries as well as in non-transportation industries employed nearly 20 million people in 2002, accounting for 16 percent of U.S. total occupational employment. For example, the for-hire transportation sector employed over 44 million workers In 2002 More than 60 percent of these for-hire workers are either in freight-related occupations or in Jobs that directly support freight transportation. An additional 1.7 million workers are employed in transportation equipment manufacturing and another 4.5 million in transportation-related industries such as automotive service and repair, highway construction, and motor vehicle and parts dealers (USDOT BTS 2004). Transportation-related occupations also make up a significant portion of the employment of non-transportation industries such as truck drivers, freight arrangement agents, and freight-moving workers in the wholesale and retail industries. In 2002, there were about 9.2 million people employed in transportation-related occupations in non-transportation industries.

Growth in productivity is the fundamental driving force for economic growth Productivity growth in freight transportation has long been a driving force for the growth of U.S. overall productivity and contributed directly to the growth of the U.S. GDP. For example, from 1991 to 2000 labor productivity rose 21 percent in the overall non-farm business sector' During the same time period, labor productivity rose 53 percent for rail, 23 percent for trucking, and 143 percent for pipeline. All three of these modes are primarily engaged in freight transportation. Such productivity gains result in lower transportation costs and lower prices for consumers. This brings savings to consumers and reduces business costs.

Profit measures and the economics importance of transportation

Transportation also makes possible geographical specialization whereby different state in the limited states produces these goods and services that are best suited for geographical

specialization for those than a state of its resources and energy to production of goods and services that is not well suited for in the economic wastage and lower standard of life for the people. Importance of transportation also has some effect on the value of land that is adjacent to or served by the improvement (improvement in this case) for example, land served by a new transportation facility will eventually increase the value of formers and land owners, located adjacent to the free – way we may find out that the freeway is a nuisance in terms of noise and air pollution. In the profit measures financial performance of a public and private corporation mass transit operation can be assessed in terms of their operating surplus (or balance) of ten measured as the differences between sales, revenue and expenditure on goods and services other than capital assets. The use of these techniques include depreciation, all receipts from government transfer and payments togovernment in form of interest, dividends or receipt profitability and even to greater extent operating surplus in unsatisfactory and ambiguous indicators of economic performance (Johonson 2010).

Infrastructure Investment in Relation to Economic Growth

One of the pioneer studies that addressed the relationship between transportation infrastructure and economic development was conducted by Aschauer (1989) who concluded that there was a positive impact on private sector productivity when public capital was invested in transportation infrastructure. Aschauer followed selected highways to analyze the per capita income impact, and again concluded that there is a relationship between the two. In the 1990s, Mofidi and Stone (1990) looked at the impact of transportation infrastructure on economic development through a productivity lens and found a positive relationship between highway spending and manufacturing investments and employment. Jones (1990) looked at employment, income, and investment as key variables for assessing the economic impact of transportation infrastructure. Cook and Munnell (1990) also found positive relationships between highways infrastructure and the gross state product (GSP). Others including Moonmaw et al. (1995) found positive relationships between transportation infrastructure and per capita income. Akhmetzhanov and Lustoy (2013) demonstrated links between transportation infrastructure and regional development with respect to population movements

3. METHODOLOGY

Theoretically, changes in the growth rate of transportation, and building and construction influences and drive economic growth upward. Thus, in order to study the impact of transportation on the performance of Nigerian economy from 1986-2015, we posit that growth domestic product depends on expenditure on transportation and expenditure on building and construction. An Ordinary Least Square (OLS) technique was used for this study. The technique was choosen because it provides satisfactory results for estimates of structural parameters (Koutsoyiannis,1977:43). This method involves decision on whether the parameters are statistically significant and theoretically meaningful. It also verifies the validity of estimates and whether they actually represent economic theory.

Model Specification

The functional form of this postulation can be expressed as:

GDP = f (EXPTR, EXBDC)…….(3.1)

For estimable purposes we specify the model as:

$LogGDP_t = \beta_0 + \beta_1 logEXPTR_t + \beta_2 logEXBDC_t + e_t$…….(3.2)

Log = natural logarithm

GDP = gross domestic product at time t.

EXPTR= Expenditure on transportation
EXBDC= Expenditure on building and construction
e = Error term
t = Time
β_0 = Intercept
β_1,β_2 = Coefficient of independent parameters

Apriori Expectations

The economic apriori test was conducted to enable us examine the magnitude and size of the parameter estimates. This evaluation was guided by economic theory to ascertain if the parameter estimate conforms to expectation. Based on economic theory, it is expected that an increase in expenditure on transportation and building and construction will drive economic growth up. These imply that: β1, β2, >0.

4. EMPIRCAL RESULT AND DISCUSSION

Table 1, contains multiple regression results for GDP, Expenditure on transportation and expenditure on building and construction in Nigeria. The results indicate that the coefficient of expenditure on Building and construction (EXBDC) and constant (GDP) are found be statistically significant as indicated by probability of 0.0000 and 0.0000 implying that the null hypothesis is rejected at 1%. While the coefficient of expenditure on transportation is found to be statistically insignificant as indicated by probability value of 0.3368 implying that the null hypothesis is accepted at 5% level of significant.

Table. 1: Regression Result

Dependent Variable: LOG(GDP)
Method: Least Squares
Date: 01/14/17 Time: 12:14
Sample: 1986 2015
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.980004	0.146357	47.69174	0.0000
LOG(EXTRP)	0.124698	0.127421	0.978632	0.3364
LOG(EXBDC)	0.752032	0.121463	6.191430	0.0000

R-squared	0.920655	Mean dependent var	8.617446
Adjusted R-squared	0.914777	S.D. dependent var	1.963636
S.E. of regression	0.573244	Akaike info criterion	1.819627
Sum squared resid	8.872421	Schwarz criterion	1.959747
Log likelihood	-24.29441	Hannan-Quinn criter.	1.864453
F-statistic	156.6421	Durbin-Watson stat	1.258046
Prob(F-statistic)	0.000000		

Precisely, the coefficient of Expenditure on transportation (EXTRP) is found to be statistically insignificant at 33.68 percent level respectively as indicated by their probability value of 0.0.3368. The coefficient of expenditure on building and construction and constant are found to be statistically significant at 1 per cent level respectively as indicated by their probability

value of 0.0000 and 0.0000 respectively. Hence, the coefficient of constant (GDP) and expenditure on building and construction (EXBDC) INFL are rightly signed (positive) and consistent with the theory, while the Coefficient of expenditure on transportation (EXTRP) is not rightly singed, hence is not consistence with theoretical expectation. The regression result implies that 1 per cent change in expenditure on transportation will increase GDP by 12.46 (0.124698) per cent. So also 1 per cent change in expenditure on building and construction will increase GDP by 75.20 (0.752032) per cent respectively. The F-statistics value of 156.6421, which measure the joint effects of the explanatory variables, found to be significant at 1 per cent as indicated by the corresponding probability value of 0.000000. Implying that the null hypothesis is rejected at 1 per cent. Which implies that the independent variable is simultaneously significant.

The R^2 value of 0.920655 implies that 92.06 per cent of the total variation in GDP in Nigeria was explained by expenditure on transportation and expenditure on building and construction. Coincidentally, the goodness of fit of the regression remained high after adjusting for the degree of freedom as indicated by the adjusted R 2 (R^2 = 0.914777 or 91.47%). The R-Square suggested that not only the included variables of the model that affect GDP in Nigeria, but there are other variables, although their influence is higher than those variables not captured in the model. The Durbin-Watson statistics (1.258046) in table 1 is higher than R^2 (0.920655) indicating that the model is non- spurious. The Durbin-Watson statistics 1.258046 is low and less than 2 indicating the presence of/or positive autocorrelation. This provides the bases for conducting unit root test.

Stationary Test (Unit Root Test)

This test is used to determine whether the data is stationary (i.e whether it has unit roots) and the order of integration. In this regard, the Augmented Dickey-Fuller (ADF) was used. The Unit root test result in Table 2 (see Appendix), shows that all the variables are not stationary at level but are stationary at 1st difference I(1) for GDP, EXTRP, and EXBDC which shows that the Augmented Dickey-Fuller (ADF) values are greater than their critical values at 1%, 5%, 10%.

Co-integration Test (Johansen Cointegration Test)

This test is use to show the long run relationship between the variables in a model. Given that all the variables are stationary, we decided to find out whether these variables are co-integrated. In doing this we adopted the Johansen procedure. The Johansen co-integration test makes use of two tests statistic namely: the trace test and the maximum Eigenvalue test. The first row in each of the table tests the hypotheses of no co- integrating relationship while the second row tests the hypothesis of one co-integrating relation and so on, against the alternative of full rank of co-integration. We present the results in Table 3.

The result shows the existence of co-integration between the gross domestic product (GDP) and other variables. The results show the rejection of null hypothesis of no co-integration and acceptance of the alternative of co-integration. Actually, the results imply the existence of a stable long run relationship between gross domestic product and sub-sectors of transportation.

Table 3: Co-integration Test (Johansen Co-integration Test)

Date: 01/14/17 Time: 12:29
Sample (adjusted): 1988 2015
Included observations: 28 after adjustments

Trend assumption: Linear deterministic trend
Series: GDP EXTRP EXBDC
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.901640	91.33050	29.79707	0.0000
At most 1 *	0.604304	26.39508	15.49471	0.0008
At most 2	0.015453	0.436048	3.841466	0.5090

Trace test indicates 2 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

5. CONCLUSION AND RECOMMENDATIONS

This paper investigates the impact of transportation on the performance of the Nigerian economy from 1986-2015. Secondary source of data was adopted sourcing data from CBN bulletin. The properties of time series variables were examined through the application of Augmented Dickey-Fuller technique in testing the unit root property of the series and jan-hansen co-integration test of long term relationship between the variables. The results of the OLS revealed that transportation impacted positively on economic performance in Nigeria. The results of unit root suggest that all the variables in the model are stationary at first difference I(1). The results of co-integration reveal that there is long term relationship between GDP and order variables under investigation. Moreover, thispaper found that, there is a link between economic performance and transportation system in Nigeria, implying that if government increase spending transportation system it will boost economic performance of Nigeria. Therefore, this paper recommends that concerted effort be made by policy makers and the government to make policies that will improve transport system as well as government to spend more on transportation system in other to improve economic performance of Nigeria.

Moreover, The Federal Ministry of Transport should balance the federal government effort through transportation regulations, strict monitoring of implementation of the allocation, improving the quality of human resources and the involvement of the private sector. They should provide adequate transportation facilities in terms of road signs, traffic lights, street lights, medians, drainages, and functional mass transit vehicles by government and private individuals is necessary so as to minimize traffic congestion and accidents.

The Federal Ministry of Transport need to increase the number of quality road networks as well as introducing high occupancy vehicle lanes. Proper maintenance of existing road networks should be enforced. There is also need for construction of flyovers at crossroads to lighten up notorious congestion areas. Also, they should be increased investment in research on other modes of transportation such as opening up water ways, revitalizing the railway system so as to reduce congestion and pressure on the existing roads.
Nigerians should ensure to pay charged taxes, toll gate fee and fines for breaking the traffic rules because this will balance the government effort in providing world-class transport facilities. Also, people should make use of other mode of transportation that are available in the country.

REFERENCES

Adeniji, K. (1983). Nigeria Municipal Bus Operators. *Transportation Quarterly, 37*(1): 135-143.

Adeniji, K. (2000). Transport challenges in Nigeria in the next two decades. Key note address presented at the fifth national council of transport meeting organized by the federal Ministry of transport, Abuja.

Ahmun S. (1989), The mass Transport programme in Nigeria problems and prospective" paper presented at a seminar on transport business organized by Kaduna polytechnic consultancy unit: England – cues publication Ltd.

Akinbobola, T. O., & Saibu, M. O. O. (2004). Income Inequality, Unemployment, and Poverty in Nigeria: A Vector Autoregressive Approach". *Policy Reform, 7*(3): 175- 83.

Amis, P., & Kumar, S. (2000) Urban economic Growth, Infrastructure and Poverty in India: Lessons from Visakhapatnam". *Environment and Urbanization, 12*(1): 185- 96.

Baffes, J., & Shah, A. (1993). Productivity of Public Spending, Sectorial Allocation Choices and Economic Growth. Paper prepared for presentation at the 1993 Annual Meetings of American Economic Association, Anaheim, California.

Benett, E, P., & Grohman, B. G. (1999). "Public-Private Partnerships for the Urban Environment" Unpublished paper, Chicago.

Bezinger, V. 1996. Urban Access and Rural Productivity Growth in Post-Mao China. *Economic Development and Cultural Change, 44*: 539-70.

Binswanger, H., S., & Khandker, M. R. (1989). How infrastructure and financial institutions affect agricultural output and investment in India. World Bank Working Paper Series 163. Washington DC: World Bank.

Calderón, C., & Servén, L. (2003). "The Output Cost in Latin America"s Infrastructure Gap." In Easterly, W. and Servén, Eds. The Limits of Stabilization: Infrastructure, Public Deficits and Growth in Latin America. Stanford University Press, Palo Alto, CA and World Bank, Washington D.C.

Calderon, C., & Serven, L. (2008). "Infrastructure and Economic Development in Sub-Saharan Africa," Policy Research Working Paper Series 4712, The World Bank.

Canning, D. (1999). "The Contribution of Infrastructure to Aggregate Output." World Bank Policy Research Working Paper No. 2246. World Bank, Washington D.C.

Canning, D., & Bennathan, E. (2000). „The Social Rate of Return on Infrastructure Investments". WB Policy Research Working Paper 2. Washington, DC: World Bank.

Canning, D., & Pedroni, P. (2004). Infrastructure and long run economic growth. Working Paper 99(9), Center for Analytical Economics, Cornell University.

Cascetta, E., (1995). "The Italian Decision Support System for Transportation Policies and Investments" General Architecture and Development Status. Sydney: Proceedings of 7th World Conference on Transport Research.

Daly, A. (2000). *National Models*. In HENSHER, D.A. and BUTTON, K.J. (ed.), 2000. Handbook of Transport Modelling. Pergamon.

Dargay, J., & Gately, D. (1999). "*Income's Effect on Car and Vehicle Ownership, Worldwide: 1960-2015*." *Transportation Research Part A, 33*, 101-138.

Dercon, S., & Krishnan, P. (1998). Changes in Poverty in Rural Ethiopia 1989-1995: Measurement, Robustness Tests and Decomposition. WPS/98-7. Oxford: Center for the Study of African Economics.

Duranton, G., & Turner, M. A. (2008). Urban Growth and Transportation. individual.utoronto.ca/gilles/Papers/GrowthTransport.pdf

Egert, B, Kozluk, T., & Sutherland, D. (2009). 'Infrastructure and Growth: Empirical Evidence,' William Davidson Institute Working Paper Number 957, 1-57

Ellis, D. R, Glover, B., & Norboge, N. (2012). Refining a Methodology for Determining the Economic Impacts of Transportation Improvements, University Transportation Center for Mobility Project No 11-00- 68, 1-48.

Fay, M., & Morrison, M. (2005). "Infrastructure in Latin America and the Caribbean Recent Developments and Key Challenges" The World Bank Finance, Private Sector and Infrastructure Unit Latin America and The Caribbean Region Volume 1.

Fedderke, J. W., & Bogetić, Z. (2006a). "International Benchmarking of Infrastructure Performance in the Southern African Customs Union Countries" World Bank Policy Research Working Paper 3987, World Bank, Washington D.C.

Fedderke, J. W., & Bogetić, Z. (2006b). "Infrastructure and Growth in South Africa: Direct and Indirect Productivity Impacts of 19 Infrastructure Measures" World Bank Policy Research Working Paper 3989, World Bank, Washington D.C.

Fedderke, J. W., Perkins, P., & Luiz, J. M. (2005). "Infrastructural Investment in Long-run Economic Growth: South Africa" 1875-2001. *World Development*, *34*(6), 1037-1059.

Federal Republic of Nigeria (FRN) (2000). Obasanjo's Economic Direction 1999-2003, Lagos: Dawn Functions Nigeria Limited.

Filani, M. O. (2012). 'Transport systems in Nigeria,' Lead Paper presented at the International Colloquium on Thirty Years of Social Services and Management in Nigeria, in honour of Professor Emeritus Andrew Onokerhoraye, at Precious PalmRoyal Hotel, Benin City, Nigeria, 26th – 28th March, 2012.

Gujarati, D. N., & Porter, D.C. (2009). Basic Econometrics (5th Ed), New York: McGraw-Hill. Mongaby.com (1991). 'Nigeria Transport and Communications.' Retrieved on October , 2013 from http://www.mongabay.com/history/nigeria/nigeria-transportation_transportation

HCG, (1992) "*The National Model System for Traffic and Transport"*, Ministry of Transport and Public Works, Rotterdam.

Hulten, C. (1996). "Infrastructure Capital and Economic Growth: How Well You Use It May Be More Important than How Much You Have." NBER Working Paper 5847, December.

Ighodora, C. A. U (2009). 'Transport Infrastructure and Economic Growth in Nigeria,' *Journal of Research and National Development, 7*(2), 1-13.

Imobighe, M. D., & Awogbemi, T. O. (2006). The Role of NEEDS in Public Infrastructure and Economic infrastructure and welfare: an application to Nigeria. World Bank Policy Research.

Jalan, J., & Ravallion, M. (2003). Does Piped Water Reduce Diarrhea for Children in 31 Rural India? *Journal of Econometrics 112*(1):153-173.

Ladan, S. I (2012). 'An Analysis of Air Transportation in Nigeria,' *JORIND, 10*(2), 230-237, www.transcampus.org./journals.

Limao, N., & Venables, A. J. (1999). Infrastructure, Geographical Disadvantage and Transport Costs. Policy Research Working Paper Series 2257. Washington DC: World Bank.

Macmillan. J. J. (1972), Econometric method, 2nd Edition New York: Macmillan.

Munnell, A. H. (1990). Why Has Productivity Declined? Productivity and Public Investment. *New England Economic Review* (Federal Reserve Bank of Boston) (January/February): 3-22.

Mustapha, M. (2011). Impact of transportation on economic growth: An assessment of road and rail transport systems, Department of Economics Bayero University Kano, Nigeria.

Obioma, E. C., & Ozughalu, U. M. (2010). 'An Examination of the Relationship between Government Revenue and Government Expenditure in Nigeria: Co-integration and Causality Approach,' *Central Bank of Nigeria Economic and Financial Review 48*(2), 35-57.

Olukoju, A. O. (1996). 'Transportation in Colonial West Africa,' In Ogunremi, G.O & Faluyi, E.K (Eds.) An Economic History of West Africa Since 1750, (144-156), Ibadan: Rex Charles Publication in Association with Connel Publications.

Onokala, P. C (2012). 'Transport Systems in Nigeria', Lead Paper presented at the International Colloquium on Thirty Years of Social Services and Management in Nigeria, in honour of Professor Emeritus Andrew Onokerhoraye, at Precious Palm Royal Hotel, Benin City, Nigeria, 26th – 28th March.

Oyesiku, O. O., & Dosunmu, V. A. (2011). 'Transport and Logistics Research and Its Impact on Capacity Building of Local Institutions In Nigeria,' *American Journal of Scientific and Industrial Research, 2*(4), 559-566 Weisbrod,

Perron, P. (1988). 'Trends and Random Walks in Macroeconomic Times Series: Further Evidence from a New Approach,' *Journal of Economic Dynamics and Control, 12*, 297-332.

PPPUE (2004). "Environment Options and Issues" PPPUE Working Paper Series Volume I, United Nations Development Programme, Yale University

Rioja, F. K. (2001a). "Filling Potholes: macroeconomic effects of maintenance versus new investments in public infrastructure" *Journal of Public Economics 87,* 2281- 2304.

Rioja, F. K. (2001b). "Growth, Welfare and Public Infrastructure: A General Equilibrium Analysis of Latin American Economies" *Journal of Economic Development 26*(2), 119-130.

Rodan, R. (1947). 'Notes on the Theory of Big Push,' In Elias, H.S and Wallich, W. W (Eds) Economic Development of Latin America.

Sanchez-Robles, B. (1998). "Infrastructure Investment and Growth: Some Empirical Evidence" *Journal of Contemporary Economic Policy,16*(1), 98-108.

Tatom, J. A. 1991. Public Capital and private Sector Performance, Review, Federal Reserve Bank of St. Louis, May/June, 73,3-15.

Uma, K. (2014). Does transportation sector have any impact on economic development? A time series assessment with nigeria in focus,Department of Economics & Development Studies, Federal University, Ebonyi State, Nigeria kaluskyebng@yahoo.com.

Van de Velde, D. M. (2005). The Netherlands, in Calthrop, E. and Ludewig, J. (eds) Reforming Europes Railways: An Assessment of Progress, Community of European Railway and Infrastructure Companies" (CER), Eurailpress, Hamburg.

William A. A. (2016). The Impact of Transportation Infrastructure on Nigeria's Economic Developmeny Walden University.

WORD Bank (2000). "Sustainable Transport: Priorities for Policy Reform" Published by the World Bank.

World Bank (2010). The MDGs after the Crisis,Global Monitoring Report 2010. The International Bank for Reconstruction and Development / The World Bank.

Yepes, T., Pierce, J., & Foster, V. (2008). Making Sense of Sub-Saharan Africa's Infrastructure Endowment: A Benchmarking Approach. AICD, Working Paper, TheWorld Bank, Washington, D.C.

Appendix

Table 2: Stationary Test (Unit Root Test)

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.805763	0.0076
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EXTRP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.264731	0.0025
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EXBDC) has a unit root
Exogenous: Constant
Lag Length: 6 (Automatic - based on SIC, maxlag=6)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.005046	0.0500
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	