IMPACT OF TRANSPORTATION INFRASTRUCTURES ON NIGERIA'S ECONOMIC GROWTH AND DEVELOPMENT (1984 - 2024)

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Abstract

This study aimed at investigating the impact of Transportation Infrastructures on Economic growth in Nigeria from 1984 to 2024. The study makes use of Vector Error Correction model (VECM) mechanism as the technique of analysis; causality test was also conducted to determine the causal relationship among the variables in the study. The cointegration result revealed that there is a long-term relationship among the variables. The result of the error correction mechanism revealed that the variables of transport infrastructure have a positive impact on growth domestic product while corruption has a negative statistically significant impact on Economic growth in Nigeria, while. The coefficient of ECM is negatively signed and statistically significant with coefficient of (-0.89). This means that the short run dynamics adjusted to the long run equilibrium relationship. Based on the findings this study recommends that the government through the right authorities should ensure adequate provision of transport infrastructures, to maintain a sustainable Economic growth and development. The government should also embark on policies to checkmate corruption practices to ensure effective and efficient utilization implementation of right policies so that the standards of the Nigerian transport sector will improve brings about sustainable Economic growth and development in Nigeria.

Keywords are Transportation, Transport infrastructure, Economic growth, Corruption, Error correction mechanism.

JEL Classification: *E31, I32, H53*

Introduction

In recent years, there have been numerous studies examining the link between transport infrastructure and economic output, such as Mittnik and Neumann (2001) analysed the dynamic relationship between public investment in infrastructure and output in the economy, using Vector Autoregressive (VAR) model. With data impact of transport infrastructures on the economic growth of both regions and sectors, distinguishing among modes of transport but the findings have been inconsistent (Ive and Gruneberg, 2000). However, it is widely acknowledged that transport infrastructure development, which includes roads, airports, and seaports, is crucial for fostering economic growth (Heintz et al., 2009.

Hasselgren, 2018). Such infrastructure directly supports production and manufacturing activities within an economy (Fourie, 2006; Torrisi, 2009). Previous research has identified four main ways in which transportation infrastructure development affects economic growth: increasing labor and capital productivity as direct inputs (Pradhan and Bagchi, 2013); achieving cost savings through improved transportation efficiency (Gunasekera et al., 2008); facilitating industrial agglomeration.

(Baldwin and Forslid, 2000); and influencing the economy through changes in aggregate market demand (Pradhan and Bagchi, 2013). Consequently, understanding the drivers of economic growth from the perspective of transportation infrastructure development holds significant policy relevance. This study focuses on examining the relationship between transport infrastructure and economic development in Nigeria for two primary reasons. Firstly, there is limited empirical research that has explored this role in Nigeria, primarily due to relatively lower emphasis and investment in transport infrastructure compared to other cities (Pisu et al., 2015). While there have been numerous studies investigating the impact of transportation infrastructure development on economic growth in developing countries, the findings have been inconsistent. Some scholars, such as Munnell (1992), Ghosh and Meagher (2004), and Liu and Zhou (2006), argue that increased infrastructure development, including transportation infrastructure, significantly improves a country's economic performance. Particulaly in countries like India (Dash and Sahoo, 2010; Pradhan and Bagchi, 2013), South Africa (Kularatne, 2006), and Belgium (Meersman and Nazemzadeh, 2017). They contend that the economic recession experienced by certain developed countries like Greece, Spain, Portugal, and Ireland, as well as poverty in certain developing countries, can primarily be attributed to underinvestment in infrastructure development (Serven and Calderon, 2004).

However, opponents argue that increased investment in infrastructure development may crowd out private investment, leading to a reduction in the overall economic growth rate (Schclarek, 2007). Furthermore, the existing literature lacks a comprehensive time series perspective that links the level of transport infrastructure development to economic growth. Moreover, previous empirical research has often failed to comprehensively measure the level of transport infrastructure development in Nigeria, thereby limiting the ability to assess its effects on economic growth. This paper aims to fill these gaps by assessing the role of transport infrastructure and economic development in Nigeria. Some economists Ali, R., Barra, A. F., Berg, C. N., Damania, R., Nash, J. D., & Russ, J. (2015). have shown keen interest in factors which can accelerate the growth of their economies and one of such major factors is transportation. A well-functioning and integrated transport system, among other things in the economy, stimulates national growth and development which enhances the quality of life. The provision of vital linkages between spatially separated economic units enables social contact, makes interaction possible and also provides access to employment, health, education and other services which brings about civilization (Aderamo and Magaji, 2010). Studies on

transportation sector in Nigeria have become so important because of the need to formulate better policies that will affect the sector positively, thereby bringing about an efficient, effective and standard transport system. The demand for road transport services in the country over the years have increased tremendously, while the supply of road transport services has declined due to the weak level of infrastructure available in the system (Siyan, Eremionkhale and Makwe, 2015).

The condition of road transportation has frustrated development efforts in the country and this has resulted into series of challenges such as the cutting off of many rural areas in the country from neighboring larger settlements from which they could access higher order socio-economic services, low productivity, low income and a fall in the standard of living of rural residents and high rate of poverty (Aderamo and Magaji, 2010).

Road transportation problem in Nigeria relates generally to the provision of access to natural resources like minerals, agriculture, forestry and the provision of access for rural population so that they can access services at affordable rate. Findings by (Akanbi, Bamidele & Dunni, 2013) have shown that the movement of passengers and freight in rural areas of Nigeria are smaller than those of intra-urban movement. People in rural areas travel less than their urban counterparts and this is not independent of the absence of reliable and easily affordable means of motorized public transport in these areas. The distance over which motorized transport is required within rural areas is relatively shorter because of the small and compact nature of the rural settlements generally. Rural road transportation problems are accentuated by the dispersed spatial derivation of traffic; this is conditioned by the nature of rural environment and economy, bulkiness and perishable nature of rural product, imbalance in inflow and outflow, and marked variability in demand for road transport. With specific reference to Nigeria, the road transportation system is the most widely used of all forms of transportation system. Hence, the federal state and local government have made efforts to ensure that road transport infrastructure develop in all federation. However, inadequate capital expenditure in this regard has been identified as a major obstacle for improving the transport system in Nigeria especially the railway and aviation sectors.

Statement of Research Problem

Nigeria, as one of the developing nations, faces various challenges and opportunities in its pursuit of economic development. One critical aspect that requires attention is the role of transportation infrastructure in facilitating economic growth and maximizing the city's potential. While transportation systems are essential for the efficient movement of people and goods, there is a need to assess the adequacy, efficiency, and effectiveness of Nigeria`s transportation infrastructure in supporting economic development. The problem lies in the potential mismatch between the existing transportation infrastructure and the growing demands of Nigeria's expanding economy. Inadequate road networks, lack of public transit options, and limited connectivity to other regions can hinder the flow of goods, limit market access, and impede business growth. Furthermore, inadequate transportation infrastructure can lead to increased transportation costs, delays, and inefficiencies, negatively impacting the competitiveness of local industries. Additionally, the socio-economic disparities within Nigeria may exacerbate the transportation challenges faced by certain marginalized communities. Lack of accessibility and limited transportation options can create barriers for vulnerable populations, limiting their access to employment opportunities, education, healthcare, and other essential services. Addressing these challenges and optimizing the role of transportation infrastructure in promoting economic development is crucial. By enhancing transportation systems, Lafia can unlock new economic opportunities, attract investments, and improve

overall quality of life for its residents. A comprehensive understanding of the existing gaps and potential solutions is necessary to inform effective policymaking, infrastructure planning, and investment decisions.

Therefore, this research seeks to provide a comprehensive analysis of the role of transportation infrastructure in promoting economic development in Nigeria. By identifying the specific challenges faced by the country and assessing the potential opportunities, this study aims to contribute to the formulation of evidence-based strategies and policies. The findings will serve as a foundation for decision-makers, urban planners, and stakeholders to prioritize transportation infrastructure development, allocate resources effectively, and design interventions that enhance economic growth and sustainability in Nigeria. Overall, this research will address the critical problem of transportation infrastructure and its impact on economic development in Nigeria. It will shed light on the specific challenges faced by the country, highlight the potential opportunities, and provide valuable insights for informed decision making. By focusing on this problem, we can work towards creating a more connected, accessible, and economically vibrant Nigeria that benefits all its residents.

Conceptual Clarifications

Concept of Transportation infrastructure.

Transportation refers to the movement of goods, animals and persons from place to place and the various means by which such movement is accomplished. The growth of the ability and the need to transport large quantities of goods or numbers of people over long distances, at high speeds and in comfort and safety, has been a measure of technological progress (Pradhan and Bagchi, 2013). A mode of transport is a solution that makes use of a particular type of vehicle, infrastructure, and operation. The transport of a person or of cargo may involve one mode or several of the modes, with the latter case being called intermodal or multimodal transport. Each mode has its own advantages and disadvantages and will be chosen for a trip based on cost, capability, and route (Polzin, 2004). Modes of transport include air, land (rail and road), water, cable, pipeline and space. The field can be divided into infrastructure, vehicles and operations. Transport is important because it enables trade between people, which is essential for the development of civilizations (Polzin, 2004).

Transport infrastructure consists of the fixed installations, including roads, railways, airways,

waterways, canals and pipelines and terminals such as airports, railway stations, bus stations, warehouses, trucking terminals, refueling depots (including fueling docks and fuel stations) and seaports (Seetanah, 2006). Terminals may be used both for interchange of passengers and cargo and for maintenance. Vehicles travelling on these networks may include automobiles, bicycles, buses, trains, trucks, people, helicopters, watercraft, spacecraft and aircraft. Operations deal with the way the vehicles are operated, and the procedures set for this purpose, including financing, legalities, and policies. In the transport industry, operations and ownership of infrastructure can be either public or private, depending on the country and mode (Avanenge and zizi, 2016).

Empirical Literature Review

Alaba and Charles (2023) examined the impact of road transportation on Nigerian economic growth: 1985–2022. Department of Economics, Nasarawa State University, Keffi, and Federal University of Lafia, used Ordinary least square estimation technique The major findings of their work is that Road transportation has a positive and significant effect on economic growth

in Nigeria. Government expenditure on road infrastructure positively influences Real Gross Domestic Product (RGDP). Improvement in road networks enhances the movement of goods and services, which promotes commercial activities and national productivity. There is a causal relationship between road transportation and economic growth in Nigeria, showing that transport development stimulates economic activities. Poor road conditions, inadequate maintenance, and insufficient funding limit the full contribution of the transport sector to economic development.

Oyeyinka and Ekpeno (2023) evaluated the Contribution of Nigeria's Transport Sector to Economic Growth from 1970 to 2023, used a method of ordinary least square. The major findings of the study "Evaluating the Contribution of Nigeria's Transport Sector to Economic Growth from 1970 to 2023" by Oyeyinka and Ekpeno (2023) include: Nigeria's transport sector contributes positively to economic growth by facilitating trade, mobility, and industrial activities. Road transportation was found to contribute more significantly to GDP growth than other transport modes because it is the most widely used means of transportation in Nigeria. Rail and water transportation sectors remain underutilized, limiting their potential contribution to national development. Poor infrastructure, inadequate funding, and weak maintenance culture reduce the efficiency of the transport sector. The study revealed that transport infrastructure development stimulates productivity and regional integration within the Nigerian economy. Investment in transportation infrastructure increases employment opportunities and supports market accessibility. The researchers found that government policies and institutional inefficiencies affect transport sector performance in Nigeria. The study recommended greater investment in multimodal transportation systems, especially rail and inland waterways, to improve sustainable economic growth

Chen and Vickerman (2017) examined the relationship transport infrastructure and regional economic wealth in Europe and China, including Nigeria. While their study takes a more detailed approach to structural change, it falls short of quantitatively assessing the impact of transport infrastructure development on Nigeria's economic growth. The recent increase in investment in transport infrastructure in Nigeria has further widened this research gap.

Siyan, Eremionkhale and Makwe (2015) conducted an empirical investigation on the impact of road transportation infrastructure on economic growth in Nigeria using ordinary least square estimation technique. The research findings suggests that road transportation has an impact in the economic development in Nigeria. According to their findings, economic growth in Nigeria depended on the level of good and accessible road transportation and the level of road transport infrastructures that will complete the business activities and facilitate trade of small and medium scale Enterprises in Nigeria. From the research, it was noted that government attention to road transportation system and even the entire transportation sector is poor. Money meant for the maintenance of old projects and development of new projects are diverted for personal use. This has been the situation in Nigeria and most West Africa countries. They recommended that government should give more attention to the sector with a view to revitalizing the road transport system in Nigeria.

Avanenge and Zizi (2016) carried out a study on an analysis of the issues and challenges of transportation in Nigeria and Egypt using descriptive statistical tools and graphical analysis. They found that in many developing countries like Nigeria, inadequate transportation facilities are often the norm rather than the exception. A good transportation system is therefore essential

to support and guarantee economic growth and development. To achieve maximum result in the transportation industry, the study recommended strongly that; drastic measures be taken to reposition the air, road, rail and water transportation; the approach to tackle the issues and challenges raised in the transportation industry should be viewed from a holistic point of view, and tackled in its totality; research and development should be encouraged; Continuous professional development program (CPDP) should be encouraged to build capacity and assure quality in the industry.

Igwe et al, (2013). Conducted a review of Nigeria's Transportation System and the Place of Entrepreneurs, by comparing Nigeria and South Africa's transport infrastructure using descriptive statistics of secondary data obtained from World Bank Development Indicators; CIA World Fact book; Nigerian Manufacturing Enterprises Survey (NMES) 2009; and South Africa's public sector infrastructure expenditure and estimates, 2006/7 –2012/13. Their findings indicated that the capital-intensive nature of roads infrastructure requires that the Nigerian government should encourage competition by relaxing fiscal measures to empower Nigerian transport entrepreneurs and encourage private sector participation in ownership, funding and operations.

Pradhan and Baghchi (2013) explored the Effect of transportation infrastructure on economic growth in India using the Vector Error Correction Model (VECM) Approach. The study found evidence of a significant relationship between transportation infrastructure and economic growth. Similarly, Boopen (2006) analyzed the contribution of transport capital to growth for a sample of 38 Sub Saharan African countries using both cross- sectional and panel data regression analysis. In both sample cases, the analysis concluded that transport capital has been a contributor to the economic progress of these countries.

Pedro, Mercedes, and Joaquín (2002) analyzed the impact of transport infrastructures on the economic growth of both regions and sectors, distinguishing among modes of transport. They also attempted to capture the spillover effects or network effects associated with transport infrastructures. Two different methodologies are used: the first adopted accounting approach based on a regression on total productivity factor (TFP) indices, the second used econometric estimates of the production function in the form of a multiple linear regression model. Their study obtained very similar elasticities with both methodologies for the private sector of the economy, both for the aggregate capital stock of transport infrastructures and for the various types of infrastructure. Important network effects of these infrastructures on the private sector have also been observed. However, the disaggregated results for sectors of production were not conclusive.

Mittnik and Neumann (2001) examined the dynamic relationship between public investment in infrastructure and output in the economy, using Vector Autoregressive (VAR) model. With data from six industrialized countries, the study established that public investment in infrastructure had positive influence on GDP. However, there is no significant causal link running from GDP to public investment in infrastructure. Their results provide evidence for a complementary relationship between public and private investments in infrastructural facilities such as roads.

Pravakar, Ranjau, and Geethanjali (2010), investigated the role of transportation in promoting. Economic growth in china for the period of1975 to 2007, using GMM (Generalized Methods of Moment) and ARDL (Autoregressive distributed lag model) techniques. The result reveals that infrastructure and investment have played an important role in economic growth in China. Furthermore, Nwakeze and Mulikat (2010) estimated the contribution of transportation

investment, congestion and traffic related accident to economic growth in Nigeria between 1975 and 2006, using the extended Cobb Douglas production function model, they found that transport investment positively contributes to economic growth and traffic accidents contributes negatively. 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.

Most of the researchers limit their analysis on the road transportation sector and emphasized on infrastructure condition with limited attention to policy execution challenges such as corruption, governance issues, maintenance culture and funding inefficiency.

Theoretical Framework:

Solow's (1956) neoclassical model has guided this study. The core premise of Solow's model is that it relates aggregate production function, or input, to productivity, or output. Solow describes the marginal utility to be gained from productivity, capital investment, and labor and argues that technological progress in developed nations will peak at a certain time and then eventually decline. Solow argued that the average cost of production will rise in a developed nation; he viewed transportation infrastructure planning, investment, and implementation as distinct from the planned economic development process, while the opposite occurred in the developing nation due to continued increase in marginal utility of labor and capital investments. Solow's theory supports the notion of investment in road transportation infrastructure. Thus, in applying Solow's theory to this study, I expected to find that investment in road transportation infrastructure (road networks) would have an economic impact on the growth of the developing nation such as Nigeria. Growth pole theory is driven by the concept that growth or economic development is usually not uniform across a region but is often concentrated at a specific pole. The pole represents a concentration of economic activity in one area; from which growth is propagated or diffused to other areas or regions. Growth pole theories were very popular in the 1960s and early 1970s, and many countries, including developing countries, embraced them as guides for their national growth strategies to mitigate regional disparities in incomes, employment, and education accessibility. Growth pole theories were used to facilitate decentralization and encourage rapid economic growth or industrialization. Growth pole theories are also meaningful for assessing or forecasting population change, as they can suggest best use of limited regional resources to be invested, allocated, or distributed for maximum effect on economic development.

Methodology.

This section of the study contained the sources of data used for the study, model specification, model estimation technique, the variables used for the study analysis and their justification. To examine the impact of transportation infrastructures on economic growth in Nigeria, the study makes use of secondary data and it is pure annual time series data on Real Gross domestic product, Expenditure on transportation infrastructures, government stability index/Corruption perception index (government stability index was used as a proxy for corruption perception index from 1984 to 1995 and from 1996 CPI is picked up), and inflation, for the period of 38 years (1984 – 2024). The data for Growth domestic product, inflation, and expenditure on transport infrastructure were sourced from the were sourced from Central bank of Nigeria statistical bulletin (2014 and 2024), Central bank of Nigeria annual accounts (2024), Central bank of Nigeria, Economic and Financial Review , while government stability index and corruption perception index were obtained from world bank data indicators (2024).

Model Specification

In this study a model has been stated with the view of examining the impact of transportation infrastructures on economic growth in Nigeria. In capturing the study variables, the following variables were used as both dependent and independent variables or explanatory variables, and the model is represented in a functional form as follows:

$RGDP = f(ETI, CPI, INFR,)$..... (3.1)

Where:

RGDP= Growth Domestic Product.

ETI= Expenditure on Transportation Infrastructures.

CPI = Corruption perception Index.

INFR = Inflation rate.

The variables of Expenditure On Transportation Infrastructures, Corruption perception Index (independent variable) and Inflation rate (independent variable) are the proxy for Transportation infrastructures.

The VAR Model for this study can be stated as follows:

$\mathbf{RGDP_t = \beta_{10} + \beta_{11} logETI_{t-1} + \beta_{12} CPI_{t-1} + \beta_{14} INFR_{t-1} + \varepsilon_t}$ **..... (3.2)**

This can now be expressed in VECM Model form as follows:

$\mathbf{\Delta LogRGDP_t = \beta_{10} + \beta_{11} \Delta logETI_{t-1} + \beta_{12} \Delta logCPI_{t-1} + \beta_{14} \Delta logINFR_{t-1} + \alpha 1 ECM_{t-1} + \varepsilon_{1t}}$ **..... (3.3)**

$\mathbf{\Delta LogETI_t = \beta_{20} + \beta_{21} \Delta logRGDP_{t-1} + \beta_{22} \Delta logCPI_{t-1} + \beta_{24} \Delta logINFR_{t-1} + \alpha 1 ECM_{t-1} + \varepsilon_{1t}}$ **..... (3.4)**

$\mathbf{\Delta LogCPI_t = \beta_{30} + \beta_{31} \Delta logRGDP_{t-1} + \beta_{32} \Delta logETI_{t-1} + \beta_{34} \Delta logINFR_{t-1} + \alpha 1 ECM_{t-1} + \varepsilon_{1t}}$ **..... (3.5)**

$\mathbf{\Delta INFR_t = \beta_{40} + \beta_{41} \Delta logRGDP_{t-1} + \beta_{42} \Delta logETI_{t-1} + \beta_{44} \Delta logINFR_{t-1} + \alpha 1 ECM_{t-1} + \varepsilon_{1t}}$ **..... (3.6)**

Unit Root Tests

The estimation in the study starts by detecting the presence or otherwise of a unit root in the series by employing ADF and PP tests. The advantage of PP test over ADF is that PP takes into account the serial correlation by making correlations to the t-statistics of the coefficient of the lagged variable not by adding the differenced form of the lagged variable, in addition to this PP test has a strong power of rejecting Hi over ADF test.

Co-Integration Test

Once we found that variables are non-stationary at their levels and are in the same order of integration, co-integration test would be conducted to test the presence or otherwise of a long run relationship between the variables. Johansen co-integration approach will be applied during analysis. Hence, the use of Johansen co-integration test and normalized coefficients to ascertain the nature of the long run relationships between the estimated variables.

To determine the number of co-integrating vectors, Johansen (1988, 1989) and Juseluus(1990) suggest two statistic tests. The first one is the Trace test (λ Trace). It test the null hypothesis that the number of distinct cointegrating vector is less than or equal to q against a general unrestricted alternative q = r. The test calculated as follows:

$$\lambda \text{ trace}(r) = -T \Sigma \ln (1-\lambda t) \ldots\ldots\ldots (3.14)$$

Where T is the number of usable observations, and the λ1 is the estimated eigenvalue from the matrix. The second statistic test is maximum eigenvalue test(λmax) that is calculated according to the following formula:

$$\lambda \max (r, r+1) = -T\ln (1- \lambda r +1) \ldots\ldots\ldots\ldots (3.15)$$

The test concerns a test of the null hypothesis that there is r of cointegrating vectors against the alternative that r+1 cointegrating vector.

RESULTS AND DISCUSSION.

Table 4.1. Descriptive Statistics

	LRGDP	LETI	LCPI	LIFR
Mean	52129.46	2.700185	2.640022	3.157049
Median	-71.05000	2.542763	2.639057	3.087607
Maximum	1364846.	4.288204	3.258097	3.767370
Minimum	-567353.0	1.684176	1.791759	2.582544
St. dev.	333964.8	0.736001	0.303233	0.267880
Skewness	2.641173	0.759577	-0.690685	0.126921
Kurtosis	11.27414	2.503245	3.580372	2.669564
Jarque-Bera	136.5165	3.619010	3.180436	0.245967
Probability	0.000000	0.163735	0.203881	0.884278
Sum	1772401.	91.80628	89.76073	107.3397
Sum Sq. Dev.	3.68E+12	17.87600	3.034353	2.368065
Obsevations	38	38	38	38

Table 4.1 presented the summary statistics of the variables used which comprises of mean, median, maximum and minimum, skewness, kurtosis, jarque –bera and its probability values. Mean is the average of a given set of variable. The mean and median of all the variables according to the table are appropriate except RGDP which is skewed to the position side. The variability from the mean of all the variables are also appropriate with the exception of RGDP variable which and this reflect in the normality of the variables as indicated by the Jarque-bera with the probability of 0.000000. This indicate that the variables are normally distributed except ETI.

Correlation Matrix

Table 4.2

VARIABLES	LRGDP	LETI	LCPI	LIFR
LRGDP	1.000000	0.139985	-0.127917	0.144467
LETI	0.139985	1.000000	0.002388	-0.022383
LCPI	-0.127917	0.002388	1.000000	-0.180475
LIFR	0.144467	0.022383	-0.180475	1.000000

From the result of the correlation matrix there is indication of a positive relationship between ,Expenditure on Transportation infrastructures(ETI), inflation rate(IFR), and real gross domestic product (RGDP) at 14%, 14.5% respectively, but there is a weak negative relationship between corruption

perception index (CPI) at 13% approximately.

4.3.1 Unit Root Test

Table 4.3(a): Augmented Dickey Fuller Test (Result)

AUGMENTED DICKEY FULLER TEST AT LEVEL			AUGMENTED DICKEY FULLER TEST AT AT FIRST DIFFERENCE		
VARIABLES	ADF With Only Constant	ADF With Constant and Trend	ADF with Only Constant	ADF With Constant and Trend	Order Of Integration
LRGDP	-5.202927	-5.343757	-7.995849	-7.859135	I(1)
LETI	-0.679158	-1.796003	-8.511118	-8.490539	I(1)
LINFR	-2.038719	-0.868079	-4.841381	-5.344887	I(1)
CPI	-2.848302	-2.856953	-6.607577	-6.610465	I(1)

Researcher`s computation using E-views (9)

Table 4. 3 (b): Result of Phillips Perron Test (PP)

PHILLIPS PERRON(PP) TEST AT LEVELS			PHILLIPS PERRON(PP) TEST AT AT FIRST DIFFERENCE		
VARIABLES	PP With Only Constant	PP With Constant and Trend	PP with Only Constant	PP With Constant and Trend	Order Of Integration
LRGDP	-3.857147	-3.865053	-5.247877	-5.162300	I(1)
LETI	-0.549779	-1.355025	-8.679380	-8.701795	I(1)
LINFR	-2.013578	-0.921910	-4.841273	-5.342282	I(1)
LCPI	-2.834300	-2.832324	-6.631792	-6.637234	I(1)

Researcher`s computation using E-views (9)

In table 4.3(a) and 4.3(b) indicates the Augmented Dickey Fuller and Phillips Perron unit root test results at both levels and first difference Which shows that all the variables are not stationary at levels but stationary at first difference which means all the variables are purely I(1).The result provides evidence that none of the variable is stationary at levels, hence there is non-stationary. However, the null hypothesis for non-stationary for the variables is accepted and it is sufficient enough to conclude that there is presence of unit root in the series at levels, this implies that the variables are stationary at first difference and are integrated of order one I(1).

Cointegration Test.

table 4 .5(a): Maximum Eigen Value Test Result

Null, Alternative		Eigen Value	Maximum Eigen Value Test	Critical Value	Provability Value
r=0,	**r ≥ 1**	**0.726705**	**44.51056***	**41.49720**	**0.0062**
r=1	**r ≥ 2**	**0.624639**	**31.35574**	**38.33101**	**0.2533**
r=2	**r ≥ 3**	**0.562791**	**26.47499**	**32.11832**	**0.2091**
r =3	**r ≥ 4**	**0.387730**	**16.22560**	**25.82321**	**0.5247**
r = 4	**r ≥ 5**	**0.252848**	**9.327569**	**19.38704**	**0.6904**

Researcher`s computation using E-views (9)

Table 4.5(b): Trace Test Result

Null, Alternative		Eigen Value	Trace Statistics Test	Critical Value	Provability Value
r=0,	r ≥ 1	0.726705	130.2286*	117.7882	0.0064
r=1	r ≥ 2	0.624639	88.71807	88.80380	0.0507
r=2	r ≥ 3	0.562791	57.36233	63.87610	0.1563
r =3	r ≥ 4	0.387730	30.88734	42.91525	0.4504
r = 4	r ≥ 5	0.252848	14.66174	25.87211	0.6027

Researcher`s computation using E-views (9)

From table 4.5(a) and 4.5(b), the co-integration test results of both trace statistics and maximum eigine value statistics suggested that there is existence of one (1) cointegrating equation in the model. This implies that the variables used in the model have a long run relationship. Hence, the appropriate technique to be use is Vector Error Correction model (VECM).

Table 4.6: Long-Run Coefficient of The Cointegrating Vector Normalized on RGDP

RGDP	LETI	LINFR	LCPI
1.000000	0.032561	0.024852	-0.043672
	(0.00351)	(0.08429)	(0.00334)

From the long-run cointegrated equation presented in table 4 it was evident that expenditure on transportation infrastructures is significant and positively affecting economic growth , and it has conform with the apriori expectation of positive relationship with economic grow with the coefficient of 0.032, which implies that 1% increase in expenditure on transportation infrastructures will leads to 3.2% increase in economic growth in Nigeria., Inflation rate is also significant and positive in determining economic growth, it has also conform with it's a priori expectation of positive relationship with coefficient of 0.024, this implies that 1% increase in inflation rate will leads to 2.4% increase in economic growth in Nigeria. The coefficient of corruption perception index (0.04) is also statistically significant and negatively sign, this implies that 1% increase in interest rate will leads to 4% decrease in economic growth in Nigeria.

Discussion of findings.

The result of the empirical analysis has shown that transportation infrastructure has a significant impact on economic growth and development in Nigeria. Expenditure on transportation infrastructure has a positive and significant impact on economic growth and development in Nigeria with the coefficient of (0.032) at 5% level and the result is consistent with the studies of Pradhan and Baghchi (2013), Who established that transportation infrastructure has a positive impact on the Nigeria`s Economy

Corruption is negatively affecting economic growth in Nigeria based on the result it has a coefficient of ((0.04) at 5% also and the result is in line with the studies of Inflation has a positive and significant impact on economic growth and development in Nigeria with the coefficient of (0.024) at 5% level and the result is consistent with the studies of Chen and Vickerman (2017), who established that the transportation infrastructure has a significant impact on regional economic growth,

Conclusion

In this research we have tried to examine the relationship between transport infrastructures and economic growth in Nigeria from the period of 1984 and 2024.From the empirical findings, it can be concluded that variables of expenditure on transportation infrastructures corruption perception index, and inflation rate are factors that determines economic growth in Nigeria. The major conclusion that emerged from the empirical result is that transportation infrastructures have a positive and statistically significant impact on economic growth. The transportation expenditure and inflation rate has a positive and statistically significant influence on economic growth in Nigeria, while corruption perception index has a negative relationship with economic growth in Nigeria. It can, therefore, be deducted that transport infrastructures have a positive and statistically significant impact on economic growth in Nigeria from the period of 1984 and 2024 and there is a long run relationship among the variables.

5.4 Recommendations

Based on the empirical result of this study, the following recommendations are made to enhance transportation infrastructure in Nigeria.

The government should embark on effective and efficient policies such as expenditure switching policies by channeling more funds to transportation infrastructures expenditure to boost the country`s transportation sector, thus leading to high quality and efficient transportation facilities which brings about favorable economic growth in Nigeria.

The government shall promote and strengthen policies that checkmate corruption such as due process policy, public service reforms and E-governance policy and ensure strict compliance with the money laundering act policy in order to discourage the government officials from corruption activities carryout their responsibilities with and utmost faith and this will help stimulate the transport sector performance and achieve economic growth and development in Nigeria.

The government should also embark on strategic policies that stabilized prices so that the value of the Nigerian naira appreciates and thus brings about balance of payments stability in Nigeria. The government through monetary authority should ensure that the inflation is minimum and bearable using the right and appropriate type and tools of monetary policy (expansionary od contractionary) depending on the target, so that local products will be at affordable prices, this will prevent the demand for foreign products and reduce pressure on imports and economic growth will be achieved.

The government should also improve the railway transportation, aviation sector and the inland waterways to ensure the right transportation facilities for effective delivery of goods and services to boost the volume of international trade through transportation sector performance to achieve high economic growth of the economy.

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