IMPACT OF PUBLIC CAPITAL EXPENDITUR ON ECONOMIC GROWTH OF NIGERIA: ROLE OF INSTITUTIONAL QUALITY

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ABSTRACT

This study examines the impact of public capital expenditure and the role of institutional quality in Nigeria. It employed annual time series data from 2002 to 2022, sourced from the World Bank Development Indicators (WDI, 2023) and the World Governance Indicators (WGI, 2023). The methodology adopted was the Fully Modified Ordinary Least Squares (FMOLS). The data were subjected to a unit root test (ADF), and all variables were found to be integrated at either I(1) or I(0). The FMOLS results revealed that the negative impact of corruption on public capital expenditure (PCE) is masked by political priorities. The error correction mechanism (ECM) indicates a speed of adjustment of 59%, capable of correcting disequilibrium annually. Based on these findings, it is recommended that the government strengthen legal institutions, combat corruption, and promote political stability to ensure efficient and sustainable public investments.

Keywords: *Capital, Corruption, Expenditure, Public, Economic Growth*

1.0 Introduction

Public capital expenditure is essential for driving economic growth through infrastructure development, productivity enhancement, and improving quality of life. Globally, it is recognized as a key tool in stimulating private sector investment and fostering long-term economic progress. Efficient public spending, especially in sectors like transportation, education, and healthcare, strengthens infrastructure and human capital, contributing directly to economic growth (Akinbobola et al., 2020). However, the effectiveness of such expenditures is closely tied to the quality of institutions, which impact how well public funds are allocated and utilized. Strong institutions lead to better management of resources and greater returns on public investments, whereas weak institutions often result in inefficiencies and corruption, undermining potential economic benefits.

In Africa, where development challenges persist, the role of public capital expenditure is even more crucial. Although many African nations have significantly increased public investments in recent years, they have struggled to convert these investments into sustained growth, largely due to institutional weaknesses and governance issues.

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Public capital expenditure in countries with strong institutions generally yields higher returns, whereas in countries with weak governance, such expenditures often fail to produce meaningful outcomes, highlighting the need for institutional reforms to maximize the benefits of public spending (Adebayo & Olayemi, 2021).

In Nigeria, a country with a nominal GDP of $199.721 billion and a per capita income of $877.073 (IMF, 2024), the impact of public capital expenditure on economic growth is significantly affected by institutional quality. Despite substantial investments in infrastructure like roads, power, and education, Nigeria has faced challenges in translating these investments into sustainable economic growth. The World Bank (2021) notes that inefficiency, corruption, and weak institutional oversight have hindered the effectiveness of Nigeria's public capital expenditure. Nigeria's complex regulatory environment, poor policy enforcement, and high levels of corruption have prevented public investment from achieving its full potential (Ezeani, 2020). Studies have shown that institutional quality is a key determinant of the success of public investment in Nigeria. In view of Adebayo et al. (2021) found that enhancing transparency, reducing corruption, and strengthening legal frameworks could significantly improve the impact of public capital expenditure on economic growth. On the other hand, weak institutions have led to resource misallocation and decreased investor confidence, hindering long-term growth. Therefore, improving Nigeria's institutional framework is crucial to ensuring that public capital expenditures lead to tangible economic growth rather than being misdirected or wasted. Institutional quality, defined by its role in protecting investors and enforcing legal frameworks, is crucial for long-term prosperity (Anthony-Orji et al., 2019; Benyah, 2010; Levine, 1998). Nigeria's declining institutional performance, reflected in negative Worldwide Governance Indicators (WGI) scores, where scores range from -2.5 to +2.5. Higher scores indicate stronger or more favourable institutions are highlights systemic weaknesses in governance, rule of law, and corruption control, which significantly hinder its development.

Table 1: Institutional Quality (IQ) Indicators in some selected African Countries

Country	Control of Corruption	Government Effectiveness	Political Stability and Absence of Violence Terrorism	Regulatory Quality	Rule of Law	Voice and Accountability
Bostwana	0.94	0.53	1.02	0.59	0.64	0.57
Cape Verde	0.78	0.10	0.86	-0.15	0.57	0.83
Gabon	-0.83	-0.68	0.29	-0.40	-0.50	-0.76
Ghana	-0.15	-0.08	-0.03	-0.09	-0.01	0.29
Maurtius	0.37	0.71	0.90	0.68	0.96	0.87
Namibia	0.36	0.15	0.71	0.14	0.19	0.39
Nigeria	-1.17	-1.02	-1.77	-0.88	-1.19	-0.76
South Africa	0.29	0.54	-0.13	0.49	0.14	0.66

Source: *Author's Compilation using the data from World Governance Indicator (WDI, 2023)*

The table 1: demonstrates significant variations in the quality of institutions across African nations. Botswana and Mauritius are at the forefront due to their robust governance, evident in their impressive ratings for controlling corruption, political stability, and adherence to the rule of law (Botswana: 0.94, 1.02; Mauritius: 0.96). Cape Verde excels in political stability (0.86) and voice and accountability (0.83), but falls behind in regulatory quality (-0.15). Both Namibia and Ghana demonstrate moderate performance, with

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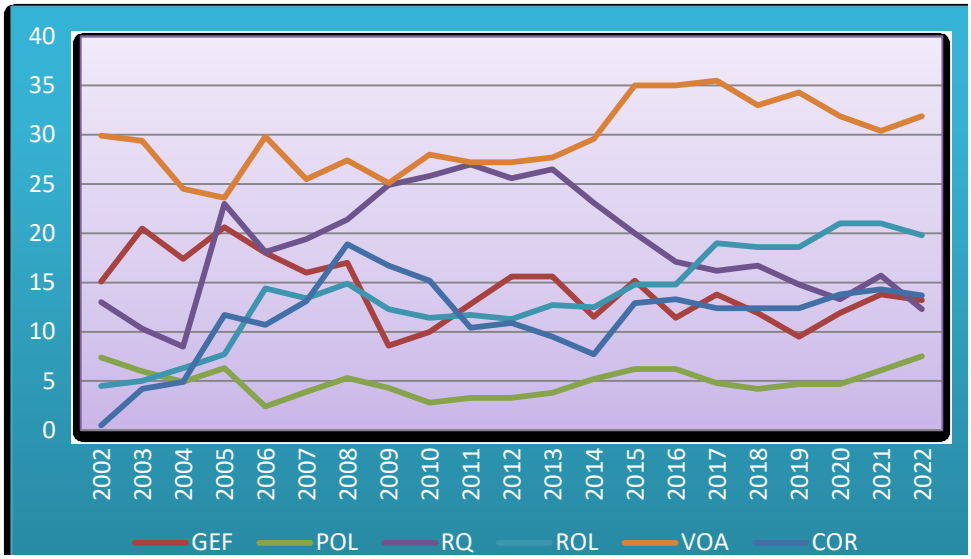
Namibia leading in political stability (0.71) and Ghana attaining close-to-average ratings across various areas. On the other hand, Nigeria and Gabon encounter major issues with their institutions, as Nigeria performs poorly in controlling corruption and political stability, while Gabon demonstrates inadequate governance with negative ratings in various measures. These differences underscore the varying levels of institutional capabilities throughout the region.

Figure 1: Institutional Quality



Source: *data using from World Governance Indicator (WGI, 2024), Government Effectiveness (GEF), Political Stability and Absence of Violence Terrorism (POL), Regulatory Quality (RQ), Rule of Law (ROL), Voice of Accountability (VOA) and Corruption (COR)*

As presented in Figure 1; a rising trend in governance indicators such as Government Effectiveness (GEF), Political Stability (POL), Regulatory Quality (RQ), Rule of Law (ROL), Voice and Accountability (VOA), and Control of Corruption (COR) reflects improvements in public service, stability, regulations, legal frameworks, citizen participation, and corruption control. Conversely, a declining trend in these areas indicates challenges such as instability, regulatory inefficiencies, weak legal systems, reduced accountability, and growing corruption.

Public capital expenditure in Nigeria is hindered by weak institutions, inefficiency, corruption, and poor governance, preventing infrastructure investments from driving sustainable economic growth. Strengthening institutional quality is essential for maximizing the effectiveness of public spending (Akinbobola et al., 2020; Adebayo & Olayemi, 2021). The study aims to investigate the impact of public capital expenditure on economic growth of Nigeria: the role of Institutional Quality. The paper is divided into five sections: Introduction, Literature Review, Methodology, Results and Discussions, and Conclusion and Recommendations.

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2.0 Literature Review

Conceptual Clarification

Public Capital Expenditure

Public capital expenditure, which involves government spending on infrastructure like roads, bridges, and hospitals, plays a crucial role in economic development. Barro (1990) argues that such investments increase overall productivity by creating public assets that foster growth, while Aschauer (1989) highlights their role in improving private sector efficiency. Tanzi and Schuknecht (2000) emphasize that the success of public capital spending depends on governance and institutional quality, as poor management can lead to inefficiencies, adds that inclusive capital expenditure, focusing on equitable distribution, is essential, particularly in developing countries with significant infrastructure gaps. Thus, public capital expenditure is vital for sustainable development, with its effectiveness tied to efficient investment management within strong institutional frameworks.

Institutional Quality

Institutional quality refers to the strength and effectiveness of a country's legal, regulatory, political, and governance systems, which significantly influence economic outcomes. Acemoglu et al. (2001) argue that strong institutions are key to fostering economic growth by protecting property rights, enforcing contracts, and promoting transparency, thus creating a favorable environment for investment. Rodrik et al. (2004) contend that institutions, rather than geography or trade, are the primary drivers of long-term economic success. Levine (1998) highlights the importance of institutional quality in protecting investors, improving access to capital, and facilitating economic activities. Conversely, weak institutions as noted by Akinlo and Egbetunde (2015), lead to inefficiencies, corruption, and hinder development by failing to provide necessary regulatory frameworks. Ultimately, institutional quality shapes economic performance and public sector management.

Economic Growth

Economic growth, measured by GDP, reflects a country's increase in output and is essential for improving living standards and reducing poverty. Barro and Sala-i-Martin (2020) highlight the importance of human capital, technological innovation, and investment in physical capital. Acemoglu et al. (2021) stress that strong institution, which ensure property rights and foster innovation, are crucial for sustainable growth. Sahay et al. (2021) emphasize the role of macroeconomic policies, trade openness, and infrastructure investment in driving growth in emerging economies. Together, these factors demonstrate that economic growth relies on a combination of capital, institutions, and policies.

Theoretical Literature

Endogenous Growth Theory (1986) and New Institutional Economics (1990)

The Endogenous Growth Theory (EGT), developed by economists such as Romer (1986) and Lucas (1988), posits that investments in public capital, human capital, and innovation are central to long-term economic growth. This theory suggests that government spending on infrastructure and education can directly enhance productivity and innovation. However, the New Institutional Economics (NIE), pioneered

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by North (1990), emphasizes that the effectiveness of these investments is heavily influenced by the quality of institutions, such as governance, rule of law, and regulatory frameworks. In Nigeria, while public capital expenditure can foster growth, weak institutions like corruption and inefficient governance may limit the effectiveness of these investments. Therefore, improving institutional quality is essential to ensuring that public capital expenditure translates into sustainable economic growth, integrating insights from both EGT and NIE.

Empirical Literature

Jung and Lee (2020) examined the relationship between public capital expenditure and economic growth in Latin America, with a focus on the moderating role of institutional quality. Using panel data for 10 Latin American countries from 1995 to 2017, the authors employed the Generalized Method of Moments (GMM) technique to address endogeneity concerns. Institutional quality was assessed through indicators such as government effectiveness, regulatory quality, and control of corruption. The study found that public capital expenditure positively influenced economic growth across the region. However, the effectiveness of these investments was highly dependent on the quality of institutions in place. Specifically, countries with stronger governance structures and better control of corruption saw more significant benefits from infrastructure investments. The authors concluded that enhancing governance frameworks is crucial for Latin American countries to fully leverage public capital expenditure for sustainable economic growth.

Paredes and Aguirre (2019) investigated the role of institutional quality in shaping the effectiveness of public capital expenditure in the Latin America and Caribbean (LAC) region. The authors used cross-country data from 15 LAC countries covering the period from 1990 to 2016 and employed a fixed-effects model to control for country-specific factors. Governance indicators such as rule of law, corruption control, and regulatory quality were used to assess institutional quality. The findings revealed that public capital expenditure had a significant positive effect on economic growth in the region, but this relationship was much stronger in countries with better institutional frameworks. In countries with weak governance and high levels of corruption, the positive effects of public investment were diminished. The study concluded that for the LAC region, improving institutional quality especially in terms of enhancing transparency and reducing corruption is essential for ensuring the efficiency of public capital expenditure and fostering long-term economic growth.

Hassan and Shahbaz (2018) explored how institutional quality impacts the relationship between public capital expenditure and economic growth in Sub-Saharan Africa. The study utilized dynamic panel data methods, specifically the Arellano-Bond estimator, to analyze data from 20 Sub-Saharan African countries from 1990 to 2015. The authors incorporated governance indicators such as political stability, voice and accountability, and regulatory quality. The results indicated that public capital expenditure had a positive and statistically significant effect on economic growth in the region. However, the positive impact of public investment was stronger in countries with high institutional quality, particularly in terms of political stability and regulatory efficiency. The study emphasized that weak institutions and governance challenges, such as corruption, can hinder the effectiveness of public capital expenditure. Hassan and Shahbaz concluded that improving institutional quality is essential to maximizing the economic benefits of public investment in Sub-Saharan Africa.

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Ndiaye and Diallo (2020) focused on the role of institutional quality in the relationship between public capital expenditure and economic growth in Senegal. Using data from 1985 to 2017, the authors employed a dynamic panel model to analyze the relationship between public capital spending and growth, incorporating governance indicators such as political stability, rule of law, and government effectiveness. The study found a positive relationship between public investment and economic growth, but the effect was significantly enhanced by improvements in governance. Countries with better governance structures saw a greater return on public capital investment. The study concluded that institutional reforms, particularly in governance and political stability, are key for maximizing the economic impact of public investment in Senegal.

Kufakunesu and Mlambo (2019) conducted a study on Zimbabwe to explore how public capital expenditure influences economic growth and the mediating role of institutional quality. The study used a time-series dataset from 1990 to 2015 and applied a cointegration analysis to investigate the long-term relationships between public investment, economic growth, and institutional factors. The results showed that public capital expenditure positively affects economic growth in Zimbabwe, but institutional factors, such as corruption control, political stability, and legal frameworks, significantly influence the extent of this effect. The study emphasized that despite the potential for growth through public investment, weak institutional frameworks have hindered the effectiveness of public capital expenditure in Zimbabwe. The authors recommended institutional reforms to strengthen the impact of public investment on growth.

Adeleke and Odusola (2017) analyzed the relationship between public capital expenditure and economic growth in South Africa, focusing on how institutional quality affects this dynamic. The study used time-series data from 1980 to 2014 and employed the Autoregressive Distributed Lag (ARDL) approach for estimation. Institutional quality was measured through governance indicators such as political stability, corruption control, and regulatory quality. The results revealed that public capital expenditure significantly contributes to economic growth in South Africa. However, the impact was more pronounced in periods of strong institutional quality, particularly with better control of corruption and enhanced regulatory frameworks. The authors concluded that for public capital expenditure to be fully effective in fostering growth, South Africa must strengthen its institutions, particularly in governance and anti-corruption efforts.

Ibrahim and Ibrahim (2023) emphasize that controlling corruption and strategically managing government expenditure are essential for economic growth in Nigeria. Their research suggests that corruption indirectly hampers growth, especially when government spending falls below 4.25%, beyond which it becomes ineffective in mitigating corruption's negative effects. This highlights the need for efficient and targeted government spending. Eleftherios and Minas (2022) adopt a broader perspective, noting that corruption's impact on growth varies across regions, particularly in developing countries. Using the Fully Modified OLS methodology, they argue that corruption significantly impedes growth, but the effects differ depending on context, advocating for tailored anti-corruption interventions. In an Asian context, Muhammad and Zachary (2021) explore how corruption hampers growth by diverting resources from productive investments, such as infrastructure and education, to less productive areas like military spending. They stress the importance of monitoring government expenditure to ensure public funds are used effectively and call for a more transparent and accountable system to reduce corruption.

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Gap in the Literature

Research on public capital expenditure (PCE) and economic growth in Nigeria has overlooked key aspects, such as the specific effects of institutional quality, corruption, and political stability. Studies by Jung and Lee (2020) in Latin America, Hassan and Shahbaz (2018) in Sub-Saharan Africa, and Muhammad and Zachary (2021) in Asia highlight the importance of institutional quality in determining the effectiveness of public investment. However, existing research often uses generalized models and fails to address sector-specific impacts or the bidirectional relationship between corruption and government expenditure (Johnny & Esther, 2018). This study aims to fill these gaps by applying the Fully Modified Ordinary Least Squares (FMOLS) method to explore how PCE, institutional quality, and political stability influence economic growth in Nigeria, with a focus on sector-specific investments and corruption dynamics.

3.0 Methodology

The study aims to analyze the impact of public capital expenditure (PCE) in Nigeria with a particular focus on the role of institutional quality, as highlighted by Nathan et al. (2024). Public capital expenditure can influence economic growth and development by improving infrastructure, governance, and the overall investment climate. However, its effectiveness is significantly shaped by institutional quality, such as government effectiveness (GEF), political stability (POL), regulatory quality (RQ), rule of law (ROL), voice of accountability (VOA), and corruption (COR). The study will employ the Fully Modified Ordinary Least Squares (FMOLS) method, as suggested by Nathan et al. (2024). This method is appropriate because it accounts for potential non-stationarity and endogeneity in the variables, providing more accurate and consistent estimates compared to traditional methods such as OLS. The model will be specified as follows:

$$PCE = f(GEF, POL, RQ, ROL, VOA, COR) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .. (3.1)$$

Transformed equation (3.1) into econometric form

$$PCE_t = \alpha + \beta_1 GEF_t + \beta_2 POL_t + \beta_3 RQ_t + \beta_4 ROL_t + \beta_5 VOA_t + \beta_6 COR_t + \mu_t \ldots\ldots\ldots (3.2)$$

Where: PCE_t = Public Capital Expenditure at time t, GEF_t=Government Effectiveness at time t, POL_t =Political Stability and Absence of Violence at time t, RQ_t=Regulatory Quality at time t, ROL_t =Rule of Law at time t, VOA_t=Voice of Accountability at time t, COR_t =Corruption at time t, α =intercept (constant), $\beta_1, \beta_2, \ldots\ldots\ldots\ldots \beta_6$=Coefficients of the independent variables, μ_t=Error term.

Source of Data

Data for the analysis were sourced from World Bank Development Indicators (WDI, 2024) for public capital expenditure (PCE), World Governance Indicators (WGI, 2024) for the institutional quality variables: Government Effectiveness (GEF), Political Stability (POL), Regulatory Quality (RQ), Rule of Law (ROL), Voice of Accountability (VOA), and Corruption (COR).

Estimation Technique and Procedure

The research models were analyzed using fully modified ordinary least squares (FMOLS) regression was originally designed in the work by Phillips and Hansen (1990) to provide optimal estimates of cointegrating regressions. The method modified lest squares to account for serial correlation effects and for the

endogeneity in the repressors that results from the existence of a cointegrating relationship. The FM-OLS estimator adjusted for serial correlation and endogeneity in the error term. The standard FM-OLS approach modifies the OLS estimator by correcting for the long run correlation structure of the residuals.

Let $\hat{\beta}$ OLS be standard OLS estimator of β which is;

$\hat{\beta}$ OLS = $(\sum_{t=1}^{T} x_t\ x_t')^{-1} \sum_{t=1}^{T} x + y$……(3.3)

The FM-OLS estimator is given by;

$\hat{\beta}$ FM = $\hat{\beta}$ OLS +$(\sum_{t=1}^{T} x_t\ x_t')^{-1} \sum_{t=1}^{T} \widehat{U}\ 'xt$……(3.4)

where;

$\widehat{U_t}$ is the residual from the OLS regression of y_t on x_t, the summation are taken over the time period t=1, 2,……, T.

Table 2: Source/Measurement of Variables

Variables	Measurement	Source	A priori expectation
Public Capital Expenditure (PCE)	Public Capital Expenditure (PCE) is typically measured in monetary terms, such as Nigerian Naira (₦) in millions or billions.	World Bank Development Indicator (WDI, 2024)	Dependent Variable
Government Effectiveness (GEF)	The capacity of government to deliver public service	World Governance Indicators (WGI, 2024)	+
Political Stability and absence of violence Terrorism (POL)	Absence of Violence	World Governance Indicators (WGI, 2024)	+
Regulatory Quality (RQ)	Government to formulate sound policies	World Governance Indicators (WGI, 2024)	+
Rule of Law (ROL)	Strength of legal institution	World Governance Indicators (WGI, 2024)	+
Voice of Accountability (VOA)	Reflect the transparency	World Governance Indicators (WGI, 2024)	+
Corruption (COR)	Estimate of governance (ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance)	World Governance Indicators (WGI, 2024)	–

Source: *Author's Compilation (2024)*

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4.0 Results and Discussion

Table 3: Descriptive Statistics

	PCE	POL	ROL	RQ	VOA	COR
Mean	26.66780	1.527156	2.506156	2.899458	3.377107	2.426306
Median	26.75117	1.558089	2.568428	2.930593	3.384385	2.517696
Maximum	26.97416	2.001480	3.044523	3.295837	3.569533	2.939162
Minimum	26.11453	0.875469	1.504077	2.140066	3.161247	1.435085
Std. Dev.	0.285512	0.295768	0.444010	0.323525	0.123804	0.369683
Skewness	-0.594146	-0.523812	-0.960280	-0.699185	0.038874	-1.458643
Kurtosis	1.943738	2.578820	3.090534	2.790303	2.000589	4.705927
Jarque-Bera	2.106438	1.062422	3.080623	1.666176	0.837390	9.517288
Probability	0.348813	0.587893	0.214314	0.434705	0.657905	0.008577
Sum	533.3560	30.54313	50.12313	57.98916	67.54215	48.52612
Sum Sq. Dev.	1.548829	1.662100	3.745749	1.988702	0.291219	2.596638
Observations	20	20	20	20	20	20

Source: *Author's Compilation, (2024)*

Descriptive statistics present in table 3, the descriptive statistics for key variables public capital expenditure, political stability, rule of law, regulatory quality, voice of accountability, and corruption highlight important data characteristics. Public capital expenditure has a mean of 26.67 and median of 26.75, illustrating a symmetric distribution with values ranging from 26.11 to 26.97 and a low standard deviation of 0.29. Political stability's mean is 1.53 and median 1.56, with moderate variability (range: 0.88 to 2.00; standard deviation: 0.30). For rule of law, the mean is 2.51, median 2.57, and values range from 1.50 to 3.04, resulting in a higher standard deviation of 0.44. Regulatory quality shows a mean of 2.90 and median of 2.93, with a narrow range (2.14 to 3.30) and moderate variation (standard deviation: 0.32). Voice of accountability, with a mean of 3.38 and median of 3.38, shows low variability (range: 3.16 to 3.57; standard deviation: 0.12). Corruption's mean is 2.43 and median 2.52, with moderate variability (range: 1.44 to 2.94; standard deviation: 0.37). Skewness and kurtosis analyses show corruption has significant deviation from normality, whereas other variables do not.

Table 4: Correlation Matrix

	PCE	POL	ROL	RQ	VOA	COR
PCE	1.000000					
POL	-0.097497	1.000000				
ROL	0.853205	-0.262579	1.000000			
RQ	0.328820	-0.435297	0.298288	1.000000		
VOA	0.596662	0.211392	0.494130	-0.226429	1.000000	
COR	0.482888	-0.249037	0.751092	0.259601	0.019412	1.000000

Source: *Author's Compilation, (2024)*

The correlation matrix reveals in table 4; the correlation matrix reveals that public capital expenditure is positively correlated with rule of law (0.85) and voice of accountability (0.60), indicating that higher public capital expenditure is linked to stronger rule of law and accountability. Public capital expenditure also shows a moderate positive correlation with corruption (0.48) and a slight negative correlation with political stability (-0.10). Political stability is negatively correlated with rule of law (-0.26) and regulatory quality (-0.44), suggesting that a decrease in political stability may lead to improvements in these areas. Rule of law has

strong positive correlations with corruption (0.75) and moderate positive correlations with public capital expenditure (0.85) and voice of accountability (0.49). Regulatory quality shows mild positive correlations with public capital expenditure (0.33) and rule of law (0.30), but a moderate negative correlation with political stability (-0.44). Voice of accountability is positively correlated with public capital expenditure (0.60) and rule of law (0.49), but weakly negatively correlated with regulatory quality (-0.23). Lastly, corruption has a strong positive correlation with rule of law (0.75), indicating that higher corruption levels are associated with weaker rule of law. Overall, public capital expenditure, rule of law, and voice of accountability are positively related, while political stability and regulatory quality exhibit weaker or inverse relationships with other variables.

Table 5: Unit Root Test

	ADF			PP		
Variables	**At Level**	**1st diff.**	**Prob.**	**At Level**	**1st diff.**	**Prob.**
PCE	-4.8919***	-1.8667	I(0)	-4.3169***	-1.6790	I(0)
POL	2.7772*	-3.8486**	I(0)	-4.3169*	-5.6376***	I(0)
ROL	-2.4326	-3.9898***	I(1)	-2.4217	-4.0413***	I(1)
RQ	-1.8634	-5.5698***	I(1)	-1.7560	-5.5698***	I(1)
VOA	1.2601	-5.6795***	I(1)	-1.6895	-5.7884***	I(1)
COR	-3.4822**	-4.1219***	I(0)	-3.4742**	-4.1219***	I(0)

Source: *Author compilation Eviews 10, (*) significance at 10%, (**) significance at 5% and (***) significance at 1% respectively (2024)*

Table 5 present the unit root test results via Augmented Dickey-Fuller and Phillips-Perron tests for six variables: Public Capital Expenditure, Political Stability, Rule of Law, Regulatory Quality, Voice of Accountability, and Corruption. Public Capital Expenditure, Political Stability, and Corruption are stationary at level I(0), while others are at first difference. These results show the mixtures of I(0) and I(1) in both the test respectively.

Table 6: Fully Modified Ordinary Least Square (FMOLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
POL	0.129762	0.141907	0.914413	0.3771
ROL	0.594539	0.209259	2.841159	0.0139**
RQ	0.244315	0.134247	1.819894	0.0919*
VOA	0.475840	0.506340	0.939764	0.3645
COR	-0.274026	0.196517	-1.394415	0.1866
C	23.35016	1.758773	13.27639	0.0000***

Source: *Author's Compilation, (2024)*

The Fully Modified Ordinary Least Squares results indicate that political stability has an insignificant effect on public capital expenditure, with a unit increase in political stability leading to a 0.13 increase in public capital expenditure. Rule of law, however, shows a strong positive relationship, with a unit increase leading

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to a 0.59 increase in public capital expenditure, and this effect is statistically significant at 5%. Regulatory quality also positively influences public capital expenditure, with a 0.24 increase in public capital expenditure for a unit increase in regulatory quality, although this is only marginally significant at 10%. Voice of accountability shows a positive but statistically insignificant effect, with a 0.48 increase in public capital expenditure for a unit increase. Corruption has a negative effect on public capital expenditure, with a coefficient of -0.27, suggesting that increased corruption leads to reduced public capital expenditure, but this relationship is not statistically significant. These findings align with Nathan et al. (2024), who argue that institutional quality variables are important for shaping public capital expenditure in Nigeria. However, they contrast with studies by Utile et al. (2021) and Abubakar (2020), which found stronger or more direct effects of institutional quality on public capital expenditure. The disparity in results could be due to differences in economic conditions, country-specific contexts, or the scope of the studies. For example, Utile et al. (2021) highlighted a more significant direct effect of institutional quality on public expenditure in African nations, while Abubakar (2020) focused on government effectiveness and institutional quality during economic reforms in Nigeria, potentially overlooking the complexities of public capital expenditure. Furthermore, Alvarado et al. (2019) found a more pronounced impact of institutional quality on public investment in Latin America, suggesting that regional context plays a key role in determining the influence of institutional factors on public capital expenditure.

Table 7: Error Correction Model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.042719	0.008993	4.750380	0.0006***
D(LPOL)	-0.033408	0.031651	-1.055525	0.3138
D(LROL)	-0.083761	0.068190	-1.228335	0.2450
D(LRQ)	0.083412	0.037126	2.246755	0.0462**
D(LVOA)	0.147357	0.108332	1.360234	0.2010
D(LCOR)	0.081721	0.038727	2.110160	0.0586**
ECM(-1)	-0.059383	0.097008	-0.612149	0.0535**

Source: *Author's Compilation, (2024)*

The Error Correction Model (ECM) results in table 4.5 show the short-term dynamics and long-term adjustments in the relationship between governance indicators and public capital expenditure. The constant term is positive and statistically significant, indicating a baseline increase in public capital expenditure. Among the governance variables, regulatory quality has a significant positive short-term impact on public capital expenditure, suggesting that improvements in regulations boost public capital expenditure. Similarly, corruption shows a marginally significant positive effect, indicating that a reduction in corruption can help improve public capital expenditure, though the effect is weak. In contrast, political stability, rule of law, and voice of accountability do not have statistically significant short-term effects on public capital expenditure. The error correction term (ECM(-1) has a coefficient of -0.059383 and is statistically significant at 5 per cent meaning that any deviations from the long-term equilibrium are corrected at a rate of 5.9% per period. This suggests that the model gradually adjusts to restore PCE to its normal equilibrium position, with the correction taking place over time.

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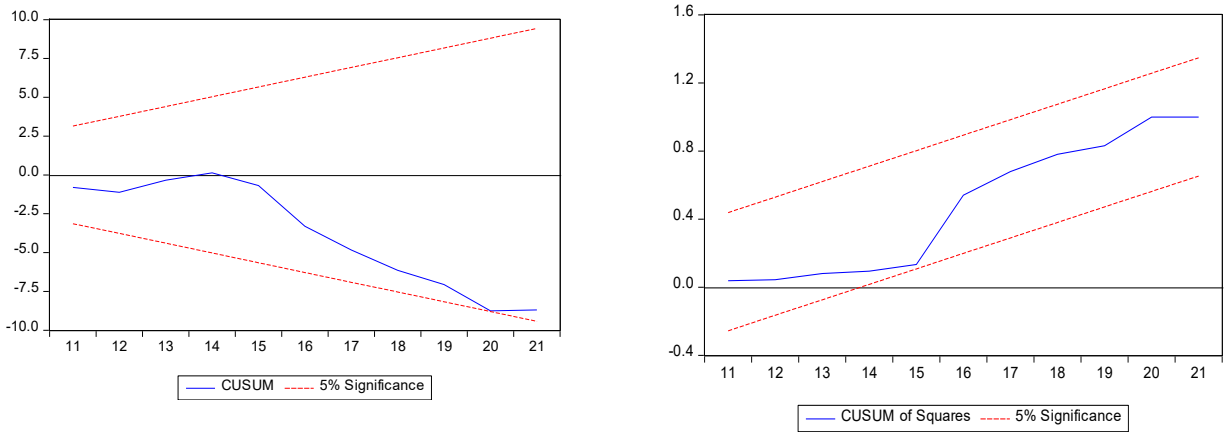
Table 8: Diagnostic Test Result

Test	Coefficient	P-Value
Normality Test	0.378121	0.827736
Serial Correlation LM Test	2.667693	0.1231
Residual Heteroskedasticity Test	2.131240	0.1312

Source: *Author's Compilation, (2024)*

The diagnostic test results indicate in table 4.6 that the model meets key assumptions of econometric reliability. The Normality Test shows a p-value of 0.827736, indicating that the residuals are normally distributed, and there is no evidence to reject the normality assumption. The Serial Correlation LM Test yields a p-value of 0.1231, suggesting that there is no significant autocorrelation in the residuals, supporting the assumption of no serial correlation. Additionally, the Residual Heteroskedasticity Test with a p-value of 0.1312 indicates that the residuals do not exhibit heteroskedasticity, meaning the variance is constant across observations. Overall, the model's residuals are well-behaved, confirming that the model is appropriately specified and the estimated results are reliable.

Figure 2: CUSUM and CUSUM of Square



Source: *Author's Compilation, (2024)*

The stability result for the Model reveals that the coefficients and relationships observed in the model are consistent and can be used for forecasting and policy analysis. It is important for policymakers and researchers to consider the stability of the model when interpreting and relying on the results.

5.0 Conclusion and Recommendations

The study concludes that institutional quality plays a significant role in shaping public capital expenditure in Nigeria. Key governance indicators, such as rule of law and regulatory quality, have a positive impact on public capital expenditure, with rule of law showing a strong, statistically significant relationship. Corruption negatively influences public capital expenditure, but its effect is not statistically significant. Political stability and voice of accountability have weaker or insignificant effects. The error correction model (ECM) highlights the short-term dynamics and the gradual correction of deviations from the long-

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term equilibrium. Overall, the study emphasizes that improving institutional quality is crucial for enhancing the effectiveness of public capital expenditure in Nigeria. Based on the findings the following recommendations were made;

i. Government should establish clear and enforceable laws, enhance the independence of the judiciary, and invest in legal institutions such as courts and law enforcement agencies. By ensuring that legal frameworks are robust and transparent, the government can prevent misuse of public funds, improve accountability, and make public capital expenditure more effective.
ii. Government should strengthen regulatory bodies, enforce stricter anti-corruption laws, and make public procurement processes more transparent. By adopting online platforms for publishing contracts, conducting regular audits, and implementing public awareness campaigns, the government can ensure resources are allocated efficiently and reduce corruption in public spending.
iii. Government should strengthen democratic institutions, increase political accountability through regular audits, and establish clear mechanisms for holding public officials responsible. Promoting transparency and encouraging citizen participation in governance will help create a stable political environment, which is essential for sustainable public investment.

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