GOVERNMENT REVENUE AND INFRASTRUCTURAL DEVELOPMENT IN NIGERIA

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ABSTRACT

This article examined the influence of government revenue on infrastructure development in Nigeria. The enquiry proxied the independent variable with three variables namely; oil revenue, non-oil revenue and money supply while the dependent variable was proxied with infrastructural development index. The data used were secondary time series data for the period 1999 to 2024. The data were sourced from the Central Bank of Nigeria from the Central Bank of Nigeria CBN Statistical Bulletin, 2023, ABS Economic Report, 2024 and African Infrastructural Development Report, 2024. The article conducted pre-estimation tests, such as unit root test to understand the integration levels of the variables, that is, the stationarity of the variables. The primary estimation method employed was auto-regressive distributed lag (ARDL), while the post-estimation tests includes; Breusch-Pagan-Godfrey, Breusch-Godfrey serial correlation tests, and Jarque Bera test which were used to ensure residual met regression assumption. The findings revealed that both government oil and non-oil revenue have no significant influences on infrastructural development, and their coefficients were negative, suggesting that the government has not prioritized both the social and economic infrastructural needs of the nation. However, money supply has been found more impactful, as it exhibited a positive and significant influence on infrastructural development better than the revenue of the government. Therefore, the article concluded that government revenue has no statistically significant influence on infrastructural development in Nigeria during the period under review. Therefore, the article recommended that government at all levels should carry out a detailed audit of government capital and recurrent expenditure from 1999 to 2024 to identify why the government revenue has not encouraged infrastructural development in Nigeria.

Keywords: *Government Revenue, Infrastructure, Oil Revenue, Money supply, Recurrent Expenditure.*

I.   INTRODUCTION

In every country, both the private and public sectors have huge responsibilities and obligations that are expected of each of them by which the sectors' performances are measured. In fulfilling these important tasks and duties, funding is an integral part without which the neither the private nor the public sector can achieve its objectives. Hence, the prominence of availability of fund to

any government cannot be over emphasized (Animasaun & Babayanju, 2024). Funds received from the various revenue heads are referred to as public revenue in public sector financing. To fund its operations, the government needs public funds. Taxes, borrowing, fees, fines, government asset sales, leases, mining, royalties, and many more sources can provide such funds. (Muojekwu & Udeh, 2023). In every nation, government spending plays important roles in reducing infrastructural gaps. Public spending on creation of good road and other transport networks, schools, hospital, communication infrastructure, electricity for basic and key industries, research and development and many more others are crucial in improving production capacity and inclusive growth in general (Okolo et al, 2018; Ajide, 2020).

Infrastructural development if and when adequately provided and efficiently managed would directly enhances productivity through the supply of power, transport, irrigation and communication and indirectly improves human capacity through the supply of education, health services, sanitation and water (Ideh, 2019). In Nigeria, public sector operation is responsible for the development of infrastructural facilities and social amenities (Mohamed & Farooq, 2008). However, this can only be done though the provision of revenue set aside for the fiscal year which are based on decision made on anticipated fiscal policy tools (Sakurauchi, 2002). Nigeria is particularly affected by infrastructure inadequacies and disruptions that have made the achievement of sustainable economic growth difficult.

Despite the level of infrastructure investment in Nigeria over the years and particularly since the return of democracy in 1999, painfully, she is hitherto professed as being poor in when taking into consideration infrastructure advancement (Muojekwu & Udeh, 2023). According to reports, Nigeria would need to invest roughly $14.2 billion a year for the next ten years in order to catch up to her peers in terms of infrastructure advancement (Adebayo et al, 2022). Governments both at the Federal and State levels at different times had worked feverishly to get past obstacles in the building of infrastructure. The nation's infrastructure deficit still exists today (Animasaun & Babayanju, 2024).

Thus, the continuous deficiencies in infrastructural development in Nigeria necessitated the quest to carry out this academic enquiry so as to proffer solutions to this unrelenting challenge. Hence, the article probed the how government revenue has influenced infrastructural improvement in Nigeria.

Broad objective of this article is to probe the government revenue and its influence on infrastructure development, while the article specifically specific:
  i.   examined the influence of oil revenue on infrastructure development index in Nigeria;
  ii.   investigated the influence of non-oil revenue on infrastructure development index in Nigeria; and
  iii. assessed the influence of money supply on infrastructure development index in Nigeria.

II.   LITERATURE REVIEW

Conceptual Review

Government Revenue

Government same as individuals and corporate organizations require a substantial, continuous and sustained inflows of revenues to assist the government in meeting its electoral pledges and fiscal intentions. While government annually design and highlight both capital projects and recurrent expenditures it wants and aims to execute within the current or next year, the attainment of such goals is directly proportional to the volume of revenue the government is able to attract (Animasaun & Babayanju 2024). Government revenue refers to the income that a government generates to finance its activities and fulfil its responsibilities to citizens. It is the financial backbone that enables the state to provide public goods and services: security, education, healthcare, infrastructure, and other important social welfare packages (Muojekwu & Udeh, 2023).

Beyond funding daily operations, government revenue plays a strategic role in shaping economic and social outcomes (Oladapo & Olalekan, 2023). Through the way revenue is raised and allocated, governments can influence income distribution, encourage or discourage certain economic activities and promote national development. For instance, progressive taxation can reduce inequality, while targeted levies or incentives can support industrial advancement or environmental protection. Effective management of government revenue is therefore, essential, as it determines not only the quantity of resources available but also, the level of trust citizens have in public institutions and the overall stability of the economy (Okon & Uwah, 2023).

Infrastructural Development

According to Okolo et al (2018) infrastructural development refers to the systematic planning, construction and improvement of the physical and institutional facilities that support the functioning of a society and its economy. These facilities include transportation networks such as roads, railways, ports, and airports; utility systems like electricity, water supply, and telecommunications; as well as public structures such as schools, hospitals, and housing. Strong infrastructure provides the foundation upon which productive activities take place, making it easier for people to move, communicate, access essential services, and carry out economic transactions efficiently (Oladapo & Olalekan, 2023).

Above and beyond its physical aspects, infrastructural development is a key driver of long-term social and economic progress. Well-developed infrastructure enhances productivity, attracts investment, reduces the cost of doing business, and improves the quality of life for citizens. It also promotes regional integration by connecting rural and urban areas and ensuring more balanced development across a country. When infrastructure is poorly developed or inadequately maintained, it can hinder growth and widen social inequalities. Therefore, sustained investment

and effective management of infrastructure are crucial for achieving inclusive development and national prosperity. (Okwara & Christian, 2019),

Theoretical Framework

Theory of Public Economy

The theory of public economy advanced by Friedrich Von Wieser in 1924 focused on how a state should allocate resources in order to maximize social welfare. Wieser, a key figure in Austrian School of Economics, argued that government economic activities should be guided by the same principle that governs private economic decisions: the principle of marginal utility. According to him, public expenditure should be directed towards uses that yield the greatest overall benefit to society, not merely based on political pressure or tradition. He viewed the as an economic agent whose decisions affect the distribution and use of scarce resources, and therefore, insisted that public choices must be made rationally and efficiently (Wagstaff & Cleason, 2004).

Wieser's theory further emphasizes that public goods and services should be evaluated by comparing their social benefits with their social costs. Since many government services do not have market prices, Wieser suggested that policy makers should estimate their value based on the importance citizens attached to them and alternatives forgone. In this way, the theory links public finance closely with welfare economics, highlighting the responsibility of the state to balance limited resources against unlimited social needs. Wieser's ideas laid an important foundation for modern public economics by stressing efficiency, rational choice, and the pursuit of the greatest benefit for the community as a whole (Igga, 2018).

Empirical Review

Animasaun and Babayanju (2024) assessed how Nigerian infrastructure development was impacted by government revenue. Oil and non-oil revenue were used as proxies for government revenue, while capital expenditures were evaluated as infrastructures. Public obligations were represented by both domestic and foreign debts. CBN Statistical Bulletins provided the information. Both descriptive and inferential estimates were made of the data. This analysis demonstrated that Nigeria's infrastructure development pattern was erratic. Furthermore, the article discovered no statistically significant relationship between government revenue and infrastructure growth. Additionally, it was discovered that Nigeria's infrastructure development was greatly impacted by state debt. This study found that although public debt had an impact on Nigeria's infrastructure development, government revenue had no effect within the specified time periods.

Muojekwu and Udeh (2023) investigated how tax income affected Nigeria's infrastructure development. For a twenty-seven-year period, from 1995 to 2021, capital spending was utilised to

gauge economic development, while tax from petroleum profit, tax from business income, value added, customs and excise charges tax were employed as proxies for tax revenue. The Federal Ministry of Finance, Federal Inland Revenue Services, Central Bank of Nigeria, National Bureau of Statistics, and World Bank Publications provided the time series data.

The article used the Augmented Dickey Fully Unit root test as a first testing step to verify the time series variables' order of integration. Both descriptive and inferential statistics were utilized in the article, including Ordinary Least Square (OLS) regression analysis and Pearson correlation. The particular results demonstrated that: Nigeria's capital expenditures are significantly and favourably impacted by the petroleum earnings tax. Capital expenditures are significantly and favourably impacted by company income tax. Capital expenditures are significantly and favourably impacted by value added tax. Capital spending is significantly and favourably impacted by customs and excise taxes.

Adebayo et al. (2022) examined evidence from Sub-Saharan African nations regarding the tax revenue and transport infrastructure expectation mismatch. Due to the availability of data encompassing a sample period of 2007-2020, five nations were purposefully selected for the study. The data was analysed using both descriptive and inferential (Multiple Regression) statistics. According to the report, Sub-Saharan Africa's transport infrastructure expectation gap was significantly impacted by tax income. The study found that in Sub-Saharan African nations, tax income has an impact on the infrastructure expectation gap. So as to close the gap in transport infrastructure expectations, when making strategic decisions, governments in sub-Saharan African countries were advised to prioritise the interests of stakeholders.

Owolabi and Awoyinka (2020) examined the effects of federal statutory revenue state allocation on infrastructure development in Ogun State, Nigeria. Data collection focused on the study's independent variables (federal allocation to Ogun State, Nigeria) and dependent variables (environment management, youth and social development, education, health, agriculture, and transportation sectors). Unit root tests were applied to the study variables, and Autoregressive Distributive Lag (ARDL) was utilised. The Ministry of Finance in Ogun State supplied the time series data that spans a 19-year period from 2000 to 2018.The results showed that Ogun State's environmental management is greatly impacted by federal statutory revenue state allotment.

Ideh (2019) evaluated the connection between tax revenue components and Nigeria's economic growth. For the study period (2003–2017), secondary time series data were obtained from pertinent records of the relevant agencies. Value added tax, petroleum profit tax, personal income tax, corporate income tax, and customs and excise charges were among the tax revenue components evaluated in this study; real GDP and the human development index (HDI) were used to gauge economic development. Together with other essential statistical tools, the Autoregressive Distributed Lag approach was used to analyse the data. The study's findings have significant policy ramifications. In particular, it was noted, among other things, that although the petroleum profit tax constituted a significant portion of tax revenue, it had a negative correlation with measures of economic development (real GDP and HDI). This suggests that the money collected from the petroleum profit tax is not appropriately and directly allocated to the construction of the necessary infrastructure that will advance Nigeria's economic development.

III. RESEARCH METHOD

Data from 1999 to 2024 were subjected to preliminary tests using Augmented Dickey-Fuller and Auto-Regressive Distributed Lag (ARDL) was chosen as estimation technique while Breusch Pagan test conducted for residual post-diagnostic test.

Model Specification

This article adopted model of Animasaun and Babayanju (2024) who evaluated government revenue and infrastructural development in Nigeria. The model was specified as follows:

CE = f(OR, NOR)
Where:
CE = Capital expenditure as dependent variable
OR= Oil revenue
NOR = Non-oil revenue

However, this enquiry modified Animasaun and Babayanju's model by replacing capital expenditure by infrastructure development index which captures the index of infrastructure development in Nigeria. Also, money supply was included in the model to account for macroeconomic impact on IFDI.

Therefore, the model for this current study is stated thus:
IDI = (OR, NOR, MS)……………….……………………..…..……………….Equa. 1
Linearizing model, the study re-specifying the model thus:
$IDI_t = \beta_0 + \beta_1 OR_t, \beta_2 NOR_t, \beta_3 MS_t + £_t)$……………………….……………..Equa. 2
Where:
IDI= Infrastructure development index
OR= Oil revenue
NOR = Non-oil revenue
MS= Money Supply
β_0 = Intercept (constant term)
β_1, β_2, & β_3 = Slope Parameters to be estimated
£ = Error Term
t = Time.

IV. DATA ANALYSIS AND INTERPRETATION

Preliminary Estimation Test

Table 1: Summary of Philip Peron Test

At Level	t-Statistic	Prob.	Integration	At First Difference	t-Statistic	Prob.	Integration
LAIDI	-2.2515	0.1945	n0	AIDI	-5.7231	0.0001	***
LNOR	-0.1363	0.9348	n0	d(LNOR)	-5.1134	0.0004	***
LOIR	-3.8423	0.0076	***	d(LOIR)	-5.5688	0.0001	***
LMS	-2.7531	0.0801	*	d(LMS)	-3.2931	0.0272	**

a: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1% and (no) Not Significant
Source: EViews Output, 2026

Table 1 presented the results of the stationarity test conducted using the standard Philip Peron (PP) test for each variable. Stationarity test is an important test often conducted prior to the main estimation to determine the stability of the variable or whether the variable exhibited a random walk within the time period. All variables were transformed into their respective natural logs. The results revealed that only the log of oil revenue (LOIR) was stationary at its level, suggesting that LOIR has no unit root at level, while the other variables, LIDI, LNOR and LMS have unit roots at their respective levels. However, upon testing for a unit root at the first difference, all the variables, such as log of infrastructural development (LIDI), log of non-oil revenue (LNOR), log of money supply (LMS) became stationary at their first difference.

Table 2: Auto-Regressive Distributed Lag (ARDL)

Dependent Variable: LIDI

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LIDI(-1)	0.1944	0.17302	1.1235	0.2752
LNOR	-0.0456	0.0463	0.9852	0.3369
LOIR	-0.0430	0.0257	1.6750	0.1103
LMS	0.2753	0.0681	4.0415	0.0007
C	0.3935	0.1669	2.3584	0.0292
R-squared	0.9889	Mean dependent var		2.7574
Adjusted R-squared	0.9865	S.D. dependent var		0.3721
S.E. of regression	0.0432	Akaike info criterion		3.2630
Sum squared resid	0.0355	Schwarz criterion		3.0175
Log likelihood	44.1555	Hannan-Quinn criter.		3.1978
F-statistic	421.9429	Durbin-Watson stat		1.8712
Prob(F-statistic)	0.0000			

Source: Author's Computation from EViews 10, 2026

The enquiry revealed that the lag value of LIDI (-1) of 0.1944 has a positive influence on its previous value, LIDI, and the p-value (p=0.0275) was statistically insignificant at the 5% level.

This implies that a 1% increase in LIDI (-1) would bring about a 19.44% increase in its own innovation while holding other variables constant. The estimation further revealed that LNOR (b=0.0456) and LOIR (b=0.0430) harm infrastructural development, while LMS (b=0.2753) has a positive influence on it. Checking on their respective p-values, it was revealed that the LNOR and LOIR p-values (p=0.3369 and 0.1103) are above the threshold of 5%, suggesting that the variables have an insignificant influence on infrastructural development, while the LMS p-value (p=0.0007) was below the 5% threshold, suggesting that LMS has a significant influence on infrastructural development. These findings imply that a 1% increase in LMS would bring about a 27.53% increase in infrastructural development, while a 1% increase in OIR and NOR would result in a 4.56% and 4.30% decline in infrastructural development.

The model properties revealed that the coefficient of determination R^2 of 0.9889 demonstrates a strong fit, suggesting that the independent variables accounted for approximately 99% of the variation in infrastructural development, while the fraction of 1% is explained by other extraneous variables not included in the model. Furthermore, the adjusted R^2 of 98.65% also explained the variation in the dependent variable to the tune of 98.6% according to the number of variables included in the model, and it also explained that the explanatory variables are strong determinants of infrastructural development. The calculated F-statistic of (421.9429) and its corresponding p-value (p = 0.0001) further confirm the overall significance of the model, indicating that it is highly statistically significant in explaining the influence of government revenue on infrastructural development in Nigeria. Lastly, the Durbin-Watson statistic of 1.8712 is close to the benchmark of 2, which suggests that the regression residual has no serial correlation problem.

Table 4.3: Post Estimation Diagnostic Test

Test	F-Statistics	Prob
Breusch Godfrey SCLM Test	0.1651	0.6844
Breusch Pagan Godfrey Test	4.5674	0.3346
Jaque Bera Test	1.0358	0.5957

Source: EViews 10, 2026.

Post-estimation checks on the residuals were performed to ensure the model's robustness. These checks included the Breusch-Godfrey Serial Correlation LM test, the Breusch-Pagan-Godfrey test, and the Jarque-Bera test, with results presented in Table 4.3. These tests, respectively, assess the presence of autocorrelation, evaluate the constancy of the residual variance (i.e**.,** heteroscedasticity), and test for the normality of the error term. The decision rule for each test is straightforward: if the p-value is below the 5% level of significance, it indicates the presence of the problem being tested. Conversely, if the p-value is above 5%, the residual is considered free from that particular problem. As shown in Table 4.3, all three tests yielded p-values (0.6844, 0.3346 and 0.5957) well above 5% level of significance. This indicates that the residuals are free from autocorrelation, exhibit constant variance (homoscedasticity), and are normally distributed. These findings collectively suggest that our regression model is robust and reliable.

Hypotheses Testing

To test the hypotheses of this enquiry, Table 2, which is the autoregressive distributed lag results, was used.

H$_{01}$: There is no significant influence of oil revenue on infrastructural development in Nigeria.

Using Table 2, the LOIR p-value was 0.1103, which is higher than the 5% level of significance (LOS). Thus, LOIR has no significant influence on infrastructural development in Nigeria. Hence, the null hypothesis is retained.

H$_{02}$: There is no significant influence of non-oil revenue on infrastructural development in Nigeria.

In testing the null hypothesis of objective two of no significant influence of non-oil revenue on infrastructural development in Nigeria using Table 2, the LNOR p-value was 0.3369, and it is higher than the 5% level of significance (LOS). Thus, LNOR has no significant influence on infrastructural development in Nigeria. Hence, the null hypothesis is retained.

H$_{03}$: There is no significant influence of money supply on infrastructural development in Nigeria.

Using Table 2, the LMS p-value was 0.0007, and it is lower than the 5% level of significance (LOS). Thus, that LMS has a statistically significant influence on infrastructural development in Nigeria. Hence, the null hypothesis is rejected, while the alternative of a significant influence of money supply on infrastructural development is accepted.

V.   CONCLUSION AND RECOMMENDATIONS

The article probed the influence of government revenue on infrastructural advancement between 1999 and 2024. Infrastructural development was measured by the infrastructural development index, while oil and non-oil revenue measured government expenditure, and money supply was used as a control variable. Data gotten from different government publications and estimated using autoregressive distributed lag. The discoveries revealed that both government oil and non-oil revenue have no significant influence on infrastructural development, and their coefficients were negative, suggesting that the government has not prioritized both the social and economic infrastructural needs of the nation.

However, money supply has been found more impactful, as it exhibited a supportive and reasonable encouragement on infrastructural advancement better than the revenue of the government. Therefore, the article summarized that revenue from government has no meaningful influence on infrastructural advancement within the year of review. Consequent upon these findings, it was concluded that revenue from government has no statistically reasonable influence on infrastructural advancement during the period under review. Thus, based on the discoveries above, the article recommended that, as a result of insignificant influence of government revenue on infrastructural advancement in Nigeria, government at all levels should carry out a detailed audit of government capital and recurrent expenditure from 1999 to 2024 to identify why the government revenue has not encouraged infrastructural development in Nigeria. Also, new and proactive policies should be designed and implemented to boost non-oil export in Nigeria to

stimulate infrastructure development in Nigeria. Furthermore, the CBN should continue to manage the money supply to ensure it continue to stimulates infrastructural development in Nigeria

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