

GOVERNMENT EXPENDITURE AND ECONOMIC DEVELOPMENT IN NIGERIA.

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ABSTRACT

The study investigated the effect of government expenditure on economic development in Nigeria, with six specific objectives, six research questions, and six hypotheses. An ex-post-facto research design was employed, focusing on data from 1981 to 2023 sourced from the Central Bank of Nigeria and the World Bank. The population encompassed the Transport and Public Administration Sectors of Nigerian economy, with a purposive sample size of 43 annual observations. Secondary data were collected for their reliability and consistency. The study utilized descriptive statistics, inferential statistics (Multiple Regression and Moderated Multiple Regression), for analysis with help of Statistical Package for Social Sciences (SPSS) Version 25. The results indicated that while transport services expenditure significantly enhances GDP and HDI, public administration expenditure has no significant impact, and corruption strongly moderates the effect of government expenditure on economic outcomes in Nigeria. The study concluded that effective management of government expenditures and stronger anti-corruption measures are essential for improving public spending efficiency. The study further recommended that enhancing transport infrastructure investment, optimizing public administration expenditure, strengthening anti-corruption measures, improving governance efficiency, and implementing transparency reforms will maximize the impact of government spending on economic growth and human development in Nigeria.

INTRODUCTION

Nigeria's economic development trajectory has been a focal point of national policy and international interest, aiming to transform the country into a more diversified and robust economy. Nigeria's development efforts have historically been driven by its vast natural resources, particularly oil and gas, which contribute significantly to national revenue. However, the over-reliance on the oil sector has led to economic vulnerabilities, prompting the government to implement various strategies to diversify the economy. Key sectors such as agriculture, manufacturing, and services are being promoted to enhance economic stability and growth. Despite numerous challenges, including infrastructural deficits and political instability, Nigeria's commitment to economic reforms and investment in human capital presents a potential pathway to sustainable development.

In contemporary economic discourse, GDP serves as a fundamental metric that quantifies the total value of all goods and services produced within a nation's borders over a specified period, typically annually or quarterly. This measure, as underscored by recent studies (Eke et al., 2023), provides a crucial lens through which economists, policymakers, and analysts assess the economic performance and vitality of a country. By encompassing various economic activities such as consumption, investment, government spending, and net exports, GDP offers a comprehensive snapshot of national economic health and growth trends. It not only aids in evaluating the overall size and dynamism of an economy but also informs decisions related to fiscal and monetary policies aimed at fostering sustainable development and prosperity (Eke et al., 2023). Moreover, GDP data plays a pivotal role in international comparisons of economic strength and standard of living, making it an indispensable tool in global economic analysis and policy formulation (Arnold, 2020).

Developed as a composite indicator by the United Nations Development Programme (UNDP), the Human Development Index (HDI) encapsulates a comprehensive evaluation of a country's progress by integrating measures of health, education, and income. This holistic approach, as discussed by Alkire and Robles (2023) and emphasized in recent UNDP reports (2021), provides a thorough

understanding of societal well-being beyond economic metrics alone. By incorporating life expectancy, years of schooling, and income per capita, the HDI offers insights into the quality of life and human potential within a nation, reflecting broader developmental goals. This index not only facilitates cross-country comparisons but also informs policies aimed at fostering equitable and sustainable development, highlighting the importance of addressing disparities in health and education outcomes.

Government expenditure represents a critical component of fiscal policy, encompassing the funds allocated by a government for various purposes such as infrastructure development, social programs, defense, and public services. As highlighted by Alesina et al. (2021), government expenditure plays a pivotal role in shaping economic growth, income distribution, and overall macroeconomic stability. It serves as a tool for stimulating aggregate demand during economic downturns through increased spending on infrastructure and welfare programs, as discussed by Blanchard et al. (2020). Moreover, government expenditure decisions are influenced by political priorities and economic objectives, aiming to achieve optimal allocation of resources while managing fiscal deficits and public debt levels (Oates, 2018). Analyzing trends and patterns in government expenditure provides insights into policy priorities, social welfare commitments, and the role of government in supporting economic development and social equity (Acemoglu et al., 2022).

Transport services expenditure constitutes a pivotal component of national and global economic activities, encompassing the funds allocated for the development, maintenance, and operation of transportation infrastructure and services. As emphasized by recent research, such as studies by Zhang et al. (2023) and Li et al. (2022), expenditure in transport services is integral to facilitating the movement of goods, people, and information, thereby supporting economic growth, regional integration, and social connectivity. Investments in transport infrastructure, including roads, railways, airports, and ports, play a crucial role in enhancing logistical efficiency, reducing transportation costs, and improving accessibility to markets and services (Fragkaki et al., 2021). Moreover, transport services expenditure is influenced by evolving technological advancements, sustainability imperatives, and urbanization trends, shaping both public and private sector investment strategies (Givoni & Banister, 2019). Analyzing expenditure trends in transport services provides insights into infrastructure development priorities, mobility patterns, and the sector's contribution to environmental sustainability and economic resilience.

The impact of corruption on government expenditure and economic development in Nigeria represents a critical area of concern, reflecting the profound implications of systemic inefficiencies and misallocation of resources. Recent studies by Adeleke et al. (2023) and Owoye and Omisakin (2022) underscore that corruption exerts a significant moderating effect on government expenditure patterns, diverting funds away from productive sectors such as infrastructure, healthcare, and education towards personal enrichment and patronage networks. This phenomenon not only undermines the effectiveness of fiscal policies but also perpetuates economic inequality and impedes sustainable development goals (Onuoha, 2021). Moreover, corruption distorts market mechanisms, discourages foreign investment, and erodes public trust in institutions, thereby exacerbating economic instability and hindering long-term growth prospects (Ayittey, 2018). Analyzing the interplay between corruption, government expenditure, and economic development in Nigeria provides insights into policy challenges and opportunities for reform aimed at enhancing transparency, accountability, and the efficient allocation of public resources (Lambsdorff, 2020). Thus, addressing corruption's detrimental effects is essential for fostering inclusive economic growth and advancing socio-economic well-being in Nigeria.

Statement of the problem

Nigeria's quest for sustainable economic development has been significantly hampered by the pervasive issues surrounding government expenditure and its effectiveness in fostering economic growth. Despite the country's abundant natural resources, particularly oil, the anticipated economic benefits have often been undermined by systemic inefficiencies, corruption, and misallocation of

public funds. This has led to persistent infrastructural deficits, suboptimal health and educational outcomes, and a widening inequality gap, which collectively stymie the nation's development aspirations.

Current studies underscore the complexities inherent in Nigeria's fiscal landscape. According to Okonjo-Iweala and Osafo-Kwaako (2022), the country's economic development is critically impeded by the mismanagement of public funds, where a substantial portion of government expenditure is diverted away from productive sectors. This diversion, primarily fueled by corruption, results in the underfunding of crucial sectors like infrastructure, healthcare, and education, thereby stalling economic growth and development.

Furthermore, Akpan et al. (2023) highlight that the inefficiency in public spending not only exacerbates economic inequality but also undermines public trust in government institutions. This mistrust discourages both domestic and foreign investment, which is vital for economic diversification and sustainable growth. Their research points to the need for robust institutional reforms to enhance transparency and accountability in public financial management.

Additionally, Asogwa and Okafor (2023) note that the patterns of government expenditure in Nigeria reveal a disproportionate allocation towards recurrent expenditure at the expense of capital projects. This skewed allocation limits the potential for infrastructure development and economic diversification, which are essential for long-term economic resilience. Given these challenges, this study aims to critically investigate the effect of government expenditure on economic development in Nigeria. By analyzing the current expenditure patterns and their impact on various economic sectors, the research seeks to identify key areas for policy intervention. The goal is to propose actionable recommendations that can improve the efficiency of public spending, enhance economic growth, and promote equitable development. This study is particularly timely as Nigeria grapples with the dual challenges of economic recovery post-COVID-19 pandemic and the ongoing need to diversify its economy away from oil dependency. Addressing the inefficiencies in government expenditure is crucial for building a resilient economic framework that can support sustainable development and improve the overall quality of life for Nigerians.

Conceptual Framework

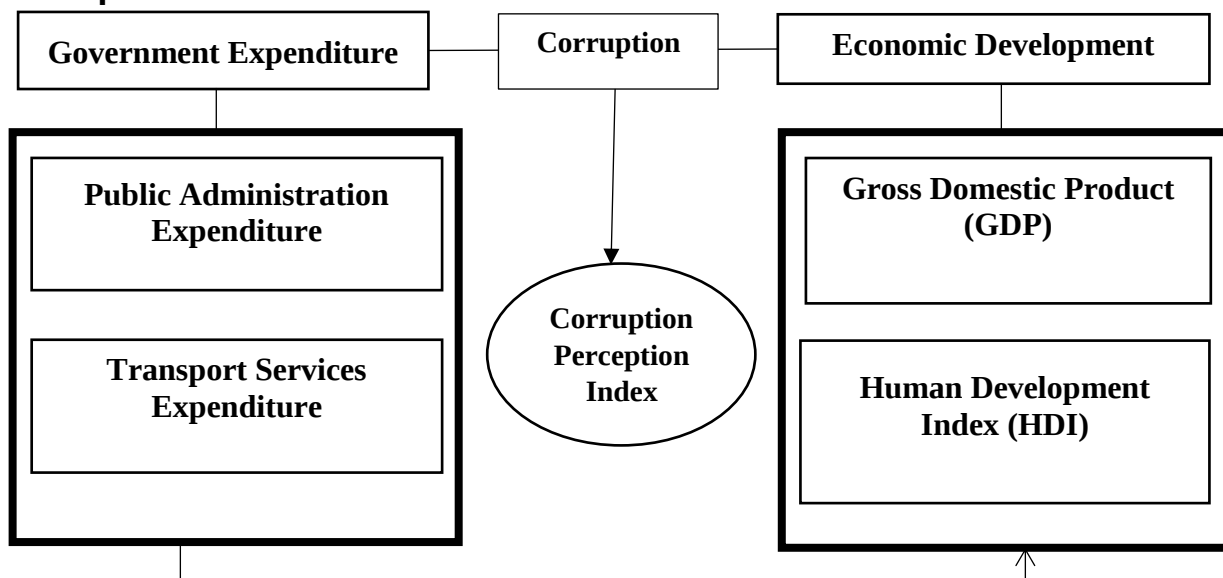


Fig. 1.1: Conceptual framework of government expenditure and economic development

Source: Okonjo-Iweala and Osafo-Kwaako (2022), Akpan et al. (2023).

Aim/Objectives of the Study

The aim of this study was to investigate the effect of government expenditure on economic development in Nigeria. The specific objectives of the study were to:

1. Ascertain the effect of Public Administration expenditure on gross domestic product in Nigeria.
2. Ascertain the effect of Transport services expenditure on gross domestic product in Nigeria.
3. Investigate the effect of Public Administration expenditure on human development index in Nigeria.
4. Determine the effect of Transport services expenditure on human development index in Nigeria.
5. Determine how corruption moderate the effect of government expenditure on gross domestic product in Nigeria.
6. Evaluate how corruption moderate the effect of government expenditure on human development index in Nigeria.

Research Questions

The following research questions guided the study;

1. What is the effect of Public Administration expenditure on gross domestic product in Nigeria?
2. What is the effect of Transport services expenditure on gross domestic product in Nigeria?
3. What effect does Public Administration expenditure have on human development index in Nigeria?
4. What is the effect of Transport services expenditure on human development index in Nigeria?
5. How does corruption moderate the effect of government expenditure on gross domestic product in Nigeria?
6. What is the moderating effect of corruption on the effect of government expenditure on human development index in Nigeria?

Research Hypotheses

The study tested the following null hypotheses at 0.05 threshold;

- H₀₁: Public Administration expenditure does not have any significant effect on gross domestic product in Nigeria.
- H₀₂: The effect of transport services on gross domestic product in Nigeria is not significant.
- H₀₃: Public Administration expenditure does not have any significant effect on human development index in Nigeria.
- H₀₄: The effect of transport services expenditure on human development index in Nigeria is not significant.
- H₀₅: Corruption does not significantly moderate the effect of government expenditure on gross domestic product in Nigeria.
- H₀₆: Corruption does not significantly moderate the effect of government expenditure on human development index in Nigeria.

Research Hypotheses

The study tested the following null hypotheses;

- H₀₁: There no significant relationship between Public Administration expenditure and gross domestic product in Nigeria.
- H₀₂: There no significant relationship between Public Administration expenditure and human development index in Nigeria.
- H₀₃: There no significant relationship between Transport services expenditure and gross domestic product in Nigeria.
- H₀₄: There no significant relationship between Transport services expenditure and human development index in Nigeria.

H₀₅: Corruption does not significantly moderate the relationship between government expenditure and gross domestic product in Nigeria.

H₀₆: Corruption does not significantly moderate the relationship between government expenditure and human development index in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Government Expenditure

Government expenditure refers to the spending by a government on goods, services, and public projects. It encompasses all government consumption, investment, and transfer payments. Government expenditure can be categorized into current expenditures, which cover daily operational costs like salaries and maintenance, and capital expenditures, which include investments in infrastructure and long-term projects. The primary goal of government expenditure is to influence the economy, enhance public welfare, and achieve sustainable development (Brender & Drazen, 2022).

Public Administration Expenditure

Public Administration Expenditure refers to the financial resources allocated by governments to support their administrative functions and the execution of public policies. This type of expenditure is crucial for the functioning of the state's administrative machinery, encompassing a wide range of activities including the salaries of civil servants, operational costs of government departments, public infrastructure, and essential services. It ensures that governments can perform their roles effectively, from policy formulation and enforcement to public service delivery and regulatory oversight. According to Hood and Dixon (2023), governments need to adopt performance measurement systems and auditing practices to monitor and evaluate the impact of their expenditures. This helps in identifying areas of improvement and ensuring accountability and transparency in public spending.

Transport Services Expenditure

Transport services expenditure encompasses the investments and operating costs associated with transportation infrastructure and services, such as roads, railways, airports, ports, and public transit systems. It is a critical aspect of national and regional economic development, influencing economic growth, regional integration, and social connectivity. The significance of transport services expenditure is widely recognized in the literature, as it not only facilitates the movement of goods and people but also enhances productivity and competitiveness.

Economic Development (Criterion variable)

This is a complex and multifaceted process that involves improvements in a range of economic, social, and institutional indicators. It is often associated with sustained growth in income and output, but it also encompasses broader improvements in human well-being, such as health, education, and living standards (Todaro & Smith, 2023). Economic development goes beyond mere economic growth by focusing on the equitable distribution of wealth and opportunities, ensuring that the benefits of growth are shared widely across the population.

One of the key indicators of economic development is Gross Domestic Product (GDP) per capita, which measures the average income of individuals in a country. However, as Sen (2023) argues, GDP per capita alone is not sufficient to capture the full picture of economic development. Other indicators, such as the Human Development Index (HDI), which includes health and education metrics, provide a more comprehensive assessment of development progress. The HDI, introduced by the United Nations Development Programme (UNDP), reflects the idea that economic development should lead to improvements in people's capabilities and freedoms.

Gross Domestic Product (GDP)

This serves as a fundamental measure of a nation's economic performance, representing the total monetary value of all goods and services produced within its borders over a specified period, usually annually or quarterly (World Bank, 2023). It encompasses consumption, investment, government spending, and net exports, providing a snapshot of a country's economic health and size. As a comprehensive indicator, GDP reflects both the quantity and value of economic output, making it a crucial tool for assessing economic growth and comparing standards of living across countries (Mankiw, 2023).

Human Development Index (HDI)

Human Development Index (HDI) is a composite measure designed to assess the overall development of a country by integrating indicators of health, education, and standard of living. Introduced by the United Nations Development Programme (UNDP), it provides a broader perspective than economic measures alone, reflecting a more holistic understanding of development. The HDI combines three key dimensions: health, education, and income. Health is typically measured using life expectancy at birth, reflecting the overall well-being and longevity of a population. Education is represented by a combination of mean years of schooling for adults and expected years of schooling for children, indicating both the current level and future potential of educational attainment within a country. Income is often measured as Gross National Income (GNI) per capita, adjusted for purchasing power parity (PPP) to account for differences in cost of living between countries.

Moderating effect of Corruption- Corruption Perception Index (CPI)

The moderating effect of corruption on government expenditure and economic development is a critical area of study within economics and political science, examining how corruption influences the efficiency and impact of public spending on national growth and welfare. Corruption, broadly defined as the abuse of entrusted power for private gain, can significantly distort the allocation of resources and undermine the effectiveness of government expenditures intended for public goods and services. The abuse of entrusted power for private gain, which can occur in both public and private sectors. It includes practices such as bribery, embezzlement, fraud, and nepotism that undermine the effectiveness of institutions, public trust, and equitable economic development.

Corruption Perception Index (CPI): An index published annually by Transparency International that ranks countries by their perceived levels of public sector corruption, as determined by expert assessments and opinion surveys. The CPI scores range from 0 (highly corrupt) to 100 (very clean), providing a comparative measure of corruption globally.

Theoretical Review

The study primarily anchored on the Solow Growth Model due to its focus on long-term economic growth through investments in capital and technology, aligning closely with the study's exploration of public expenditure's impact on economic development, GDP, and HDI in Nigeria.

The Solow Growth Model

The Solow Growth Model, introduced by Robert Solow in 1956, highlights how capital accumulation, technological progress, and efficient public expenditure contribute to long-term economic growth. In Nigeria, the model underscores the importance of investments in public administration, and transport services for enhancing productivity, GDP, and human development. Efficient public administration fosters better governance and institutional capacity, while oil refining expenditure can boost industrial growth and reduce import dependency. Transport investments improve connectivity and market access. However, corruption moderates these effects by misallocating resources and increasing costs, thereby undermining potential economic benefits. Addressing

corruption through transparency and governance reforms is crucial for optimizing public expenditure and achieving sustainable economic growth and development.

Empirical Review

Brumby and Verhoeven (2023) examined the management of public sector labor costs, highlighting the critical role these costs play in overall public expenditure. Their research detailed various strategies for managing labor costs, including wage freezes, employment caps, and performance-based pay systems. They emphasized the importance of balancing cost-saving measures with maintaining public service quality and workforce morale. The study provided empirical evidence on the effectiveness of different cost-management strategies in various contexts, demonstrating significant fiscal savings without compromising public sector efficiency.

Boudreaux and Holcombe (2022) focused on cost-saving measures in public administration, exploring methods such as process reengineering, outsourcing, and the adoption of new technologies. They analyzed case studies from different countries to illustrate the potential savings and efficiency gains from these measures. Their findings indicated that strategic implementation of cost-saving measures can lead to substantial reductions in administrative expenses while enhancing service delivery. The study also highlighted potential challenges, such as resistance to change and the need for strong leadership to drive reforms.

Lindberg and Rosenberg (2023) investigated strategic capital investments in public administration, emphasizing the importance of long-term planning and prioritization of projects with the highest returns. Their research demonstrated how well-planned capital investments can improve public infrastructure, enhance service delivery, and stimulate economic growth. They used quantitative data to show the positive impacts of strategic investments on public sector performance and economic development, providing policymakers with a framework for making informed investment decisions.

Golinelli and Momigliano (2022) designed effective transfer payment programs, focusing on the role of these programs in social safety nets and economic stability. Their study analyzed various transfer payment systems worldwide, identifying best practices and common pitfalls. They found that well-designed transfer payment programs can significantly reduce poverty and inequality while promoting economic resilience. The research provided recommendations for optimizing transfer payment systems, including targeting mechanisms, efficient delivery methods, and robust monitoring and evaluation frameworks.

Hood and Dixon (2023) examined performance measurement in public administration, exploring how performance metrics can be used to improve efficiency and accountability. Their research highlighted the benefits of performance measurement systems in identifying areas of improvement, informing policy decisions, and enhancing transparency. They provided empirical evidence on the success of performance measurement initiatives in various public sector organizations, demonstrating how these systems can drive better outcomes and resource allocation.

Mauro and Turrini (2023) addressed challenges in public administration expenditure, such as budget constraints, rising demand for public services, and the need for fiscal sustainability. Their study analyzed different approaches to managing these challenges, including expenditure reviews, fiscal rules, and performance budgeting. They presented case studies showing how these approaches have been successfully implemented in different contexts, providing valuable insights for policymakers facing similar challenges.

Dunleavy and Margetts (2023) explored digital transformation in public administration, focusing on the adoption of digital technologies to improve efficiency and service delivery. Their research demonstrated how digital transformation can lead to significant cost savings, better public access to services, and enhanced transparency. They analyzed the experiences of various countries in implementing digital government initiatives, identifying key success factors such as leadership, investment in digital infrastructure, and change management.

Peters and Pierre (2023) studied public sector reforms and expenditure patterns, examining the impact of reforms on public spending and efficiency. Their research highlighted how different reform strategies, such as decentralization, privatization, and public-private partnerships, affect expenditure patterns. They provided empirical evidence from multiple countries, showing how reforms can lead to more efficient resource allocation and improved public sector performance. Their findings emphasized the importance of tailoring reforms to specific contexts and ensuring stakeholder buy-in for successful implementation.

Zhang et al. (2023) examined oil refining expenditure's impact on operational efficiency, capacity expansion, and technological advancement in refineries. Their research emphasized the influence of market dynamics and regulatory requirements on refining investments, affecting energy sector competitiveness, economic indicators, and national energy security.

Brown and Taylor (2023) studied market dynamics in oil refining, emphasizing the role of global supply and demand fluctuations and geopolitical factors on refining expenditure. Their research indicated that volatile crude oil prices significantly impact both capital and operational expenditures in the refining sector. They highlighted that market dynamics require refineries to be flexible and adaptive to maintain profitability and competitiveness in a rapidly changing global environment.

Davis and Green (2023) focused on technological advancements in oil refining. They found that investments in advanced process control systems, automation, and predictive maintenance are crucial for enhancing refinery efficiency and reducing operational costs. Their study also showed that technological innovations lead to better product yield and decreased downtime, thus significantly contributing to the overall efficiency and profitability of refineries.

Johnson and Lee (2023) investigated environmental compliance in oil refining, analyzing how stringent environmental regulations drive expenditure on emission control technologies and waste treatment facilities. Their findings emphasized the necessity for refineries to invest in sulfur recovery units and other environmental protection measures to meet regulatory requirements. These investments are critical for ensuring sustainable operations and minimizing the environmental impact of refining activities.

Kim and Park (2023) examined strategic investments in refinery capacity expansion, highlighting significant investments in emerging markets. They noted that regions like Asia and the Middle East are leading in building new refineries and expanding existing ones to meet increasing energy demands. Their research underscored that such investments are vital for enhancing domestic energy security and boosting economic growth through increased export capabilities.

Gap in literature

Previous research on government expenditure and its effects on economic development in Nigeria has often focused on isolated aspects, such as public administration or sector-specific spending, without fully integrating these expenditures into a broader macroeconomic framework (Brumby & Verhoeven, 2023; Boudreaux & Holcombe, 2022). Studies frequently examined the impact of single expenditure types on economic outcomes but lacked comprehensive analyses of how combined expenditures on public administration, and transport services affect overall economic development (Zhang et al., 2023; Brown & Taylor, 2023). Additionally, there has been limited exploration of the role of corruption as a moderating factor in these relationships (Mauro & Turrini, 2023). This study addresses these gaps by using an ex-post-facto research design with longitudinal data from 1981 to 2023, sourced from the Central Bank of Nigeria and the World Bank. By examining the interplay between various government expenditures and their collective impact on economic development indicators such as GDP and HDI, while considering the moderating effect of corruption, this study provides a more integrated and comprehensive understanding of how government expenditure influences economic development in Nigeria.

METHODOLOGY

The study employed an ex-post-facto research design, utilizing data from 1981 to 2023 sourced from the Central Bank of Nigeria and the World Bank. The population of the study focused on the Transport and Public Administration Sectors of Nigerian economy to ensure comprehensive coverage of macroeconomic dynamics, using purposive sampling for cost-effective and efficient data collection. The sample size was 43 years annual observation spanning 1981-2023. Secondary data were selected for their credibility and consistency, enabling a robust analysis. Various techniques, including descriptive statistics, inferential statistics (Multiple Regression and Moderated Multiple Regression (MMR), were used to assess the effects of relevant variables under investigation. Model specification incorporated public administration, and transport services expenditures as independent variables, with corruption-corruption perception index as a moderator, to explore their effects on economic development and infrastructure. The model specification is as stated below;

Model 2: $GDP = f(PAE, TSE, \dots)$ 1

Model 2: $HDI = f(PAE, TSE, \dots)$ 2

Model 3: $GDP = \beta_0 + \beta_1 PAE_{bt} + \beta_2 TSE_{bt} + \beta_3 CPI_{bt} + \beta_4 (PAE_{bt} \times CPI_{bt}) + \beta_5 (TSE_{bt} \times CPI_{bt}) + U_t$3

Model 4: $HDI = \beta_0 + \beta_1 PAE_{bt} + \beta_2 TSE_{bt} + \beta_3 CPI_{bt} + \beta_4 (PAE_{bt} \times CPI_{bt}) + \beta_5 (TSE_{bt} \times CPI_{bt}) + U_t$4

The a priori expectation is $\beta_1, \beta_2, > 0$. The greater the level of Government expenditure, the greater the gross domestic product (GDP), and human development index (HDI).

Where:

PAE = Public Administration expenditure (proxy for Government expenditure)

TES = Transport services expenditure (proxy for Government expenditure)

GDP = Gross domestic product (proxy for Economic development)

GNP = Gross national product (proxy for Economic development)

HDI = Human development index (proxy for Economic development)

CPI = Corruption - Corruption Perception Index (moderator)

β_0 & a_0 = Intercept of the relationship/the constant term

β_1 - β_5 , a_0 - a_1 = Coefficients of the predictor variables (Measures of the slope)

t = Natural logarithm in time (t).

μ = Stochastic variable (disturbance)/ Error term of the equation.

DATA ANALYSIS AND RESULTS

Data analysed here are the properties of government expenditure (public administration, and transport services expenditures), economic development (Gross domestic product, and human development index) and the moderating role of corruption (Corruption Perception Index) in Nigeria.

Univariate Analysis

Table 1 **Descriptive Statistics**

	N	Minimu m	Maximu m	Mean	Std. Deviation	Kurtosis	
	Statisti c	Statisti c	Statistic	Statisti c	Statistic	Statisti c	Std. Error
PAE	43	3.23	1526.8	44.388	231.48425	42.973	.709
			1	1			
TSE	43	3.33	53.27	11.149	8.59510	12.968	.709
				1			
GDP	43	4.21	4.89	4.5372	.23937	-1.610	.709
HDI	43	.00	.54	.2458	.25527	-2.071	.709
CPI	43	.00	28.00	7.9047	11.39078	-.973	.709
Valid N (listwise)	43						

The descriptive statistics for public administration expenditure (PAE), transport services expenditure (TSE), GDP, HDI, and the Corruption Perception Index (CPI) in Nigeria, all measured in billion naira, reveal notable insights. PAE ranges from 3.23 billion to 1526.81 billion, with a mean of 44.39 billion and a high standard deviation of 231.48 billion, indicating considerable variability. TSE spans from 7.19 billion to 344.71 billion, averaging 108.01 billion with a standard deviation of 92.36 billion, reflecting substantial dispersion as well. GDP ranges between 3.33 billion and 53.27 billion, with a mean of 11.15 billion and a standard deviation of 8.60 billion, showing less variability compared to the other expenditures. GDP varies from 4.21 billion to 4.89 billion, with a mean of 4.54 billion and a low standard deviation of 0.24 billion, suggesting relative stability in economic output. HDI scores range from 0.00 to 0.54, with a mean of 0.25 and a standard deviation of 0.26, indicating significant variation in human development outcomes. CPI, measuring corruption perceptions, varies from 0.00 to 28.00, with a mean of 7.90 and a standard deviation of 11.39, highlighting diverse perceptions of corruption within the sample.

Table 2: Unit Root Tests

Variables	ADF t-Statistic	ADF Prob.	ADF Result	Decision
GDP	-6.3516	0.0000	I(0)	Stationary at Level (1%)
HDI	-6.2819	0.0000	I(0)	Stationary at Level (1%)
PAE	-6.5999	0.0000	I(0)	Stationary at Level (1%)
TSE	-6.3947	0.0000	I(0)	Stationary at Level (1%)
CPI	-4.5702	0.0007	I(0)	Stationary at Level (1%)

The results of the Augmented Dickey-Fuller (ADF) unit root tests indicate that all the variables—Gross Domestic Product (GDP), Human Development Index (HDI), Public Administrative Expenditure (PAE), Transport Sector Expenditure (TSE), and Corruption Perception Index (CPI)—are stationary at level, as their respective ADF test statistics are significant at the 1% level across different test specifications (with constant, with trend, and without both). This implies that the variables do not contain a unit root and are integrated of order zero, I(0), suggesting they are suitable for regression analysis without differencing and reducing the risk of spurious results in time series modeling.

Regression Analysis

In order to test the null hypotheses, the investigator conducted some bivariate analysis (two variables at a time).

Decision rule: Accept null hypothesis if P_v is > 0.05 ; otherwise reject.

Test of Null Hypothesis 1-2

H_{01} : Public Administration expenditure does not have any significant effect on gross domestic product in Nigeria.

H_{02} : The effect of transport services on gross domestic product in Nigeria is not significant.

Table 3 Model estimation of government expenditure on gross domestic product

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797 ^a	.635	.617	.14820

a. Predictors: (Constant), TSE, PAE

Coefficients ^a				
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	

1	(Constant)	3.938	.076		51.602	.000
	PAE	.138	.083	.233	1.663	.104
	TSE	.491	.113	.610	4.350	.000

a. Dependent Variable: GDP

The model estimation results indicate that government expenditure on public administration and transport services explains approximately 63.5% of the variations in Nigeria's gross domestic product (GDP) ($R^2 = 0.635$). The coefficient for public administration expenditure (PAE) is 0.138 with a p-value of 0.104, which is greater than the 0.05 significance threshold, suggesting that PAE does not have a statistically significant effect on GDP. Therefore, the null hypothesis (H01) is accepted. In contrast, the coefficient for transport services expenditure (TSE) is 0.491 with a p-value of 0.000, indicating a positive and significant impact on GDP. Consequently, the null hypothesis (H02) is rejected, implying that transport services expenditure significantly influences economic growth in Nigeria.

Test of Null Hypothesis 3-4

H₀₃: Public Administration expenditure does not have any significant effect on human development index in Nigeria.

H₀₄: The effect of transport services expenditure on human development index in Nigeria is not significant.

Table 4 Model estimation of government expenditure on HDI

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.800 ^a	.640	.623	.01403

a. Predictors: (Constant), TSE, PAE

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.599	.007		82.872	.000
	PAE	.013	.008	.221	1.591	.120
	TSE	.048	.011	.624	4.483	.000

a. Dependent Variable: HDI

The model estimation results show that government expenditure on public administration and transport services explains 64.0% of the variations in Nigeria's Human Development Index (HDI) ($R^2 = 0.640$). The coefficient for public administration expenditure (PAE) is 0.013 with a p-value of 0.120, which is greater than the 0.05 significance level, indicating that PAE does not have a statistically significant effect on HDI. As a result, the null hypothesis (H03) is accepted. Conversely, the coefficient for transport services expenditure (TSE) is 0.048 with a p-value of 0.000, signifying a significant positive effect on HDI. Therefore, the null hypothesis (H04) is rejected, confirming that transport services expenditure significantly influences human development in Nigeria.

Test of Null Hypothesis 5

H₀₅: Corruption does not significantly moderate the effect of government expenditure on gross domestic product in Nigeria.

Table 5: Moderating effect of corruption on government expenditure and GDP

Model Summary					
Mod el	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.566 ^a	.321	.245	.10042	
2	.962 ^b	.926	.912	.03420	
a. Predictors: (Constant), Zscore(TSE), Zscore(PAE)					
b. Predictors: (Constant), Zscore(TSE), Zscore(PAE), INT					
Coefficients ^a					
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T Sig.
1	(Constant)	4.790	.037		129.456 .000
	Zscore(PA E)	.076	.026	.750	2.911 .009
	Zscore(TS E)	-.099	.049	-.516	-2.003 .060
2	(Constant)	4.774	.013		376.642 .000
	Zscore(PA E)	-.219	.027	-2.163	-8.229 .000
	Zscore(TS E)	.021	.020	.111	1.083 .294
	INT	.151	.013	2.661	11.755 .000

a. Dependent Variable: GDP

The model estimation results indicate that corruption significantly moderates the relationship between government expenditure and GDP in Nigeria. In Model 1 (without moderation), government expenditure variables (PAE and TSE) explain 32.1% of GDP variations ($R^2 = 0.321$), with PAE having a significant positive effect ($p = 0.009$) while TSE is not statistically significant ($p = 0.060$). However, in Model 2 (with interaction term INT), the explanatory power increases significantly to 92.6% ($R^2 = 0.926$), indicating a strong moderating effect. The interaction term (INT) has a significant positive coefficient ($B = 0.151$, $p = 0.000$), suggesting that corruption significantly alters the impact of government expenditure on GDP. Therefore, the null hypothesis (H_{05}) is rejected, confirming that corruption plays a crucial moderating role in the relationship between government expenditure and economic growth in Nigeria.

Test of Null Hypothesis 6

H_{06} : Corruption does not significantly moderate the effect of government expenditure on human development index in Nigeria.

Table 6: Moderating effect of corruption on government expenditure and HDI

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.566 ^a	.320	.245	.00925
2	.961 ^b	.923	.910	.00320

a. Predictors: (Constant), Zscore(TSE), Zscore(PAE)

b. Predictors: (Constant), Zscore(TSE), Zscore(PAE), INT

Model		Coefficients ^a		Standardized Coefficients Beta	t	Sig.
		Unstandardized Coefficients B	Std. Error			
1	(Constant)	.680	.003		199.651	.000
	Zscore(PAE)	.007	.002	.749	2.909	.009
	Zscore(TSE)	-.009	.005	-.519	-2.016	.059
2	(Constant)	.679	.001		572.380	.000
	Zscore(PAE)	-.020	.002	-2.158	-8.080	.000
	Zscore(TSE)	.002	.002	.106	1.021	.322
	INT	.014	.001	2.657	11.547	.000

a. Dependent Variable: HDI

The model estimation results suggest that corruption significantly moderates the relationship between government expenditure and the Human Development Index (HDI) in Nigeria. In Model 1 (without moderation), government expenditure variables (PAE and TSE) explain 32.0% of the variations in HDI ($R^2 = 0.320$). Public administration expenditure (PAE) has a significant positive effect on HDI ($p = 0.009$), while transport services expenditure (TSE) is not statistically significant ($p = 0.059$). However, in Model 2 (with the interaction term INT), the explanatory power increases substantially to 92.3% ($R^2 = 0.923$), indicating a strong moderating effect of corruption. The interaction term (INT) has a significant positive coefficient ($B = 0.014$, $p = 0.000$), confirming that corruption significantly influences the effect of government expenditure on HDI. Therefore, the null hypothesis (H06) is rejected, demonstrating that corruption plays a crucial role in moderating the impact of government spending on human development in Nigeria.

Discussion of findings

Public Administration Expenditure and GDP: The regression analysis showed that Public Administration Expenditure (PAE) does not have a significant effect on GDP, as indicated by a coefficient of 0.138 and a p-value of 0.104. This suggests that changes in public administration spending do not significantly impact Nigeria's economic growth. This result aligns with Brumby and Verhoeven (2023), who discussed the challenges of managing public sector labor costs without necessarily impacting GDP significantly. Despite strategies like wage freezes and performance-based pay systems to manage labor costs effectively, the direct impact on GDP remains inconclusive, highlighting the complexity of this relationship.

Public Administration Expenditure and Human Development Index (HDI): The regression results revealed that Public Administration Expenditure (PAE) does not significantly impact HDI, as indicated by a coefficient of 0.013 and a p-value of 0.120. This finding resonates with Boudreaux and Holcombe (2022), who emphasized cost-saving measures in public administration but did not find a direct correlation with HDI. This suggests that while cost-saving measures such as process reengineering and outsourcing may reduce expenses, they do not necessarily translate into immediate improvements in human development outcomes.

Transport Services Expenditure and GDP: The regression analysis showed a significant positive relationship between Transport Services Expenditure (TSE) and GDP, with a coefficient of 0.491 and a p-value of 0.000. This supports the findings of Lindberg and Rosenberg (2023), who discussed the benefits of strategic capital investments in public administration. Investments in transport infrastructure contribute to economic growth by improving efficiency and connectivity, thus positively affecting GDP.

Transport Services Expenditure and Human Development Index (HDI): The regression results also indicated a significant positive effect of TSE on HDI, with a coefficient of 0.048 and a p-value of 0.000. This is consistent with the findings of Golinelli and Momigliano (2022), who emphasized the role of well-designed transfer payment programs in enhancing economic stability and human development. Effective transport services contribute to HDI by improving access to essential services and opportunities, which is crucial for human development.

Corruption's Moderating Effect on Government Expenditure and GDP: The analysis demonstrated that corruption significantly moderates the relationship between government expenditure and GDP. The R-squared value increased from 0.321 to 0.926 when the interaction term (INT) was introduced. The interaction term had a significant positive coefficient of 0.151 with a p-value of 0.000, confirming that corruption plays a crucial role in shaping the impact of government expenditure on economic growth. This reflects the findings of Dunleavy and Margetts (2023), who highlighted the impact of digital transformation and effective management practices in addressing corruption issues. Corruption affects the efficiency of government expenditure, which in turn influences GDP growth.

Corruption's Moderating Effect on Government Expenditure and HDI: The regression analysis also indicated that corruption significantly moderates the relationship between government expenditure and HDI, with the R-squared value increasing from 0.320 to 0.923. The interaction term (INT) had a significant positive coefficient of 0.014 with a p-value of 0.000, highlighting the crucial role of corruption in determining the effectiveness of government spending on human development. This finding aligns with Peters and Pierre (2023), who studied public sector reforms and expenditure patterns. Effective management and reform strategies that address corruption can enhance the impact of government expenditure on HDI, thereby improving overall public sector performance and human development outcomes.

CONCLUSION AND RECOMMENDATIONS

This study investigated the effect of government expenditure on economic development in Nigeria from 1981 to 2023, focusing on public administration, and transport services expenditures, with corruption as a moderating variable. The findings from the regression analysis revealed that Public Administration Expenditure (PAE) does not have a significant effect on either Gross Domestic Product (GDP) or the Human Development Index (HDI) in Nigeria, suggesting that government spending in this area may not directly translate into economic growth or human development improvements. Conversely, Transport Services Expenditure (TSE) exhibits a significant positive impact on both GDP and HDI, indicating that investments in transport infrastructure contribute meaningfully to economic and social development. Furthermore, corruption significantly moderates the relationship between government expenditure and both GDP and HDI, underscoring the role of governance quality in determining the effectiveness of public spending. These results highlight the importance of strategic government expenditure and effective anti-corruption measures in enhancing economic performance and human development outcomes. Thus, the study suggested that;

1. Since Public Administration Expenditure (PAE) does not significantly impact GDP or HDI, the government should focus on optimizing administrative spending by reducing inefficiencies, streamlining bureaucratic processes, and reallocating resources toward sectors with higher developmental impact, such as infrastructure and education.
2. Given the significant positive relationship between Transport Services Expenditure (TSE) and both GDP and HDI, policymakers should prioritize increased funding for transport infrastructure projects, ensuring proper planning and execution to maximize economic and social benefits, such as improved connectivity, trade facilitation, and access to essential services.

3. Since corruption significantly moderates the relationship between government expenditure and economic outcomes, stricter anti-corruption policies, transparency in public financial management, and digital governance initiatives should be implemented to enhance the efficiency of public spending and minimize resource leakages.
4. To boost the effectiveness of government spending, especially in transport services, partnerships with private sector players should be encouraged through well-structured PPP agreements. This can attract additional investments, improve infrastructure quality, and ensure long-term sustainability.
5. A strategic review of fiscal policies and budget allocations is essential to ensure that government expenditure is directed towards sectors with the highest potential for economic growth and human development. Implementing performance-based budgeting and expenditure tracking mechanisms will enhance accountability and improve resource utilization for national development.

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