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Transportation and Economic Development Nexus in Nigerian Economy

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***Abstract*— The study examined the contribution of transportation to economic development in Nigerian economy between 1980 and 2018. The study adopted anex-postresearch design approach using secondary data collected from various sources and econometrics method of ordinary lest square regression analysis techniques. The analytical framework of the model was based on the Endogenous Growth Model of the Neo-Classical economists. Time series analysis of the study data revealed that the all the variables were not stationary at level, but became stationary after first differencing. Cointegration analysis of the model specification shows that there is a stable long run relationship between transportation system development and economic development in Nigeria. Estimate of the error correction model shows that both transport sector output and investment in transportation infrastructure have positive and significant impact on economic development. Based on these findings, the study concludes that transportation is important to economic development and recommends government investment in transportationinfrastructure as strategy for economic development.**

***Index Terms*— Development, Economic Growth, Infrastructure, Investment, Transportation.**

I. Introduction

Nigeria became independent in 1960 with current population of over 200 million people, diverseculture, and abundant natural resources and human resources. Nigeria has a very large labour force to support large market size and bourgeon economy which consists of different sectors, such sector includes the agriculture sector, the energy sector, the mining sector, the manufacturing sector, the banking sector, the communication sector, the transportation sector and so on.

Many economists are interested in factors which support the growth of their economies, and one major factor is transportation. The interest in transportation sectorin Nigeria is important due to the view of researchers that effective transport sector willpositively affect the movement of goods and services within and outside the economy and therefore affect total factor productivity.

For instance, Agricultural products generated in the rural areas needs to be taken to the urban centres for further distribution. This can only take place or be achieved only through means of transporting those goods from that place to another. Here transportation provides the means by which product are circulated around the country.

Thus, the demand for Transport service in the country over the year has increased rapidly, while the supply of transport services has declined due to lesser infrastructure in place in the system. A well-functioning and integrated transport system, among other thing in the economy, stimulates national growth and development, which in turn ,enhances the quality of life for all ,enabling the seamless movement of goods and services and people, and provides the vital linkages between spatially separated facilities which enables social contact and interaction possible and also providing access to employment, health, education, and other services which brings about civilisation.

Over the years the Nigerian transportation sector has evolved. The evolution of the transport system in Nigeria can be viewed in two phases. The first phase is the colonial era which marked the origin of modern transport system. It was during this era that the networks of rail, water and road were laid. The overriding objective was essentially to meet the exportation of cash crops, such as groundnuts, cocoa, cotton and palm products and to the importation of cheap, mass produced consumption goods. The early transport system was planned in the most economical way possible. The system is characterized by sub-standard road and rail alignments and a sub base, which later proved inadequate to accommodate heavy vehicles. In the second era, which is the postcolonial period,after the independence in 1960, thereas a re-orientation of goals, in the transportation sector. Transportation became one of the instruments of unification of the country and an important tool for social and economic development. Given the fact that transportation Infrastructure is very crucial to the growth and development of the economy, it is therefore important toexamine how transportation infrastructure contributes to the development of Nigerian economy by evaluating the relationship that exists between transportation infrastructure developmentand economic growth. Studies in this area have been few and mainly descriptive, showing the importance of having a better transportation infrastructure in place so as to increase the sector contribution to economic growth and development.

The present study is justified by the need to provide empirical understanding of the impact of transportation infrastructure on the economic growth of Nigeria and how it influences the development process. The remaining parts of the study is structured into four sections as follows: Section two (2) is the Literature review Section three(3) concentrates on the research method. Section four (4) presents the empirical results and discussion of findings, while section five (5) is devoted to the summary and conclusion from the study.

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II. Literature Review

The relationship between transport system development and economic growth can be located in the growth theories, especially, the theories that give importance to capital and technological progress. The three relevant theories here are the Horald-Domar(1942) model, the Solow-Swan (1956) model, and the Romer(1986) model.

The Harold –Domar(HD) model is fallout from the Keynesian short run analysis. It is an extension of the result of the Keynesian model in the long run. It was propounded by Roy Harold and EvseyDomar in 1942. The basic proposition of the Harold –Domar model is that the rate of growth of the economy, simply, economic growth is a function of the net saving ratio, and the capital output ratio. This can mathematically be expressed as: $\frac{\Delta Y}{Y} = \frac{s}{c}$

Where ΔY is change in national income, s is net saving ratio, and c is the capital output ratio. The right-hand side represents economic growth. The whole expression says that economic growth is directly proportional to the net saving ratio and inversely proportional to the capital output ratio. For the economy to achieve economic growth, it must save and invest some proportion of its national income. However, the rate of its growth depends very much on the inverse of capital output ratio, which is the ratio of output to investment. The more the rate of investment in capital, the higher the growth rate. Hence, multiplying the saving rate with the output-investment ratio gives the rate of economic growth at any time. Thus, investment and productivity are important to economic growth.Although this theory is based on some restrictive assumption, it has relevance in the fact that investment and capital goods are central to economic growth. The conclusion from the theory is that inadequate capital is the main cause of underdevelopment.

Lakewood(1987) finds the theory applicable in the eastern European countries. He fund the theory simple and adaptable to the capital needs of the developing countries. However, many developing economies achieved higher investment rate than most developed economies; but they could not grow faster than the latter. The HD model did not take cognizance of the sufficient conditions for economic growth. High investment rate is a necessary, but not a sufficient condition. Several development economists have faulted the Harold -Domar model. Harvey(1994) and Udiney(2008) criticis it n the ground of being too mechanical. The theory does not consider the role of human capital and institutional quality.

The Solow–Swan (SS) Model is an extension of the HD model. Solow-Swan model augmented the HD model by adding two other factors to the traditional HD model. They added labour and technology. Another important difference between the SS model and the HD model is that the SS model assumes diminishing returns to the individual factors and constant return to scale for both factors. The SS model assumes that technological progress arises from research and development activities around the world. Because the level of technological progress is from outside, the Solow –Swan model is sometimes called the Exogenous growth model.The SS model uses the aggregate production function stated as

Y=$(AL)^{1-\alpha}K^{\alpha}$ 2.2

Where Y is the national output, L is labour , K is capital stock, and A is the productivity of labour, α is the output elasticity of capital. Since α is assumed to be less than 1, there is diminishing returns to the factors and constant return to scale. Note that the technological progress augments labour efficiency.From the model, economic growth results from three main sources. One is the increase in quantity and quality of labor. Two is the increase in accumulation of capital stock, and three is the technological progress. There is a part of the growth that cannot be accounted for by the accumulation of capital and labor. This is called Solow Residual, or Total Factor Productivity. Since all countries have access to the same pool of information in the world arena, therefore, capital accumulation is the key to economic growth.

In the long run, increasing capital cannot grow the economy. Any increase in saving rate results in temporary economic growth during the transition period. However, because of the diminishing return, the per capita income grows until the steady state. Once steady state is reached, economic growth becomes zero. To have growth, there must be technological progress, that is, buy and use technology from the world arena. Economies that are open and interconnected will grow faster through interaction with outside world; while closed economy will grow slowly. Thus, transportation and communication infrastructure are critical to economic growth and development. According to Marrow(2000) the Solow –Swan model is not a complete model in that it does not give room to the level and speed of indigenous technology.

Romer (1986) could not agree with Solow and Swan that technological progress is external. He believed technological progress cannot be exogenous and free. According to Romer, technological progress is profit oriented. It cannot come from people who would not benefit from the outcome. Based on this, a firm which carries out any form of investment will gather knowledge specific to that investment. Thus, investment increases knowledge technological progress. Since this knowledge comes from Learning by Doing process, it therefore, implies that it is capital accumulation that is generating the technological progress and it will be applied in working on capital. It follows that technological progress is itself a capital good since it can work on and change capital. Technological progress as capital does not suffer from diminishing return and it marginal cost is zero once it has been produce and it does not depreciate in value. In the Romer Endogenous model, technological progress impact oncapital and there is increasing returns.

The endogenous model changed the production function from labour augmenting to capital augmenting. The Endogenous growth model is stated as:

Y=$L^{1-\alpha}(AK)^{\alpha}$ 2.3

The variables are as defined above. Since there is increasing returns, there cannot be steady state and the economy can grow permanently. This is quite unlike the SS model where there is need to open up the economy for foreign investors and aid, or the HD model which generally emphasizes importation of capital, the REM gives significant role to the government for investment in R& D, in education, and in development social –economic infrastructure. Osborne (1992has criticized the Romer Model on the groundsthat there is no investment function which depends upon profit rate.Several empirical studies have been carried out to examine the relationship between transport infrastructuredevelopment and economic growth.Specific studies whichused secondary data, econometrics techniques,and Total Factor Productivity to model therelationship betweentransportation infrastructure variables and economic development includes

Antle (1983) estimated a Cobb Douglas production function for 47 developing countries and 19 developed countries including transport and communication Infrastructure as gross national output from the transportation and communication industries per square kilometre of land area. Antle found a strong and positive relationship between the level of infrastructure and aggregate productivity.Easterly and Rebelo (1993), after controlling for other variables that could affect growth, fund that investment in transportation infrastructure was consistentlyand positively correlated economic growth with a very high coefficient.

Limao and Venables (1999) elaborated on how the presence or absence of transportation infrastructure influences access to trade. They constructed an infrastructure index that combines road, rail, and telecommunications densities and econometric methods. Limao and Venables study showed infrastructure is a significant determinant of economic growth, and that when a region is landlocked, transport costs can by 50% higher. Using these findings along with detailed data on trade and transportation costs in Sub-Saharan Africa, they concluded that most of Africa's poor trade performance is the result of poor infrastructure

Canning and Bennathan (2000) estimated the rates of return to paved roads for a panel of 41 countries over the past 4 decades. Canning and Canning and Bennathan found that the highest rates of return to road infrastructure occurred in countries with infrastructure shortages. Canning and Bennathan also analysed whether physical capital, human capital, labor, and other infrastructure variables are complements or substitutes to roads. He found that the length of paved roads is highly complementary with physical and human capital. Canning and Bennathan concluded that infrastructure investments are not sufficient by themselves to yield large changes in output.

The study conducted by Fedderke, Perkins and Luiz (2005) employing the Pesaran, Shin and Smith F-tests model, found the following: The relationship between economic infrastructure and growth appears to run in both directions, which suggests that inadequate investment in infrastructure could eventually lead to bottlenecks, and opportunities for promoting economic growth could be missed.

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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

Demurger, (2001) examined the data of 24 provinces of China between 1985 and 1998 and points out that the inequality of transport infrastructure is one of the main factors leading to growth inequality across provinces.Infrastructure endowment along with reform, openness, geographical location account significantly for observed differences in 17 growth performance across province.

Fedderke et al (2006) used a time series analysis technique to examine investment in road infrastructure and economic growth in South Africa. The result revealed 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.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.

Calderon (2009), provided a comprehensive assessment of the impact of infrastructure development on growth in African countries based on econometric estimates for a sample of 39 countries from 1960-2005. He evaluated the impact on per capita growth of faster accumulation of infrastructure stocks and enhancement in the quality of infrastructure services for 39 Africa countries in 3-key infrastructure sectors: telecommunications, electricity, and transportation (i.e road). Using an econometric technique suitable for dynamic panel models and likely endogenous regressors, the author find that infrastructure stocks and services quality boost economic growth. The findings show that growth is positively affected by the volume of infrastructure stocks.

Sahoo, Dash, and Nataraji(2010)investigated the role of infrastructure in promoting economic growth in china from the period 1975 to 2007, using GMM(Generalized Methods of Moment) and ARDL(Autoregressive distributed lag model) techniques.The result reveals that investments in infrastructure have played an important role in economic growth in China.

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Ogun (2017)investigated the impact of infrastructural development on poverty reduction in Nigeria. Specifically, the relative effects of physical and social infrastructure on living standards or poverty indicators are examined, with a view to providing empirical evidence on the implications of increased urban infrastructure for the urban poor. The paper employs secondary data for the period 1970 to 2015 and the structural vector autoregressive (SVAR) technique is adopted in the analysis. The study unequivocally finds that infrastructural development leads to poverty reduction which leads to increase in economic growth. Results also show that though infrastructure in general reduces poverty and increase economic growth, social infrastructure explains a higher proportion of the forecast error in poverty indicators relative to physical infrastructure.

Nogzi and Mulikat (2018) estimated the contribution of transportation investment, congestion and traffic related accident to economic growth in Nigeria between 1975 and 2016, using the extended Cobb Douglas production function model. The estimated model used was the error correction mechanism with the real Gross Domestic Product as the dependent variable and the explanatory variables include physical capital, labour force, total road network, automobile density and traffic related accident. The study found that transport investment positively contributes to economic growth and traffic accidents contributes negatively.

III. METHOD OF THE STUDY

This section presents the method adopted for the study. In particular, the section explains the research design, the nature and sources of data, model specification and method of data analysis.

A. *Research Design*

Specifically, the study adopted the Ex-post facto research design. Ex-post means that the activity had already occurred.Here the effect of two or more independent variable is investigated. Thus, it is the type of study in which secondary data are collected, and analyzed to examine the effect of the independent variables on the dependent variable(Cohen, Marion, & Morrison, 2000). The goal of the present study is to seek a detailed understanding of the relationship between the Nigerian transport sector and the Nigerian economic growth.Therefore, Ex-post facto research design is the most appropriate design for the study.

B. *Specification*

The analytical framework of the study is based on the Total Factor Productivity (TFP) approach. The TFP approach model can be specified as a generalized Cobb-Douglas (CD) production function. The CD production function is good for analysis of the Neo-classical growth model and provides ground to include transportation infrastructure as augment of the total factor productivity. The generalized Cobb-Douglas production could be specified as follows:

Y_i=A$K^{\alpha} L^{\beta}$(3.1)

Where Y is economic growth, A is Solow residual or Total Factor Productivity, K is capital stock, L is labour supply, α and β output elasticity with respect to capital and labour respectively. Following Solow (1956), transport enters the Cobb-Douglass production function model as an augment of the Solow residual.

Thus, A= *f* (Trans, Trp, Fd, tr) (3.2)

Where Trans is transportation infrastructure investment Trp is transport sector output, Fd is financial system development, and tr is trade.

Simplifying and substituting into equation3.1, we have

Y_i= Trans, Trp$K^{\alpha} L^{\beta}$(3.3)

The functional model above is then transform into econometrics model as

$\ln Y = \ln b_0 + b_1 \ln Trans + b_2 \ln Trp + \alpha \ln K + \beta \ln L + \epsilon_1$ (3.4)

ϵ_1 is the error, disturbance or the stochastic random term which depicts other external factors that might affect the magnitude of the Y, economic growth, not stated in the model. In the model,b_1 and $b_2$are the slope coefficients and depict the rate of change in the value of the GDP, when there is a unit change in the value of any of the transport sector output and investment respectively. β and α elasticity of output with respect to labour and capital respectively.

b0 is the intercept coefficient and it shows the rate at which economic growth rate will change independent of the explanatory variables.

C. *Nature and Sources of Data*

Data for the study are secondary in nature and consist of annual time series data of gross domestic product (GDP), transport sector annual contribution to GDP(Trans), and annual investment in transport sector (TranIF). All data will be collected from 1980 to 2018. Data for the Gross Domestic Product (GDP), transportation sector output (Trans) and investmentin transport s infrastructure (TransIF) were collected from the Central Bank of Nigeria Statistical bulletin (various issues); while data for labour force participation, capital stock were sourced from the World Bank's World Development Indicator (WDI) on the internet. Supplementary materials were taken from research journals, textbooks, newspapers and research work of other scholars.

D. *Method of data analysis*

This study adopted econometric technique in evaluating the relationship between transportation sector infrastructure components and economic growth in Nigeria. The Ordinary Least Square (OLS) regression analysis technique wasemployed for estimating the coefficients in equations 3.4. The OLS method is chosen because it possesses some optimal properties: its computational procedure is fairly simple and it is also an important component of most other estimation techniques. In addition, the following test statistics were evaluated and reported:

- Coefficient of Determination (R^2)
- Serial Correlation Test (Durbin-Watson),and
- Fisher Ratio Test(F-Statistics)

IV. EMPIRICAL RESULTS AND DISCUSSION OF FINDINGS

This section presents the empirical results, and discussion of the empirical findings.

A. *Unit Root Test Results*

The data collected for the empirical studies were examined for unit root. It is important that theregression data be stationary to avoid spurious results.The Augmented

Dickey-Fuller test approach was adopted to examine the stationarity of the regression model variables. The Augmented Dickey-Fuller test results are presented in table 1 below.

Variable	**level**	**1st difference**	**Remarks**
GDP	**0.3397**	**5.4490**	**I(1)**
K	**-2.3298**	**4.2627**	**I(1)**
LP	**-3.0129**	**-5.7075**	**I(1)**
TranIF	**-1.8182**	**-5.8978**	**I(1)**
Trans	**- 3.4322**	**-9.6871**	**I(1)**

The unit root test results presented above shows that the variables are not stationary at level. However, after first differencing, the variable became stationary. Thus, they are I (1) series, or first difference stationary.

A. Co-Integration Test Results

The Johansen co-integration test results is presented in Tables4.2a and 4.2b below.

Table 1a: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.657909	68.18976	60.06141	0.0088
At most 1	0.459832	32.79134	40.17493	0.2263
At most 2	0.250363	12.46745	24.27596	0.6666
At most 3	0.062397	2.957956	12.32090	0.8529
At most 4	0.024891	0.831811	4.129906	0.4173

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 1b: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.657909	35.39843	30.43961	0.0111
At most 1	0.459832	20.32389	24.15921	0.1521
At most 2	0.250363	9.509495	17.79730	0.5380
At most 3	0.062397	2.126144	11.22480	0.9087
At most 4	0.024891	0.831811	4.129906	0.4173

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

The Johansen cointegration test results presented above show that there is cointegration among the variables. Both Trace and Maximum Eigen value statistics show at least one cointegrating equation. It therefore implies that there is a fixed long run relationship in the model.The regression data were analyzed with the help of E-view using the Ordinary Least Square (OLS) regression techniques. The result is presented below in Table 2

Dependent Variable: DLOG(RGDP)
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(RGDP(-1))	0.927144	0.222190	4.172752	0.0003
DLOG(RGDP(-2))	0.343032	0.148868	2.304264	0.0302
DLOG(TRANS)	0.266987	0.094462	2.826396	0.0093
DLOG(TRANS(-1))	3.329462	1.103258	3.017864	0.0039
DLOG(TRF(-2))	1.295207	0.145258	9.176063	0.0057
DLOG(K-3))	2.047383	0.411506	4.975341	0.0210
DLOG(LFP)	1.017447	0.221157	4.809039	0.0177
ECM(-1)	-0.059252	0.077541	-0.764132	0.0422
R-squared	0.668882	Mean dependent var		0.075426
Adjusted R-squared	0.572306	S.D. dependent var		0.127874

S.E. of regression	0.083627	Akaike info criterion	-1.912573
Sum squared resid	0.167845	Schwarz criterion	-1.546139
Log likelihood	38.60116	Hannan-Quinn criter.	-1.791110
Durbin-Watson stat	1.866073		

Source: E-View Computer Output

proxy by transportation sector output (TRF) and transportation infrastructure (TRANS) and economic development proxy by gross domestic product per capita.

The regression results presented in Table 4.3 above shows the relationship between transportation and economic development. The result shows that the relationship between investment in transportation infrastructure and economic development is positive and statistically significant. Specifically, change in transportation sector infrastructure by 1% led to a change in gross domestic product per capita variable by3.3 % in the same direction. The impact of transportation sector output on economic development is also positive and statistically significant. The result shows that a change in transport sector output by 1% brought about change in economic development of 1.3% in the same direction after one period lag.

The relationship between economic development and capita accumulation is positive and significant. From the result, increase in capital accumulation by 1% brought about increase in economic development of about 2.04% after 3 period lags during the period under review. The relationship between labour force participation and economic development is positive, but statistically insignificant.

The model R^2 is 0.66882. this implies that transportation sector out, transportation sector infrastructure, that is transportation sector development, capital accumulation, andlabour force participation accounted for about 67.8% variation on in the level of economic development during the period under review. Other variables outside the model accounted for the remaining 33.2% variation in the level of economic development during the period under review

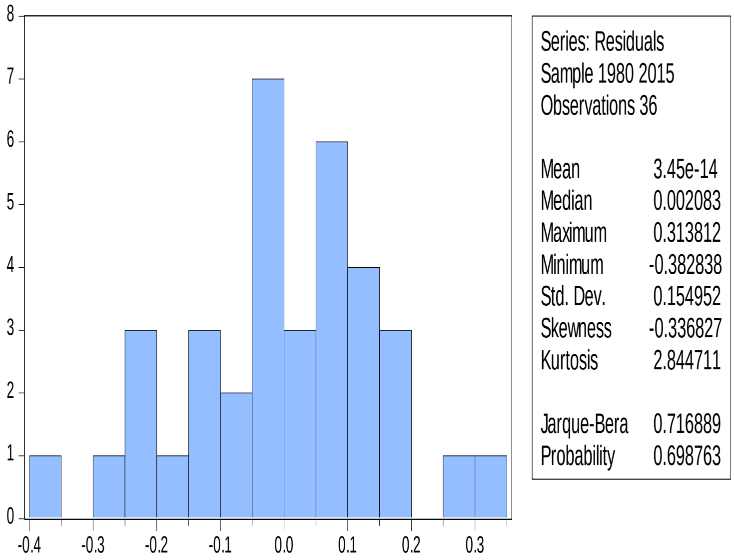
The result has shown that transport sector infrastructure development has positive and significant impact on economic growth. This implies that development of transportation infrastructure is very important to growth and development of the Nigerian economy. This is in line with the findings of Calderón and Servén (2004) which found positive. However, the result contradicts the findings of Amis and Kumar (2000) which did not find any relationship between economic growth and infrastructure. The relationship between transport sector output and economic growth is positive and statistically significant. This is in line with the *a priori* expectation for the variable. The result of the study confirms the findings of Markhein(2008) which found positive and significant relationship between transport sector output and economic growth in Latvia. The result, however, contradicts the findings of Umar(20110 which could not find any significant relationship between transportation sector and economic growth in Egypt. From the findings of the study, transportation has positive and significant on economic growth in Nigeria.

A. Model Diagnostics Analysis

This section examines the regression estimates and the model specification for compliance with the basic assumptions of the ordinary least square method. The basic assumptions are that the error terms are normally distributed, there is no autocorrelation, there is no heteroskedasticity, and the empirical model employed is adequately specified. The results ofthe model diagnostic tests are presented below.

Normality Test

The estimated residuals were examined to see if they are normally distributed. The Jacque-Bera techniques was employed at 5 % probability level. The result is presented below as Figure 4.1



The Jacque-BeraStatistic shows that the estimated error terms are normally distributed. The Jacque-Bera statistic value is 0.71688 with probability value of 0.6987. this implies the acceptance of the null hypothesis which say that the estimated error terms are normally distributed.

Autocorrelation Test

The estimated error terms were examined for autocorrelation using the Breusch -Godfrey test approach. the E-view computer output of the result is presented in Table 3

Table 3: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.295220	Prob. F(2,30)	0.2887
Obs*R-squared	2.861448	Prob.Chi-Square(2)	0.2391

The result presented in Table 4.2 proves that there is no evidence to suspect autocorrelation among the estimated error terms. The Breuch-Godfrey statistic value of 2.8614 has probability value of 0.2391. the null hypothesis which say that there is no serial correlation in the error terms is therefore maintained at 0.05 levels. This implies that there is no autocorrelation in the error terms.

Heteroskedasticity Test

Table 4 :Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.643706	Prob. F(3,32)	0.5926
Obs*R-squared	2.048864	Prob. Chi-Square(3)	0.5623
Scaled explained SS	1.493160	Prob. Chi-Square(3)	0.6838

The result presented in Table 4 proves that there is no reason to suspect Heteroskedasticity among the estimated error terms. The Breusch -Pagan -Godfrey statistic value of 1.4931 has probability value of 0.6838. The null hypothesis which say that the variance of the error terms is equal (homoscedastic) is therefore maintained at 0.05 levels. This implies that there is no heteroskedasticity in the estimated error terms.

Model Specification Error Test

The model employed for the empirical analysis was equally examined to see if it was correctly specified and if it actually capture the relation among the variables. The Ramsey Regression Specification Error Test (RESET) method was employed and the result is presented below in Table 5

Specification: LOGGDP C LOGTransLOGTranIF LOGK LFP

Omitted Variables: Powers of fitted values from 2 to 4

	Value	df	Probability
F-statistic	5.161187	(3, 29)	0.0056
Likelihood ratio	15.40166	3	0.0015

The Ramsey RESET test result presented above shows that there is no specification error in the model. That is, the empirical model was correctly specified. The Ramsey RESET test F-statistics is 5.1611. its probability value is 0.0056.Therefore, the null hypothesis that the model was correctly specified is maintained at 0.05 levels.

V. SUMMARYAND CONCLUSION

The study examined the relationship between economic growth and transportation sector. The study was purely quasi-experimental in nature and based on the use of secondary data for the analysis. The analytical framework is based on the Romer Endogenous Growth model. The study adopted the Engle-Granger(1978) as the analytical techniques. The unit root test revealed that all the variable was not stationary at level. They became stationary after first difference. The Johansen cointegration test results shows that there is a stable long run relationship between economic growth and transportation development. The estimate Error Correction model reveals that:

- Transport sector out has positive and significant impact on economic growth
- Transport sector infrastructure development has positive and significant impact on economic growth
- Capital accumulation has positive impact on economic growth
- Labour force participation rate has positive and significant effect on economic growth

Based on the findings of the study, the following conclusions were drawn.

The study has shown that transportation sector has positive and significant effect on economic growth. The implication is that the growth and development of the Nigerian economy is hinged on the development of the transportation. Transportation is a very important sector in the national economy. Apart being the sector with the third largest number of employments, the transportation is important for movement of goods and passengers from one part of the country to another. This will aid the efficient allocation of resources in the economy.

The Nigerian transportation system has been neglected over the years. The sector has witnessed poor investment level over the decades. The neglect of the transportation sector is the major cause of the poor performance of the Nigerian economy in terms of employment and industrialization. The high and significant relationship between the transportation sector and economic growth implies that if adequate attention is given to the transportation sector, the growth of the economy will be accelerated.

Transportation in Nigerian economy is still at its developing stage. There is huge challenge facing the sector from different sides. If these challenges could be surmounted, the Nigerian transportation sector would experience speedy development and live up to it expectation as important sector in the social economic development of Nigerian economy. The current trend in the global economy necessitates the need for effective and efficient modes of transportation within and between countries. To reap the benefits arising from the global world, Nigeria must put her transportation system in better perspective.

Based on the findings from the study, the following recommendations were made.The government at all levels should invest in transportation infrastructure development. This will speed up the development of the sector.There should be a concerted effort to develop capacity in the sector in terms of manpower to direct the development of the sector. The establishment of the specialized universities for the sector is a step in the right direction. However, access to this institutions and founding should be carefully planned.

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