

The Moderating Effect of Institutional Quality on the Relationship Between Oil Revenue and Economic Growth of Oil-Producing Countries in Africa.

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ABSTRACT

This study investigates the moderating effect of institutional quality on the relationship between oil revenue and economic growth in 22 African oil-producing countries over the period 2012–2023. Using a panel dataset and fixed effects regression analysis, the findings reveal a statistically significant negative main effect of oil revenue on economic growth ($\beta = -0.0832$, $p < 0.05$), consistent with the resource curse hypothesis in weak governance contexts. Institutional quality, measured via the Corruption Perceptions Index, exhibited a strong positive impact on growth ($\beta = 0.0762$, $p < 0.05$), while the interaction term between oil revenue and institutional quality was positive and significant ($\beta = 0.0038$, $p < 0.5$), confirming a synergistic moderation effect. Grounded in the principal-agent theory, the study adopted a positivist research philosophy and an explanatory design. It utilized secondary panel data sourced from the World Bank, International Monetary Fund, Transparency International, and national statistical agencies. Data analysis involved descriptive statistics, correlation analysis, and fixed-effects panel regression, including moderation analysis, using STATA version 14. The findings revealed that institutional quality positively moderated the effect of oil revenue on growth ($R^2 = 0.5026$). Strong positive correlations were observed between economic growth and oil revenue ($r = 0.7671$), and institutional quality ($r = 0.5777$), all significant at the 5% level. Additionally, oil revenue was positively correlated with institutional quality ($r = 0.5594$), also statistically significant. These results highlight the critical role of institutional strength in converting oil wealth into sustainable development. The study contributes in three key areas: theoretically, by deepening the understanding of resource-led growth in contexts of institutional fragility; empirically, by offering new panel data evidence on oil-growth dynamics in Africa; and methodologically, by enhancing macroeconomic analysis through moderated panel modeling. It recommends that African governments adopt transparent oil revenue management systems, align resource inflows with long-term public investment strategies, and reinforce fiscal oversight mechanisms. Limitations of the study include its reliance on secondary data and the omission of sub-national dynamics. Future research should incorporate spatial econometric techniques, sub-national datasets, and explore the implications of energy transition for oil-dependent economies.

Keywords: Oil Revenue, Economic Growth, Institutional Quality, Oil-producing Countries, Africa.

BACKGROUND OF THE STUDY

Africa's oil-producing countries significantly contribute to global economic growth by supplying vital raw materials for industrialization and energy production. In 2023, the continent became the world's largest trade area, with a GDP of \$3 trillion and merchandise exports of \$610.46 billion, 36% of which stemmed from oil revenues (UNECA, 2023). Nigeria, Africa's top oil producer, generates 65% of public income and 85% of exports from oil and gas (Afreximbank, 2024). Offshore exploration in West Africa has attracted global investment, enhancing Africa's role in meeting energy demands (African Energy Commission, 2022). Countries like Nigeria, Angola, and Libya are key crude oil exporters (Statista, 2023). The sector supports

global industries by providing essential materials like plastics and chemicals (Salimovna, 2024). Africa's reserves and strategic exports underscore its growing influence in global trade and energy markets.

Oil-producing nations rely heavily on oil proceeds to drive economic development, as revenues from the sector fund investments in agriculture, industry, and other productive areas, helping to diversify economies and shield them from global oil price shocks (Ogunjobi et al., 2024). Oil income boosts per capita earnings, stimulating market demand and expanding commercial activities (Ikue et al., 2021). The sector also generates substantial employment, reducing joblessness and enhancing living standards (Huseynli, 2022). Government spending, fueled by oil revenues, plays a pivotal role in economic growth by financing development projects and increasing the production of goods and services (Elamin, 2020; Zakaria et al., 2023). Productive public expenditure ensures economic stability and resilience against external shocks (Abdelkawy & Al Shammre, 2024). As oil revenues rise, economies tend to grow through diversified investments and enhanced fiscal capacity (Javed & Husain, 2024). This positive correlation between oil revenue and economic expansion underscores the strategic importance of the oil sector in national development.

Institutional quality plays a pivotal role in shaping the relationship between oil revenue and economic growth by ensuring prudent management of public funds and fostering sustainable development (Barra & Ruggiero, 2023). Strong institutions enable effective governance, justify public expenditures, and support reform initiatives that yield high returns at minimal cost (Akitoby et al., 2020). They also mitigate the negative impacts of oil dependence while enhancing the positive effects of oil wealth on national development (Hassan et al., 2019; Mohamadou et al., 2022). Countries with high institutional quality experience broader economic benefits across multiple sectors, not limited to tourism, indicating that institutional strength enhances the capacity for diversified growth (Sun et al., 2025). In contrast, weak institutions can hinder performance and slow economic progress, underscoring the need for robust governance frameworks in oil-producing nations.

Developed oil-producing countries such as the USA, Russia, China, and India have demonstrated relatively stable and efficient economic growth, with the U.S. and Russia achieving notable economic efficiency rates of 77% and 97%, respectively, between 2010 and 2017 (Lenin et al., 2021). These nations employ balanced strategies to diversify their economies and reduce vulnerability to oil price fluctuations, enhancing long-term growth (Kareem & Obaida, 2023). Vietnam's post-pandemic recovery in 2022 further illustrates how strategic economic planning can yield resilience and growth (Nguyen et al., 2023). Overall, oil production in advanced economies has positively impacted GDP performance and economic stability (Al Ghais, 2024). In contrast, African oil-producing countries face challenges in translating oil wealth into sustainable development due to weak institutional frameworks, inefficient spending, and corruption (David, 2024). Nations like Nigeria and Angola rely heavily on oil, which contributes over 90% of export earnings and more than 70% of government revenue, yet the benefits often fail to reach the broader population (OPEC, 2023). This disparity highlights the need for stronger governance and diversified investment strategies to ensure inclusive growth across the continent.

Unfavorable fiscal policies in African oil-producing countries have emerged from overreliance on oil revenue, with increased public spending during oil booms often leading to inflation and poor investment in other sectors (NEITI, 2022). Nigeria exemplifies this trend, where politically driven infrastructure projects remain incomplete due to corruption and inflated contracts (IMF, 2022). As COP28 urges a transition from fossil fuels, countries like Angola and Nigeria face fiscal stress, spending over 30% of government income on debt servicing (UN News, 2023; The World, 2023). These structural vulnerabilities hinder energy diversification and inclusive development, contributing to a drop in economic growth among oil-producing developing nations from 3.9% in 2022 to 3.2% in 2023 (Gatti et al., 2024). The economies of African oil producers have seen sharp declines, with Equatorial Guinea, Angola, Nigeria, and South Sudan experiencing negative growth rates between 2020 and 2023 (Augé, 2021; Kale, 2024). This downturn reflects the dangers of depending solely on oil revenue, as global price shocks continue to destabilize sub-Saharan economies (IMF, 2023). South Sudan's case is particularly severe, with economic growth stagnating despite oil contributing over 90% of government revenue (Aruai, 2022). Its low economic transformation score of 1.93 out of 131 underscores

the absence of diversified investment and the persistent underperformance of its economy (Stiftung, 2022; World Bank, 2023).

This persistent decline in economic growth across African oil-producing nations signals a critical need for reform. The current research seeks to explore how oil revenue affects economic growth and to propose mechanisms for its efficient use to improve welfare and promote diversification (MoFP, 2021; Adelegan & Out, 2020). Without strategic investment in other sectors, reliance on oil, foreign aid, and collateralized loans will continue to undermine financial independence (Mihalyi et al., 2022; ASDJN, 2024). Addressing this issue is essential to prevent future economic instability and ensure sustainable development across the continent.

Statement of the Problem

African oil-producing nations have experienced persistent economic decline, with countries like Angola, Nigeria, and South Sudan recording negative growth rates in 2020 (Augé, 2021). GDP ratios have steadily weakened, falling from 2.7% to 2.4% between 2017 and 2019 (Miamo & Achuo, 2022). Despite a 6.1% increase in oil production in 2022, Sub-Saharan Africa's average GDP growth dropped to 2.3% in 2023 (World Bank, 2023; World Bank, 2024). This trend underscores the fragility of oil-dependent economies and their vulnerability to global price shocks. While oil revenue positively correlates with GDP growth (Ologunde et al., 2020; Nzeh et al., 2022), overreliance on extractive sectors has led to Dutch Disease effects, weakening industrial competitiveness (Cust et al., 2022). Exchange rate inflation and labor diversion from tradable sectors have stifled diversification. Angola and CFA zone countries show structural imbalances exacerbated by remittances and resource revenues (Olanipekun, 2022). In response, some nations are pursuing economic restructuring and private sector-led diversification (Darma et al., 2022; Shah et al., 2024).

Strong institutional quality is vital for economic growth in oil-rich African nations, yet countries like Nigeria face stagnation due to corruption, weak accountability, and fragile regulatory systems (Aberu & Taiwo, 2025). Corruption remains deeply entrenched across the continent, undermining governance and development (Akwei, 2020; Imiera, 2020). Robust institutions can mitigate oil price shocks by deploying sovereign wealth funds, fiscal rules, and diversification strategies that stabilize macroeconomic conditions (Bortolotti et al., 2020; Balma & Hove, 2020). These mechanisms help smooth consumption, preserve budgetary stability, and channel oil revenues into productive sectors (Oladunni, 2020). Improved institutional frameworks also buffer volatility and promote long-term growth by ensuring efficient allocation of oil wealth (Musikavanhu & Gamariel, 2024; Musikavanhu et al., 2021). Oil-producing African countries are increasingly investing in institutional reforms to overcome systemic risks and achieve sustainable development (Nkire et al., 2023). The link between institutional strength and economic resilience remains central to unlocking the continent's oil-driven potential.

Existing literature reveals methodological gaps, such as reliance on GDP ratios or absolute figures instead of log oil revenue (Ologunde et al., 2020; Emmanuel & Maxwell, 2020). Studies often focus on global or non-African contexts, using varied models like SVAR, VEC, and TMS (Saleh, 2021; Fefa et al., 2024; Kalmarzia et al., 2021). These inconsistencies highlight the need for Africa-specific empirical research. This study aims to rigorously examine oil revenue's impact on economic growth in African oil-producing nations.

Objective of the Study

To evaluate the moderating effect of institutional quality on the relationship between oil revenue and economic growth of oil-producing countries in Africa.

Hypotheses of the Study

Ho.: Institutional quality has no statistically significant moderating effect on the relationship between oil revenue and economic growth of oil-producing countries in Africa.

THEORETICAL LITERATURE

Principal-agent theory, developed by Ross and Mitnick (1973), explains the contractual relationship between citizens (principals) and public officials (agents), especially in public administration. It is widely used to analyze corruption, accountability, and governance failures (Carr, 2020; Eneanya, 2020; Waugh, 2024). Agents often pursue personal interests over public mandates, leading to misalignment and inefficiency (Widmalm, 2016). In African oil states, weak institutional oversight enables elite capture and rent-seeking behavior (Lalude et al., 2024). Neo-patrimonialism further distorts governance by embedding informal patronage within formal institutions (Cheeseman et al., 2019; Nshimirimana, 2025). This fusion of traditional authority and state power undermines transparency, redirects oil revenues toward political survival, and erodes democratic structures (Ezeokafor & Kaunert, 2021). Principal-agent theory helps explain these systemic failures and offers a framework for reform. Aligning agency theory with stewardship principles enhances institutional design and implementation effectiveness (Nwajei et al., 2022). It addresses information asymmetry and motivational gaps between principals and agents (Cheng et al., 2019; Lane, 2013). Despite criticisms around risk-sharing and monitoring (Bernhold & Wiesweg, 2021; Erik, 2014), the theory remains relevant for evaluating public sector performance. In governance systems, principal-agent theory reveals interdependence between institutions and citizens, emphasizing collaborative service delivery (Anadza & Rasdiyanti, 2023). It guides organizational strategies and institutional management (Yallew et al., 2018). By applying its principles, governments can strengthen institutional quality and optimize public resource management. In oil-rich African nations, this theory supports reforms that enhance accountability and economic growth. Ultimately, it offers a pathway to align public institutions with national welfare goals.

Empirical Literature Review

Institutional quality is central to fiscal efficiency and sustainable development in Africa's public sector. Studies by Efayena and Olele (2024) and Nguyen and Luong (2021) affirm its role in enhancing policy outcomes and mitigating public debt. Ayana et al. (2024) found that institutional quality moderates the negative impact of government revenue on economic growth, turning it positive when combined. Their panel data analysis across 43 SSA countries contrasts with the current study's focus on 22 oil-producing nations. This highlights a methodological gap in assessing institutional quality's moderating role in oil economies. Opuala and Orji (2023) revealed that weak institutional quality in Nigeria reversed the expected growth benefits of foreign exchange management, though interaction effects showed potential for recovery. Their FM-OLS design and broader institutional indicators differ from the current study, which used only corruption index. These conceptual and methodological differences underscore the need for refined models in oil-rich African contexts. Quality governance depends on institutions' regulatory strength and policy execution. Institutional quality remains a decisive factor in aligning fiscal tools with developmental goals.

Ogbonna et al. (2021) investigated how institutional quality moderates the relationship between foreign aid and economic growth across 42 African countries using GMM and panel data from 2010–2018. Their findings showed that foreign aid significantly boosts growth when institutional quality surpasses a critical threshold. Unlike the current study, which focuses on oil revenue and uses CPI and logarithmic measures across 22 oil-producing nations from 2012–2023, Ogbonna et al. used GDP ratios and broader institutional rankings. This highlights a methodological gap in assessing institutional quality's role in oil economies. The current study addresses this gap by refining variable measurement and narrowing geographic scope. Appiah et al. (2022) demonstrated that institutional quality positively interacts with governance to enhance infrastructure development in SSA. Their findings support the argument that strengthening institutions is vital for sustainable development. This moderating role of institutional quality in governance can be extended to oil revenue–growth dynamics in African oil-producing countries. Applying institutional quality as a moderator helps clarify how governance structures influence economic outcomes. The current study builds on this by focusing on corruption as a key institutional indicator in oil-rich contexts.

Conceptual Framework

A conceptual framework is a diagrammatical structure, arranged in a reasonable manner to offer a graphical presentation of the association concerning different elements for the research work; as they associate to each other. It is a tool which is used by the researchers to explain the progressiveness of the study and linkages between concepts, ideas and different variables. It is a simple explanation, description and presentation of the research problem through integrated method of viewing the problem under research work, describing the relationship among the main ideas of the researched work; and showing actions that the researchers intend to take in the future. It is crucial to construct conceptual framework in any study because it facilitates the work of researchers in identification and construction of their worldview on the topic to be investigated. It is the simplest way through which researchers present their proclaimed remedies to the problem (Adom, et al., 2018; Tamene, 2016). Figure 1 shows a conceptual framework which demonstrates the association among oil revenue and economic growth of oil producing states in Africa. Explanatory variable is oil revenue, and dependent variable is economic growth.

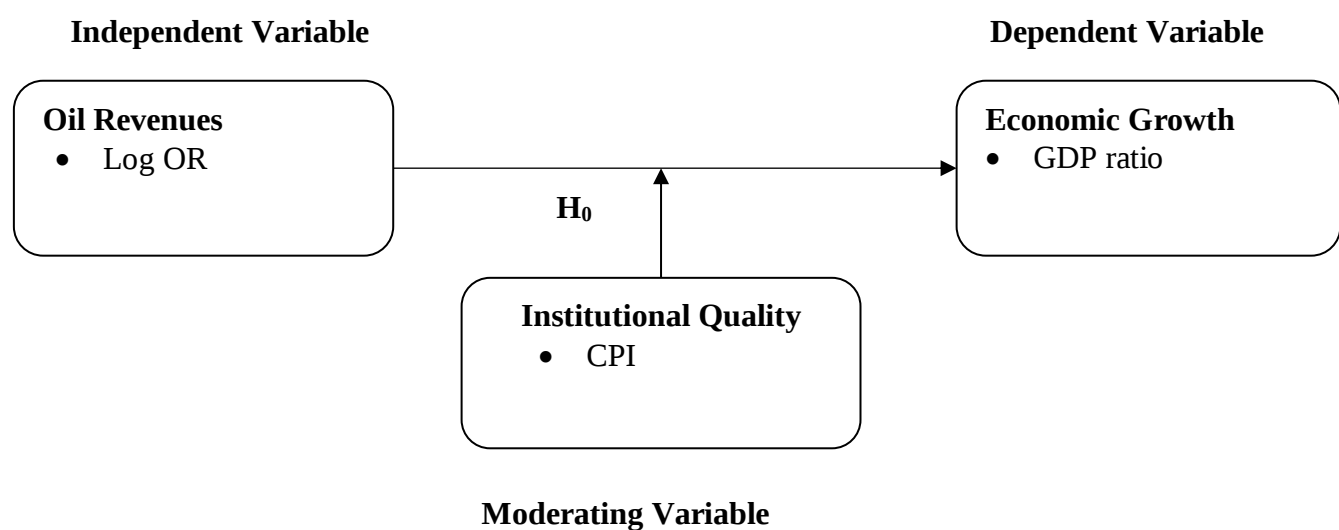


Figure 1

Source: Author (2025)

RESEARCH METHODOLOGY

The objective of this study was to evaluate the moderating effect on the relationship between oil revenue and economic growth. The research philosophy adopted in this study is positivism, which put more emphasis on observable and empirical facts as the basis for credible knowledge, aligning well with the use of secondary quantitative data (Al-Ababneh, 2020). It supports structured data collection and impartial analysis, making it ideal for examining oil revenue–growth causality in African economies using indicators like GDP and oil rents (Maku et al., 2021). Unlike interpretivism, positivism favors statistical rigor and replicability, enabling models such as Toda–Yamamoto to isolate economic relationships (Oyebowale & Algarhi, 2020). Rooted in realism, it views truth as external and independent, resisting influence from personal beliefs or ethics (Gannon et al., 2022). Positivism has gained traction in social sciences for its precision and objectivity. It shapes research strategy, data gathering, and analysis through logical and rational doctrines (Gemma, 2018). This paradigm provides a robust foundation for hypothesis testing and policy-relevant conclusions. Thus, it offers a reliable framework for conducting macroeconomic studies with generalizable results.

Furthermore, this study employed an explanatory research design to investigate the causal relationship between oil revenue and economic growth in African oil-producing nations, guided by strategic data collection and analysis principles (Namu, 2021; Asenahabi, 2019). Explanatory design emphasizes reasoning and depth

over description, making it ideal for analyzing associations among oil revenue, government spending, institutional quality, and GDP growth using secondary quantitative data (Sakyi et al., 2020; Cooper & Schindler, 2014). By applying temporal sequencing across 2012–2023 panel data and controlling for confounders like global oil prices and debt servicing, the design isolates macroeconomic effects (Ogungbade et al., 2022). It aligns with positivist philosophy through hypothesis testing and statistical inference using models like Granger causality and panel regression (Adusei, 2021). Unlike interpretivism, it focuses on measurable relationships and generalizable insights (Khan, 2020; Maku et al., 2021). This approach enhances empirical validity and supports policy reform in oil-dependent economies.

This study targeted all 22 crude oil-producing countries in Africa, spanning Western, Southern, Central, Eastern, and Northern regions (Saleh, 2022; Trading Economics, 2025). It employed the census method to collect secondary data from the entire population, ensuring inclusivity and comprehensive coverage (Aguinis et al., 2021; Spoorenberg, 2022). Census approaches are ideal for capturing detailed demographic and economic insights. They are used in national surveys to assess population characteristics. Technological advancements have enhanced the efficiency and cost-effectiveness of such data collection (Gołata, 2020). The census method offers a complete view of populations, vital for policy-making, resource allocation, and infrastructure planning (NASEM, 2021). Its data helps identify underserved areas and serves as a benchmark for validating other studies. Despite challenges like cost and undercounting, modern censuses use sampling, administrative records, and digital tools to enhance accuracy. This study leveraged secondary sources and technological innovations to streamline data collection. These advancements affirm the method's enduring value for inclusive development planning (UNECA, 2022). The census method ensures full population coverage, eliminating sampling bias and enhancing data precision for policy and governance research (Lakens, 2022). It provides reliable benchmarks for longitudinal analysis, especially where missing data could skew insights (Pascale, 2025).

Data Sources, Data Collection Procedures and Instruments

The study utilized secondary data from 22 African oil-producing countries over 12 years (2012–2023), sourced from WB, IMF, TI, and NBS using a validated data collection sheet (Ewubare & Nnamaka, 2019; Bredino et al., 2023). Instrument reliability was ensured through expert reviews and structured models like the 6Cs and content validity index (Roy & Sahu, 2024; Lim, 2024). Secondary data offered cost-effective access to extensive, quantifiable financial indicators. It enabled longitudinal and comparative analysis across regions. Such data supports evidence-based decisions and broad contextual insights (Eberhardt, 2019; Sarafidis & Wansbeek, 2020). Secondary data were sourced from credible institutions and processed using Excel for cleaning and logarithmic transformation, then exported to STATA for advanced analysis (Vartanian, 2025; Stata Corp., 2025). The 2012–2023 timeframe was chosen to capture key global and regional events affecting African oil economies, including price shocks and the COVID-19 pandemic (Alsharif et al., 2020; Mensah & Amoah, 2021). This period also saw major reforms like fiscal rules and anti-corruption measures. Inclusion of newly independent nations like South Sudan enriched the dataset. These factors ensured relevance, robustness, and contextual depth (Adegbite & Olayemi, 2023; Ogbuabor & Orji, 2022).

Data Analysis and Presentation

The study employed both descriptive and inferential statistics to transform raw data into meaningful insights for informed decision-making. Descriptive statistics measured central tendencies, dispersion, and distribution patterns, including mean, standard deviation, skewness, and kurtosis. Trend analysis revealed long-term patterns between oil revenue and economic growth across African oil-producing nations, highlighting market volatility and policy impacts (Leke et al., 2022; Mordor Intelligence, 2020). These metrics are essential for planning in oil-dependent economies. Inferential statistics, including panel data and correlation analysis, were conducted using STATA to validate relationships between variables (Castro et al., 2007; Andreb, 2017). The study examined oil revenue's effect on economic growth, with government spending as a mediator and institutional quality as a moderator. The goal was to determine whether explanatory variables significantly

influence the dependent variable. Hypothesis testing guided conclusions on variable impact. Rejection of the null hypothesis confirmed the explanatory power of the selected indicator.

Empirical Models

Incorporating moderators in research enhances theoretical depth by identifying conditions that alter variable relationships, offering nuanced insights across contexts (Hayes, 2022; Frazier et al., 2021). Moderating effect tests, essential for evaluating interaction terms like oil revenue $\times$ institutional quality, follow a two-step method: treating the moderator as an explanatory variable, then interacting it with the regressor (Whisman & McClelland, 2005). This approach refines models and strengthens empirical robustness. **Models (1) and (2)** were used to assess how institutional quality moderates the relationship between oil revenue and economic growth link in African oil-producing nations. Such integration improves the precision and applicability of governance-related findings.

Step One: Basic Model: where OR and IQ predict EG.

$$EG_{it} = \beta_0 + \beta_1 OR_{it} + \beta_2 IQ_{it} + \varepsilon_{it} \dots\dots\dots (1)$$

Step Two: Interaction Model: where OR and IQ and the interaction term predict EG.

$$EG_{it} = \beta_0 + \beta_1 OR_{it} + \beta_2 IQ + \beta_3 OR * IQ_{it} + \varepsilon_{it} \dots\dots\dots (2)$$

Where: EG = Economic growth of country *i* at time *t*; OR = Oil revenues; GS = Government Spending; IQ = institutional quality; OR*IQ = oil revenues * institutional quality; = **error** term (unobserved factors in the model); *i* = is the cross-sectional unit, where *i* = 1, 2, 3, N; *t* = is the time period, where *t* = 1, 2, 3, T

DATA ANALYSIS

Summary statistics such as mean, standard deviation (SD), and coefficient of variation (CV) are crucial for evaluating data distribution and readiness for econometric modeling. CV helps compare variability across datasets, with values above 30% indicating high dispersion and over 50% suggesting instability (Shahzad et al., 2023; Jalilibal et al., 2021; Pélabon et al., 2020). SD below 10% of the mean implies tight clustering, while higher values may signal outliers (Trafimow, 2014; Ospina & Marmolejo-Ramos, 2019). The coefficient of centrality (mean $\div$ SD) assesses how representative the mean is (Trafimow, 2014). These metrics guide interpretation and model suitability.

Table 1: Descriptive Statistics of Key Study Variables

Variable	N	M	SD	CV (%)
OR	264	6.956	12.073	173.55
IQ	264	29.383	9.987	34.00
EG	264	2.497	4.725	189.33

Source: Research Data (2025)

Descriptive statistics from 264 observations (2012–2023) across African oil-producing countries reveal high variability in oil revenue (CV = 173.55%). Institutional quality, measured via the Corruption Perceptions Index, showed moderate dispersion (CV = 34.00%), indicating persistently weak governance structures. Economic growth exhibited the highest variability (CV = 189.33%), underscoring macroeconomic instability

driven by internal and external shocks. These findings suggest that while institutional quality remains relatively stable, its low average contributes to governance inefficiencies. The data patterns emphasize the fragility of oil-dependent economies and the importance of controlling for heterogeneity in econometric modeling. Metrics like CV and SD are essential for interpreting dispersion and model readiness (Shahzad et al., 2023; Pélabon et al., 2020; Trafimow, 2014). Overall, the results justify the use of panel data techniques to explore dynamic interactions among key variables.

Pairwise Correlation Analysis

To gain preliminary insights into the associations among the study variables, a pairwise correlation analysis was performed. This technique assesses the strength and direction of linear relationships between economic growth, oil revenue, government spending, and institutional quality. The analysis is based on a balanced panel dataset covering 22 oil-producing African countries from 2012 to 2023. The correlation coefficients provide an initial indication of the nature of interactions among the variables before conducting more robust multivariate estimations. Statistical significance was determined at the 5% level ($p < 0.05$), and the results are presented in Table 2.

Table 2: Pairwise Correlation Matrix

Variable	EG	OR	GS	IQ
EG	1.0000			
OR	0.7671*	1.0000		
IQ	0.5777*	0.5594*	0.3794*	1.0000

Source: Research Data (2025)

Pairwise correlation analysis using a 12-year panel dataset from 22 African oil-producing countries revealed strong, statistically significant relationships among economic growth, oil revenue, and institutional quality. Economic growth and oil revenue showed a robust positive correlation ($r = 0.7671$, $p < 0.05$), affirming oil's role as a key growth driver. Institutional quality also correlated positively with economic growth ($r = 0.5777$, $p < 0.05$), indicating that strong governance enhances the developmental impact of resource wealth. Oil revenue and institutional quality were significantly linked ($r = 0.5594$, $p < 0.05$), suggesting that increased resource inflows may support institutional strengthening. Government spending showed a weaker but still significant correlation with institutional quality ($r = 0.3794$, $p < 0.05$), implying that governance affects fiscal efficiency. All correlations were significant at the 5% level, validating the study's conceptual framework. These results justify further empirical testing through mediation and moderation models. They underscore the need for effective fiscal policies and institutional reforms. Ultimately, oil wealth must be paired with governance quality to achieve sustained economic growth.

Inferential Analysis and Discussions

The moderation analysis explored whether institutional quality influences the strength or direction of the relationship between oil revenue and economic growth in African oil-producing countries. By introducing an interaction term into a fixed effects panel regression model, the study tested the null hypothesis (H_0) that institutional quality does not significantly moderate this relationship. Institutional quality was theorized to either amplify or weaken the economic impact of oil revenue, depending on its robustness across national contexts. This method controlled for country-specific effects and assessed how governance structures shape resource-led development. A significant interaction would indicate that institutional factors condition the transmission of oil wealth into growth outcomes. Such findings offer nuanced insights into the varied effects of oil revenue across Sub-Saharan Africa, and underscore the importance of institutional reform in maximizing economic benefits. Table 3 presents the empirical results supporting this framework.

Table 3:Fixed Effects Regression Results for Oil Revenue, Institutional Quality and Economic Growth

Panel A: Regression Coefficients					
Variable	B	SE	T	P	95% CI
OR	-0.0832	0.0283	-2.94	0.004	[-0.1390, -0.0274]
IQ	0.0762	0.0140	5.44	0.000	[0.0486, 0.1039]
OR_IQ (Interaction Term)	0.0038	0.0009	4.38	0.000	[0.0021, 0.0055]
Constant	-0.0392	0.3766	-0.10	0.917	[-0.7810, 0.7026]
Model Summary and Diagnostics					
Data and Sample					
Number of Observations		264			
Number of Groups (Entities)		22			
Observations per Group		12 (balanced)			
Time Period		2012–2023			
Goodness of Fit					
R ² (Within)		0.7863			
R ² (Between)		0.0561			
R ² (Overall)		0.5026			
Std. Dev. of Unobserved Effect (σ_u)		0.3310			
Std. Dev. of Error Term (σ_e)		0.2234			
Intra-Class Correlation (ρ)		0.6871			
Std. Dev. of Unobserved Effect (σ_u)		0.3310			
Model Diagnostics and Tests					
Correlation between u_i and Xb		-0.4120			
F-statistic (df = 3, 239)		293.19			
p-value (overall model)		0.0000			
F-test: All group effects zero (df = 21, 239)		11.26			
p-value (group effect test)		0.0000			

Source: Research Data (2025)

The fixed effects regression analysis (Table 3) confirmed that institutional quality significantly moderates the relationship between oil revenue and economic growth across 22 African oil-producing countries (2012–2023). Oil revenue had a negative effect on growth ($\beta = -0.0832$, $p < 0.05$), supporting the resource curse hypothesis in weak governance settings. Institutional quality showed a strong positive impact ($\beta = 0.0762$, $p < 0.05$), and the interaction term (OR_IQ) was also positive and significant ($\beta = 0.0038$, $p < 0.5$), indicating that better institutions reverse oil revenue’s negative effects. This synergistic moderation suggests that oil wealth and institutional strength jointly enhance growth. Model diagnostics ($R^2 = 0.7863$; $F = 293.19$) validate the findings. The rejection of (H_0) confirms that institutional quality transforms resource inflows into sustainable development.

This study tested the null hypothesis (H_0) that institutional quality does not moderate the relationship between oil revenue and economic growth in African oil-producing countries. The results revealed a statistically significant and positive interaction term, confirming that institutional quality synergistically enhances the growth impact of oil revenue. Strong institutions amplify the effectiveness of resource utilization, aligning with theoretical expectations and supporting the resource-governance-growth nexus. These findings validate the importance of governance reforms in resource-rich economies. Institutional quality transforms oil wealth into a driver of sustainable development. The results reinforce existing literature emphasizing the role of

institutional quality in fiscal management and governance. Efayena and Olele (2024) highlighted its importance in public financial success, while Ayana et al. (2024) found that institutional quality reverses the negative impact of government revenue on growth in SSA. This study builds on their work by focusing on 22 oil-producing countries and using the Corruption Perceptions Index as a refined institutional measure. It fills methodological and contextual gaps in sector-specific analysis.

Barra and Ruggiero (2023) demonstrated that institutional quality curbs excessive public spending in Europe, reinforcing the idea that governance structures shape fiscal outcomes. This study applies a fixed-effects model tailored to African oil producers, offering a focused lens on resource-led development. Ricky et al. (2023) found that institutional quality enhances fiscal policy's impact on financial development in SSA, aligning with this study's conclusion that governance strengthens economic outcomes. Opuala and Orji (2023) confirmed that institutional decay undermines macroeconomic stability in Nigeria, supporting the view that weak institutions reverse economic gains. Appiah et al. (2022) illustrated how institutional quality and governance jointly promote infrastructure development, a concept extended here to the oil revenue–growth nexus. This study contributes by demonstrating that institutional quality moderates the effect of oil revenue on economic growth, turning a potential liability into a growth asset. By focusing on corruption and a homogeneous sample of 22 African oil producers, it offers a sharper understanding of governance's role in resource-based development. The findings underscore that institutional reform is essential for converting oil wealth into broad-based economic progress.

CONCLUSION, AND RECOMMENDATIONS

This study confirmed that institutional quality significantly moderates the relationship between oil revenue and economic growth in African oil-producing countries, with strong institutions amplifying oil's positive impact. Using a balanced panel dataset and robust econometric techniques, it rejected the third null hypothesis and demonstrated a synergistic interaction between governance and resource wealth. The findings challenge the deterministic view of the resource curse, showing that poor outcomes stem from weak institutions rather than resource abundance itself. Drawing from principal–agent theory, the study highlights how institutional strength realigns incentives and improves accountability. It advocates for integrated governance frameworks that combine fiscal discipline with institutional reform. Ultimately, oil revenue can drive inclusive growth when managed within high-quality institutional contexts. This contribution bridges theoretical gaps and offers a multidimensional lens for resource-led development in Africa.

The study confirms that oil revenue significantly influences economic growth, but its effectiveness depends on institutional quality. Strengthening public institutions in fiscal policy, budgeting, procurement, and oversight is vital to curb corruption and improve resource management. Civil service reforms should enhance transparency and professionalism, while legislatures and audit bodies must be empowered for credible oversight. Public participation in fiscal decisions should be institutionalized to foster accountability. A coordinated approach involving fiscal authorities, petroleum regulators, and planning agencies ensures coherent policy formulation. Integrated governance frameworks are essential to convert oil wealth into long-term socio-economic transformation.

Future research should explore how institutional reforms interact with sector-specific policies to optimize oil revenue utilization. Studies could assess the impact of corruption-targeted interventions on fiscal efficiency and macroeconomic stability. Comparative analyses across oil-producing regions may reveal best practices in resource governance. Investigating the role of civic engagement in shaping fiscal outcomes offers another promising avenue. Longitudinal studies on diversification strategies and institutional resilience would deepen understanding of sustainable growth pathways.

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