EFFECT OF GOVERNMENT EDUCATION EXPENDITURE ON INCLUSIVE GROWTH IN NIGERIA: THE ROLE OF INSTITUTIONS

Abstract

In Nigeria, achieving inclusive growth has been challenging due to insufficient public investment in human capital and weak institutional quality. These deficiencies have resulted in widespread poverty, income inequality, low GDP per capita, stagnant human development indices, and poor living standards. This study evaluated the effects of government expenditure on education on inclusive growth in Nigeria, while also examining the moderating role of institutional quality from 1990 to 2023. The study employed the *ex-post* factor quantitative research design. The Augmented Dickey-Fuller, and Phillip Peron unit root test statistics were used to determine the order of integration. The unit root test result showed that the variables were not integrated in the same order. Autoregressive Distributive Lag Model (ARDL) was employed and it was found that government expenditure on education had negative insignificant effect on the short run and negative significant effect on the long. In terms of the interaction with institutional quality, it was found that government expenditure on education also had both short and long run negative effect on inclusive growth in Nigeria. Furthermore, both inflation rate and unemployment rate had negative effect on inclusive growth both in the short and long run. The study therefore recommended that effort should be made in strengthening institutional frameworks to ensure that government investment in education contributes positively to GDP per person employed.

Keywords: Inclusive growth, Government expenditure on education, institutional quality

1.1 Introduction

National and international agencies have recently focused on inclusive growth, but what does it mean and how can we measure its presence or absence (Suryanarayana, 2008)? Despite lacking a universally clear definition and measure, people generally understand inclusive growth as growth that simultaneously increases and equitably distributes household consumption (Ayeni & Omobude, 2018). The concept underscores the active involvement of the poor in economic

activities, aiming to prevent social conditions from deteriorating into violence and unrest. Without inclusive growth, a nation's social fabric can degrade, potentially leading to violence and social disturbance. Inclusive growth actively addresses income distribution mismatches and mitigates gross class income disparities, benefiting the disenfranchised through the widespread sharing of benefits across the population (Ayeni & Omobude, 2018). The concept and need for inclusive growth discussions have been prevalent among scholars, policymakers, and academics for decades, so much so that several briefings and reports have been made by multinationals, the International Monetary Fund (IMF), the World Bank, and the Organization of Co-operation and Development (OECD), beckoning economies to pursue growth that is more inclusive.

The failure of neoliberalism as the driving economic development strategy, done through the Washington-consensus-led Structural Adjustment Program (SAP), made inclusive growth elusive. SAP was a strategy that did not favour developing economies but rather led to economic stagnation in Africa because of chronic poverty. Perceived as responses to poverty amid purported economic growth, the financial crisis of 2008 and the Arab Spring sparked global debates on poverty and inclusion (Keçili, & Ethem, 2020). While the Arab Spring led to modest gains in economic, political, and social aspects for some regions (Qadir Mushtaq, & Afzal, 2017), these challenges prompted the International Monetary Fund (IMF) and development banks to highlight the unsustainability of economic growth and rising inequality, fostering discussions on the imperative of inclusive growth. Persistent inequality amidst robust economic growth sparked agitations, as seen in the Arab Spring, which began around 2010. The Arab Spring consisted of pro-democracy revolts primarily in Muslim countries such as Morocco, Syria, Egypt, and Tunisia. Furthermore, tensions between Main Street and Wall Street in advanced nations, as well as the concept of a 'three-speed' world economy, contributed to global discontent. All these were considered kicks against poverty amidst purported economic growth.

According to Tella et al. (2016), healthcare financing is vital if universal health coverage would be achieved to eventually attain inclusion in education. On the flip side, Osiobe, (2020) argued that government investment in education is guarantee to inclusive education. Nevertheless, her consistent fluctuation in the budgetary allocation to human capital investment for decades now exhibit the fact that she personally has little need for the benefits that will emanate from such

public investment. The trend in government expenditure on education, as reported in the Nigeria Yearbook (1968) and cited by Adeyemi (2011), provides a clear picture. In 1964, where the budgetary allocation to total recurrent expenditure and capital expenditure were respectively £143.1 million and £69.2 million, only £25.3 million and £4.2 million were respectively allotted to education.

In 1965, Nigeria witnessed a significant surge in the allocation to total recurrent expenditure, reaching £162.1 million. Within this allocation, the recurrent segment of education expenditure received £27.5 million, constituting 17.0 percent. Simultaneously, capital expenditure reached £70.4 million, of which £5.1 million (7.2 percent) was directed towards education. The subsequent year, 1966, saw a further increase in budgetary allocation of total recurrent expenditure to £174.8 million, accompanied by a rise in recurrent expenditure on education to £32.8 million, constituting 18.8 percent. However, capital expenditure on education experienced a decline to £5.0 million (7.0 percent) within the total capital expenditure of £70.4 million. The public sector primarily financed education in Nigeria from 1981 to 2003.

These fluctuations in budgetary allocations to education during this period underscore the challenges faced by the Nigerian government in maintaining consistent and adequate funding for the education sector, particularly in the context of competing financial demands such as debt servicing. The volatility in budgetary allocations to education in Nigeria persisted through the mid-1990s to the early 2000s, reflecting the ongoing challenges in maintaining consistent funding for the education sector amidst varying fiscal priorities. In 1993, there was a notable surge in the budgetary allocation for education, reaching 8.88 billion Naira (CBN,2021). However, this positive momentum was short-lived, as the allocation dropped to 7.38 billion Naira in 1994, indicating a sudden decrease in financial support for education during that year. In the subsequent years, from 1995 to 1997, there was a mixed pattern in the percentage allocation to education within the annual federal budget.

In 1995, education received 13.0 percent, followed by 10.8 percent in 1996, and 11.5 percent in 1997. These years demonstrated a relatively higher prioritisation of education within the federal budget. However, a concerning trend emerged in 1998 and 2000, where the percentages allocated

to education dropped to 9.6 percent and 8.7 percent, respectively. These declines signalled a decrease in the priority given to education within the federal budget during those years, posing potential challenges to the sustained development of the education sector. In 2009, the Federal Government allocated N221.19 billion, equivalent to 7.25 percent of its N3.049 trillion (CBN,2021) to the education sector.

Effective institutional quality is crucial to maximising returns on investments in human capital (Acemoglu & Robinson, 2005). High-quality institutions proficiently guide human capital towards its most productive applications (Dias & Tebaldi, 2012; Rodriguez & Loomis, 2007). Indicators of institutional quality encompass government effectiveness, accountability, political stability, the rule of law, corruption control, and regulatory quality (Acemoglu & Robinson, 2005). Evidence from Olanrewaju, Aremo and Binuyo (2020) and Omoke & Opula (2021), indicates that high-quality institutions influence inclusive growth. Even though Africa has been associated with underdevelopment, chronic poverty, and dependence on natural resources, its GDP exhibited rapid and consistent growth from the early 2000s up until 2020 due to COVID-19, when it had a 2.1% contraction. Despite the overall growth, there has been significant variability, as not everyone is benefiting. In response to this variability in the share of benefits, inclusive growth further gained attention, acknowledging that despite a reduction in absolute poverty, benefits have remained concentrated among a few elites (Aslam, 2020). Given the potential benefits of human capital investment and institutions on inclusive growth separately, it is vital to harvest the combined effect of human capital investment and institutions on inclusive growth in Nigeria

2.0 Literature Review

2.1 Inclusive Growth Concept

The Asian Development Bank (ABD) pioneered the definition of inclusive growth in 2007 with the intention of simultaneously accounting for both equity and growth in a unified measure. The goal was to create a measure that reflects not only a society's overall economic performance but also the degree of inclusiveness in the distribution of that economic growth among various socioeconomic groups. Even though high economic growth is considered necessary to sustain reductions in poverty, it is evident that high economic growth alone is not a sufficient condition because it does not guarantee equal benefit to all in the population (Ali & Son, 2007). Therefore,

high economic growth can lead to poverty in a situation where the weak, poor, and marginalised are bypassed.

Ali & Son (2007) define inclusive growth as the expansion of the economy that not only generates new economic possibilities but also guarantees universal access to these opportunities across all societal sectors, with a specific focus on addressing the needs of the impoverished. According to Ianchovichina and Lundström (2009), inclusive growth involves accelerating the pace of economic expansion and increasing the overall size of the economy, while simultaneously creating a more equitable environment for investment and enhancing productive opportunities.

2.2 GDP per person employed.

GDP per person employed is a crucial measure of inclusive growth, reflecting whether an economy is progressing towards sustainable economic growth and development while providing full and decent employment for all. The World Bank and Asian Development Bank (ADB) assert that decent employment provides significant opportunities and is a critical aspect of inclusive growth (World Bank 2009 and Ali 2009). As stated by Bhalla (2007), income from employment is a primary source for the poor, making employment growth central to achieving inclusive growth. However, even the poor often find employment, which does not necessarily reduce poverty. The key is to increase the productivity of existing employment and ensure that new jobs are productive (Bhalla, 2007). Additionally, Bhalla notes that individuals from poor households may prefer additional low-productivity employment to no additional employment at all.

2.3 Expenditure on Education

Expenditure on education encompasses all financial resources dedicated exclusively to funding the education sector of a country. The government or private individuals within the country can provide these financial resources. Before 1920, primary and secondary education in Nigeria were predominantly provided by Christian organisations on a voluntary basis. These efforts established a total of 25 secondary schools by 1920 (Ogunyemi, 2005). However, with the adoption of the Universal Declaration on Human Rights in 1948, education became recognised as a fundamental human right (United Nations General Assembly, 1949). In 1920, the colonial government started providing subventions to voluntary organisations involved in education, and this continued until

the early 1950s, when education was placed under regional control. By 1949, the total number of secondary schools had increased to 57.

2.4 Education Expenditure in Nigeria

In 2021, out of the 13.08 trillion Naira budget, only 742.5 billion Naira, or 5.68% of the total, was allocated to education. Nigeria's education budgetary allocation increased from 7.9 percent in 2022 to 8.8 percent in 2023. However, even with the increase, the 2023 allocation for education is 1.29 trillion Naira out of the 16.39 trillion budgets, which is still less than 10 percent of the annual budget. This signals a failure on Nigeria's part to meet the UNESCO recommendation, which suggests allocating 15 to 20 percent of the annual budget to education. Experts have consistently maintained that any allocation for education below the UNESCO benchmark remains insufficient to address the challenges faced by the education sector.

2.5 Concept of Institutional Quality

Indeed, institutional quality, both economic and political, plays a fundamental role in shaping the long-term growth prospects of an economy. The distinction between economic and political institutions is crucial, and each category contributes uniquely to the overall institutional framework of a country. The work of Acemoglu et al. (2005) emphasises that economic institutions, particularly those related to the rule of law and property rights, are central to providing a conducive environment for sustained growth. When economic and political institutions work together effectively, they create an environment that encourages investment, innovation, and the efficient allocation of resources. Lehne et al. (2014) posit a strong correlation between political and economic institutions, asserting that countries with weak political institutions often lack high-quality economic institutions. Economic institutions, including the rule of law, control of corruption, and property rights, exhibit variation between countries.

2.6 Stylised Facts

2.6.1 GDP Per Person Employed

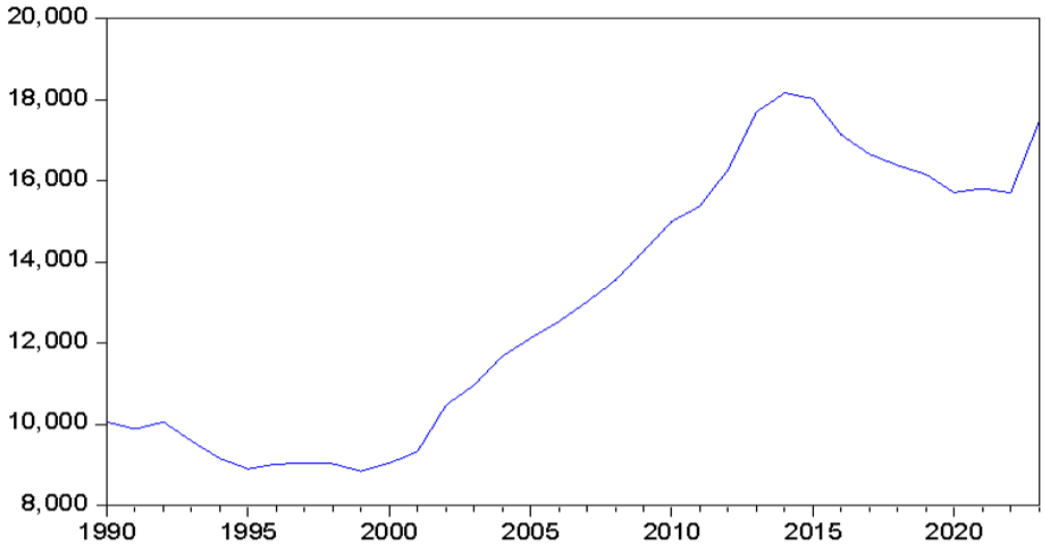

Figure 1: GDP per person employed in Nigeria from 1990-2023

Figure 1 denotes GDP per person employed in Nigeria between 1990 and 2023. The GDP per person of Nigeria was almost flat between 1990 and 1993 but it was shown to drop between 1994 and 1995. However, with the return to civil rule in 1999, there came modest improvement in the GDPPPE though not substantial. In the early 2000s, a substantial positive gain was made in GDP per person because of the economic reforms and pursuit of diversification of the economy beyond oil sector. Between 2010 and 2015, GDPPPE experienced stable rise in value as a result in growth in all sectors of the economy. By 2016, the GDPPPE began to drop perhaps due to the change democratic leadership, drop in the price of petroleum prices. Then came the Covid-19 incidence, weak institutions and poor infrastructure further depleted the GDPPPE. However, 2023 experienced positive change in the GDPPPE.

2.6.2 Government Expenditure on Education

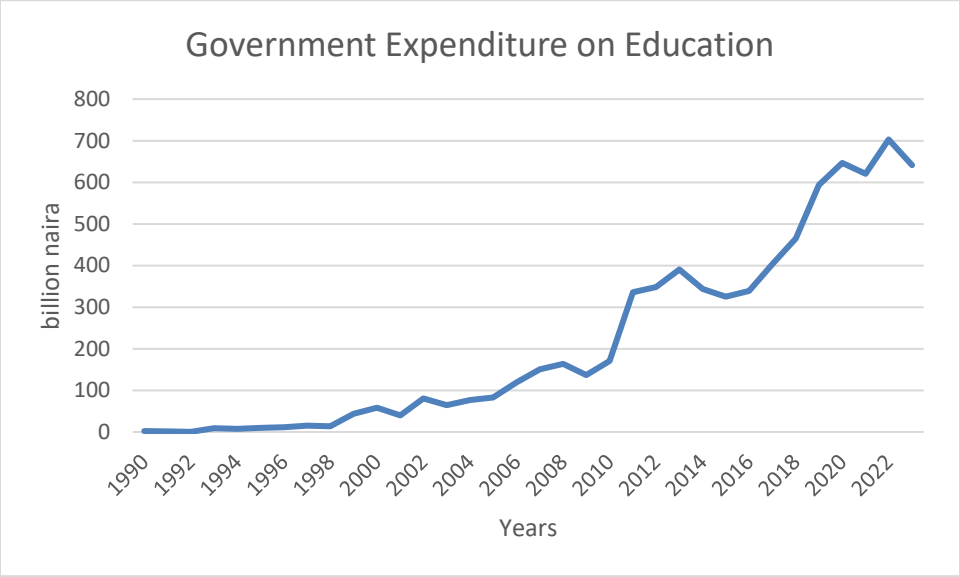

Figure 2: Trend for Government Expenditure in Nigeria from 1990-2023

In figure 2, education and health denote government investment in human capital through spending on education and healthcare for the population of Nigeria. Between 1981 and 1998, both investments in education and health were flat. An indication that attention was not given to the human capital development of the country was that there was no significant positive change in expenditure in the respective sector. Between 1999 and 2001, the government expenditure on education and health rose, but that on health was very low compared to that on education. There was never a period when the government invested equally in both education and health, or when the investment in health was higher than in education. Education was found to be most considered on the issue of development, as we can see from how it kept rising above health. This suggests how faulty the Nigerian government's spending pattern may have been. They may have intentionally or unknowingly ignored the truth that health is wealth. A sick population will not do well, even if it does well in education and in all other sectors of the economic productivity of the country. This is perhaps why Africa has remained undeveloped to this day.

2.6.3 Institutional Quality Index

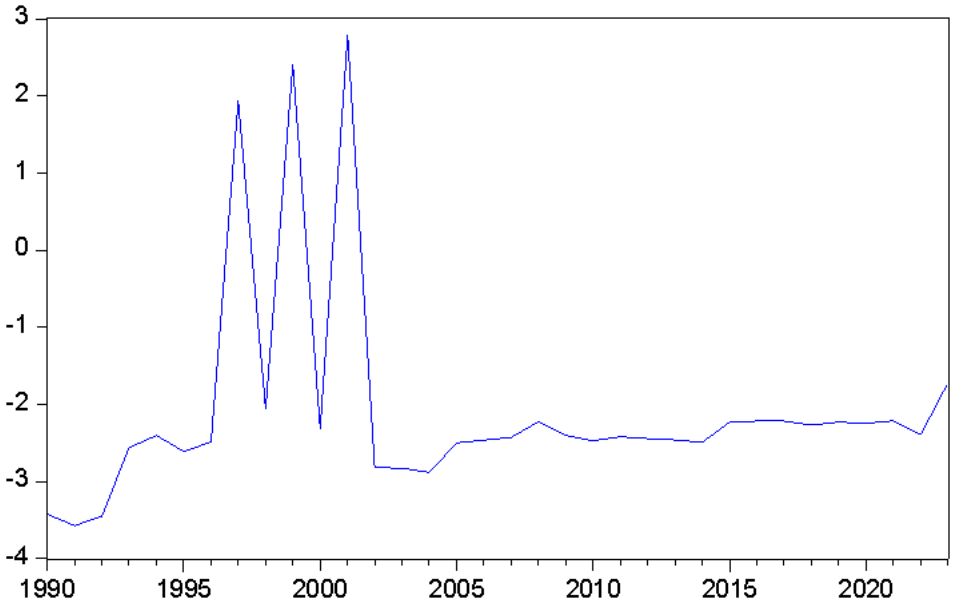

Figure 3. Trend for Institutional Quality index in Nigeria from 1990 - 2023

Figure 3 presented the dynamics of the institutional quality index of Nigeria. There was so much fluctuation between 1996 and 2000 as is depicted in the graph as it was in a continues state of rising and falling of the index. However, between 2001 it remained consistently low and almost the same till 2023 when there is a slight rise. In a nutshell, Nigeria has experienced both progress and ongoing issues in institutional quality. However, problems related to political instability, security concerns, and deep-rooted corruption continue to hinder institutional effectiveness. To achieve sustainable and inclusive growth, Nigeria must continue to prioritize institutional reforms that enhance accountability, transparency, and effective governance.

2.7 Empirical Review

2.7.1 Evidence from Developed Countries

Karaçor et al. (2017), using the panel data method, analysed the relationship between expenditures on education and economic growth for selected 20 OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Iceland, Ireland, Italy, Japan, Mexico, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweeden, Switzerland, and the and the UK) using panel data estimations (models) based on annual data for the period between 1998 and 2012. The study

concluded that there existed a correlation between educational expenditure and economic growth in the countries. The relationship between educational expenditure and economic growth in Turkey was investigated by Keçili and Ethem (2020) employing an econometric model, and the study covered a period between 1998 and 2019. The study findings showed that education expenditures had a significant impact on economic growth in Turkey. Sajid and Ali (2018) inspected inclusive growth in Spain, focusing on the relationship between economic growth and income distribution. The study also found that external demand (exports) enhanced productivity, which therefore had a significant impact on economic growth, while inward investment had no significant impact on GDP per capita.

2.7.2 Evidence from Emerging Countries

Rumbogo et al. (2021), adopting a generalised least squares (GLS) panel regression on 33 provinces over a 5-year period (2011–2015), investigated the role financial inclusion plays in the inclusive development of Indonesia. The study found that financial access had a significant positive effect on regional economic development in Indonesia when accounting for the influence of broader economic conditions and the development level of the region. Lapinskas et al. (2021) examined the impact of a country's resource wealth management (in the context of environmental agreements, green growth, sustainable development, and resource use intensification) on the level of inclusive growth in Russia. According to the empirical study, an increase in sustainable development had a significant positive effect on inclusive growth.

Employing fixed effects regression with panel annual data for 68 countries (which include 31 high-income countries, 24 upper middle-income countries, 12 lower middle-income countries, and 1 low-income country) from 1990 to 2015, Kang & Martinez-Vazquez (2022) identified conditions under which FDI can successfully lead to inclusive growth. The finding of the study was that with a high level of manufacturing and infrastructure, FDI affected inclusive growth more positively.

2.7.3 Evidence from Developing Countries:

Ejemeyovwi & Osabuohien (2018), employing the System Generalised Method of Moments (SGMM), investigated the relevance of mobile technology adoption to inclusive growth in West Africa (Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sierra Leone, Senegal, and Togo) from 2004 to 2014. The study results showed that in West Africa, mobile technology adoption had no statistically significant impact on inclusive growth. Employing a qualitative research approach and a comprehensive inclusive development lens, Pouw et al. (2018) investigated the effect of inclusive growth and development on cash transfers and health insurance via the standard of living, voice, and empowerment of the poor people in Ghana and Kenya. The study found that the expenditure level of the household was enhanced through cash transfers in Ghana as well as Kenya. This therefore had a positive effect on food security, mainly among children and the elderly, as spending priorities were on food, health, and education.

2.7.4 Evidence from Nigeria

Babasanya et al. (2018) adopted a log-linear regression model to investigate the impact of human capital development on poverty alleviation in Nigeria between the period of 1990 and 2017. The study regressed the poverty rate as a percentage of the total population on the unemployment rate and real government expenditures on education and health. The result revealed there was a convergence relationship among the variables in the long run. It went ahead and showed that the log of real government expenditure on education (InREE) had a significant positive impact on the poverty prevalence rate as a proportion of the total population, but this was not in corroboration with the theoretical postulation.

Employing Error Correction Mechanism (ECM) and Johansen co-integration estimation techniques, Oluwadamilola et al. (2018) examined the relationship between human capital and inclusive growth. The finding of the study was that a significant positive relationship existed between human capital and inclusive growth in the long run. Gross fixed capital formation, ratio of public expenditure on education, and total government expenditure all showed a positive

relationship, while total recurrent expenditure of government on education and total capital expenditure of government on education showed a negative relationship.

3.0 Methodology

In this study, inclusive growth is the dependent variable measured by GDP per person employed (*GDPPPE*). The independent variable which government expenditure on education is measured by government education expenditure. Institutions quality (INSQ) is the moderating variable decomposed into control of corruption, rule of law, voice and accountability, government effectiveness, political stability, and regulatory quality. However, to determine INSQ, PCA was employed to derive a single index. The data were sourced from World Development Indicator (WDI) database. The study covers the period 1990-2023. The period was chosen based on the data availability.

3.1 Model specification:

3.1.1 Principal Components Analysis

$\beta\varrho$=$\varpi\varrho$1×1+$\varpi\varrho$2×2+$\varpi\varrho$3×3+⋯+$\varpi\varrho\gamma$×γ…….3.1

Where,

$\beta\varrho$ = estimate of the jth factor $\varpi\varrho$ = weight on factor score coefficient

ϱ = variable of interest

γ = number of variables.

3.1.2 Regression Model

$$LnGDPPPE_t = \alpha_0 + \alpha_1 GOVEE_t + \alpha_2 Inf + \alpha_3 Unemp + \varepsilon_t \quad (3.2)$$

Based on the results of the ADF, PP and KPSS unit-root tests result which showed that our variable are integrated of mixed order (which is I(0) and I(1)) and bound test results showing that the variables were co-integrated, ARDL model of cointegration was therefore specified to show the short-run and long-run effects of GOVEE and on GDPPPE. Therefore, equation 3.2 was re-specified as the following error correction model:

$$\Delta \ln G\ DPPPE_t = \alpha_0 + \alpha_{1t} \sum_{i=1}^{p} \Delta \ln G\ DPPPE_{t-1} + \alpha_{2i} \sum_{i=1}^{p} \Delta \ln G\ OVEE_{t-1} +$$

$$\alpha_{3t} \sum_{i=t}^{p} \Delta INF_{t-1} + \alpha_{5t} \sum_{i=1}^{p} \Delta UNEMP_{t-1} + \beta_1 \ln G\ OVEE_{t-1} + \beta_2 INF_{t-1} + \beta_3 UNEMP_{t-1} + \varepsilon_t$$

(3.2b)

where Δ denoted change in the short-run changes, α_j (1, 2, 3, 4) are the short-run parameters and β_j (1, 2, 3, 4) are the long-run parameters, while ε_t is the error term. $\ln GDPPPE_t$ represented lag value of GDP per person employed, $\ln GDPPPE_{t-1}$ depicted one-period lagged value of GDP per person employed, $\ln GOVEE_{t-1}$ stood for one-period lagged value of government expenditure on education,, INF_{t-1} represented one-period lagged of inflation rate and $UNEMP_{t-1}$ represented one-period lagged of unemployment rate. α_j (0, 1, 2, 3, 4) denoted vector of the parameter of the model while α_j (1, 2, 3, 4) depicted vector of the coefficient of the explanatory variables in the model. α_0 was the intercept of the model and it stood for the level of Nigeria GDP per person employed when human capital investment and the control variables were absent. Each of the coefficients represented the nature and magnitude of the effect of the associated explanatory variable on the explained variable.

$$LNGDPPPE_t = \varpi_0 + \varpi_1 GOVEE_t * INSq + \varpi_2 Inf * INSq + \varpi_3 Unemp * INSq + \varepsilon_t$$

(3.3)

In ascertaining the interactive effect of institutions and human capital investment on GDP per person employed, equation 3.3 was re-specified as the following:

$$\Delta \ln G\,DPPPE_t = \alpha_0 + \alpha_{1t}\sum_{i=1}^{p} \Delta \ln G\,DPPPE_{t-1} + \alpha_{2i}\sum_{i=1}^{p} \Delta \ln I\,NSQ * GOVEE_{t-1} +$$

$$\alpha_{3t}\sum_{i=t}^{p} \Delta INF_{t-1} + \alpha_{5t}\sum_{i=1}^{p} \Delta UNEMP_{t-1} + \beta_1 \ln I\,NSQ * GOVEE_{t-1} + \beta_2 INF_{t-1} + \beta_3 UNEMP_{t-1} + \varepsilon_t$$

3.3b

where $\ln INSQ*GOVEE_{t-1}$ and $\ln INSQ*GOVEH_{t-1}$ were institutional quality interacted with government expenditure on education and government expenditure on health respectively. α_0 remained the intercept of the model and it stood for the level of Nigeria GDP per person employed when human capital investment and the control variables were zero. Each of the coefficients represented the nature and magnitude of the effect of the associated explanatory variable on the explained variable.

4.0 Analysis

4.1 Principal Component Analysis

Eigenvalues

Table 1 presents the eigen values of the correlation matrix of the six different indicators that constitute institutional quality (INSTQ). The sum of the eigen values is equal to the number of individual indicators.

Table 1: Eigen values

Number	Value	Difference	Proportion	Cum Value	Cum Proportion
1	3.532515	1.667692	0.5888	3.532515	0.5888
2	1.864823	1.476621	0.3108	5.397339	0.8996
3	0.388203	0.234931	0.0647	5.785541	0.9643
4	0.153271	0.108547	0.0255	5.938813	0.9898
5	0.044725	0.028262	0.0075	5.983537	0.9973
6	0.016463	---	0.0027	6.000000	1.0000

Source: Author's computation (2024) using E-Views 10

The first principal component explains the maximum variance (59%) in all the individual indicators (eigenvalue of 3.53). The second principal component explains the maximum amount of the remaining variance (31%), with an (eigenvalue of 1.86). The third principal component explains 0.6% of the variance with an (eigenvalue of 0.39), the fourth principal component explains the remaining (0.03%) of the indicators at (eigenvalue of 0.15) of the variance, the fifth principal component explains (0.008%) of the indicators at (eigenvalue of 0.04) of the variance while the sixth principal component explains the remaining (0.003%) of the indicators at (eigenvalue of 0.016) of the variance. Therefore, the first two principal components are more relevant measures of institutional quality as they explain over 89% of the variance.

Table 2: Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
CC	0.522141	-0.067580	0.147824	-0.099951	-0.498356	-0.665283
GOV_EFFT	-0.107991	0.632997	0.720049	0.258131	-0.049629	0.009333
PS	0.404530	0.425422	-0.033748	-0.711621	0.372684	0.094519
RL	0.523032	-0.083639	0.069732	0.123465	-0.414404	0.726364
RQT	0.448910	0.294583	-0.389282	0.629356	0.379111	-0.142640
VA	0.277451	-0.565675	0.549668	0.075100	0.542982	-0.020672

Source: Author's computation (2024) using E-Views 10

As noted in Table 2, the positive coefficients for the first principal component (PC1) imply that it represents the overall measure for institutional quality. The maximum weights in PC1 and PC3 are for Government effectiveness (GOV_EFFT) of institutional quality suggesting that there is a strong influence of this variable in these components. Rule of law has the strongest influence in PC1 and PC6 while regulatory quality shows the largest positive weight in PC4. Therefore, This study used PCA to determine an appropriate composite index for institutional quality I Nigeria sing the following specific PCA equation:

INSQ = 0.487311CC - 0.028480 GOV_EFFT + 0.437385PS + 0.487554RL + 0.468761RQT + 0.336105VA……4.1

Where, INSQ = the first principal component for institutional quality
Cc = control of corruption

Rl = Rule of law

Va = Voice and accountability

GovEf = Government effectiveness

PS = political stability

RegQt = Regulatory quality

Table 3: Descriptive Statistics

	GDPPPE	GOVEE	INF	INSQ	UNEMP
Mean	13000.17	218.0727	18.2500	-2.0693	4.0127
Median	12773.01	128.0670	12.9350	-2.4122	3.8270
Maximum	18168.91	702.9787	72.8300	2.7793	5.7120
Minimum	8836.113	0.291298	5.3800	-3.5726	3.0740
Std. Dev.	3341.655	226.4057	15.9	1.45690	0.5709
Skewness	0.0979	0.8201	2.1799	2.5561	1.6062
Kurtosis	1.4270	2.3297	6.8514	8.4879	4.8999
Jarque-Bera	3.5593	4.4481	47.9419	79.6869	19.7322
Probability	0.1687	0.1082	0.0000	0.0000	0.0001
Sum	442005.9	7414.473	620.5000	-70.3560	136.4310
Sum Sq. Dev.	3.68E+08	1691564.	8355.261	70.0447	10.7545
Observations	34	34	34	34	34

Source: Author's computation (2024) using E-Views 10

4.2 Stationary Test Result

Table 4: The Augmented Dickey Fuller Test Result

ADF									
AT LEVELS					AT FIRST DIFFERENCE				
INTERCEPT			TREND AND INTERCEPT		INTERCEPT			TREND AND INTERCEPT	
Variables	ADF statistics	5% Critical value	ADF statistics	5% critical value	Variables	ADF statistics	5% Critical value	ADF statistics	5% Critical value
LNGDPPPE	-0.439	-2.957	-0.439	-2.957	LNGDPPPE	-2.503	-2.957	-2.487	-3.558
LNGOVEE	-6.255	-2.960	-6.255	-2.960	LNGOVEE	-3.055	-2.992	-2.148	-3.612
INSQ_GOVEE	-5.735	-2.954	-5.860	-3.553	INSQ_GOVEE	---	---	--	--

INFL	-2.18	-2.954	-2.48	-3.553	-1.19	-1.951	INFL	-4.66	-2.95
UNEMP	-3.12	-2.954	-3.30	-3.56	0.33	-1.951	UNEMP	-3.24	-2.97

Source: Author's computation (2024) using E-Views 10

Table 5: Phillip Perron Test Result

PHILIP PERRON									
AT LEVELS					AT FIRST DIFFERENCE				
INTERCEPT			TREND AND INTERCEPT		INTERCEPT			TREND AND INTERCEPT	
Variables	PHP statistics	5% Critical value	PHP Statistics	5% critical value	Variables	PHP statistics	5% Critical value	PHP statistics	5% Critical value
LNGDPPPE	-0.364	-2.954	-1.948	-3.553	LNGDPPPE	-2.445	-2.957	2.480	-3.558
LNGOVEE	-1.596527	-2.954	-2.894	-3.553	LNGOVEE	-9.589	-2.950	-28.292	-3.558
INSQ_GOVEE	-5.735	-2.954	-5.933	-3.553	INSQ_GOVEE	-5.722	-2.954	-5.935	-3.553
INFL	-4.64	-2.95	-4.56	-3.55	INFL				
UNEMP	-1.43	-2.95	-0.96	-3.55	UNEMP	-4.57	-2.95	-4.72	-3.55

Source: Author's computation (2024) using E-Views 10

Table 6 Order of Integration

Variables	ADF with Intercept	ADF with trend and intercept	ADF AT NONE	PHILIP-PERRON Intercept	PHILIP-PERRON Trend and Intercept	PHILIP-PERRON AT NONE
LNGDPPPE	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
LNGOVEE	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
INSQ_GOVEE	1(0)	1(0)	1(0)	1(0)	1(0)	1(0)
INFL	1(1)	1(1)	1(1)	1(0)	1(0)	1(0)
UNEMP	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)

Source: Author's computation (2024) using E-Views 10

The result presented in table 6 represents the summary for unit root test using both Augmented Dickey Fuller (ADF) and Phillip Perron (PP) statistics. The result shows that GDP per person

employed (lnGDPPPE), government expenditure on education (lnGOVEE), and unemployment rate (UNEMP) are all stationary at first difference (I(1) variables) while the interaction of institutional quality and government expenditure on education (INSQ_GOVEE), and inflation rate (INFL) are stationary at levels (I(0) variables). The implication of the result is that there variables are not integrated in the same order of integration [I(0) and I(0) variables]. As a result, the best estimation technique is Author Regressive Distributive Lag Model (ARDL) as developed by Peasaran and Shine (2010).

Cointegration Test Results

Results of the optimal lag length and Bounds cointegration tests

Table 7 Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	30.69138	NA	0.011192	-1.657509	-1.426220	-1.582114
1	71.78375	66.27801*	0.000844	-4.244113	-3.966567*	-4.153640*
2	72.87720	1.693090	0.000842*	-4.250142*	-3.926339	-4.144590
3	73.01638	0.206520	0.000893	-4.194605	-3.824544	-4.073975

Source: Author's computation using E-views 10.0 (2024)

* indicates lag order selected by the criterion

The result depicts that different lag criteria has their respective lag length. The most commonly use lag criteria is Akaike Information Criteria (AIC). From the result depicted in table 7, AIC chose lag 2 as the best lag length for the model.

Table 8: Bound test result

Test Statistics	Value	K
F-statistic	6.755661	4
CRITICAL VALUE BOUNDS		
Significance	1(0) Bound	1(1) Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Author's computation using E-views 10 (2024).

Result in table 8 shows that F-statistics value is 6.76 while the upper bound test result is 4.01. As a result, the null hypothesis is rejected. The implication is that there is long run relationship among the variables. Having identified that, both short and long run form ARDL result will be presented.

Table 9: Regression Output without Interaction of Institutional Quality

PANEL A: SHORT RUN MODEL				
VARIABLE	COEFFICIENT	STANDARD ERROR	T-STATISTICS	PROBABILITY
lnGDPPPE(-1)***	0.889895	0.041256	21.56996	0.0000
lnGOVEE	-0.029422	0.023792	-1.236667	0.2277
INF	-0.000394	0.000378	-1.044151	0.3064
UNEMP***	-0.045140	0.009059	-4.982912	0.0000
C	1.243937	0.382174	3.254894	0.0032
CointEq(-1)**	-0.110105	0.041256	-2.668801	0.0132
PANEL B: LONG RUN FORM				
lnGOVEE**	-0.552717	0.251075	-2.201398	0.0372
INF	-0.003580	0.003852	-0.929405	0.3616
UNEMP**	-0.409975	0.192739	-2.127098	0.0435
C	11.297764	0.890341	12.689249	0.0000
Post Estimation Test				
Panel A: Breusch-Godfrey Serial Correlation LM Test				
F-statistic	0.433317	Prob. F (2,23)	0.6535	
Obs*R-squared	1.198280	Prob. Chi-Square (2)	0.5493	
Panel B: Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.950949	Prob. F (7,25)	0.4867	
Obs*R-squared	6.939117	Prob. Chi-Square (7)	0.4352	
Scaled explained SS	4.945623	Prob. Chi-Square (7)	0.6666	
Panel C: Ramsey RESET Test				
	Value	Df	Probability	
t-statistic	0.680343	24	0.5028	
F-statistic	0.462866	(1, 24)	0.5028	

Source: Author's computation using E-views 10 (2024).

Note: *, ** and *** denote significant at 10%, 5% and 1% respectively.

Table 10: Regression Output with Interaction of Institutional Quality

PANEL A: SHORT RUN FORM				
VARIABLE	COEFFICIENT	STANDARD ERROR	T-STATISTICS	PROBABILITY

LNGDPPPE(-1)***	0.893688	0.062189	14.37047	0.0000
INSQ_GOVEE**	-0.000187	8.13E-05	-2.297536	0.0299
INF**	-0.000815	0.000344	-2.368949	0.0256
UNEMP	-0.027788	0.018855	-1.473762	0.1526
CointEq(-1)**	-0.106312	0.062189	-1.709501	0.0093
C	1.287135	0.621900	2.069679	0.0486
PANEL B: LONG RUN FORM				
INSQ_GOVEE	-0.001756	0.001098	-1.599070	0.1219
INF	-0.007667	0.005367	-1.428576	0.1650
UNEMP**	-0.700645	0.319568	-2.192477	0.0375
C	12.107096	1.347608	8.984141	0.0000
Post Estimation Test				

Panel A: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.008073	Prob. F (1,25)	0.9291
Obs*R-squared	0.010653	Prob. Chi-Square (1)	0.9178

Panel B: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.895952	Prob. F (6,26)	0.1196
Obs*R-squared	10.04392	Prob. Chi-Square (6)	0.1228
Scaled explained SS	5.800748	Prob. Chi-Square (6)	0.4459

Panel C: Ramsey RESET Test

	Value	Df	Probability
t-statistic	1.733917	25	0.0953
F-statistic	3.006468	(1, 25)	0.0953

Source: Author's computation using E-views 10 (2024).

Discussion of Findings

The result at table 9 shows that that government investment in education had significant negative effect on inclusive growth in Nigeria both in the short and long run. However, at table 10 when there is interaction with institution quality, it was documented that government expenditure on education had negative insignificant effect on inclusive growth. This implies that institutional quality had not played a significant role in ensuring quality educational system in Nigeria. Other findings include that both inflation rate and unemployment had negative effect on inclusive growth in Nigeria. Even with institutions in Nigeria, both macroeconomic indicators had negative effect

in inclusive growth in Nigeria. This is pointing out that there are no institutions in Nigeria to address macroeconomic problems.

In line with *priori* expectation, the result contradicted the *a priori* expectation and economic theory as it was expected that after government had invested in human capital education, it should have a positive significant effect on inclusive growth. The position of negative effect of government expenditure on inclusive growth was inconsistent with the findings by Mercan (2013) for Turkey; by Maitra (2016) for Singapore, Rambali et al (2016) for Malaysia; Islam et al (2016) for Malaysia; Kristyanto & Wahjudi (2017) for East Java and others.

Conclusion and Recommendation

Public investment in education is generally expected to improve productivity and economic outcomes after some time. Several factors might be responsible for the case of Nigeria where the economic outcome after public investment is made resulted to negative effect. Pehaps the rapid growth in technology and specialized industries as well as the skills taught in Nigeria educational institutions may not have been in alignment with the demand in the labour market, hence the negative outcome in government education investment.

The implication is a workforce that is under educated and equipped to meet up with the demand in the necessarily high-productivity fields. There could also be the problem of mismatch thereby leading to underemployment of qualified labour thus causing less contribution to GDP per person employed despite the investment in education. Apart from education, the workforce requires enabling environment like constant electricity supply, good transportation, secured environment to perform optimally. The absence of these requirements even with educational certificate will have little or no positive effect on the inclusive growth in Nigeria. To address these challenges requires not only investment in our educational system but also reforms that will align our education with the needs of the labour market. There should be good quality institutions, up to standard infrastructure to be able to maximize the potentials of a better equipped and educated labour force.

Based on the finding, the study recommended that inefficiencies showed in the workforce should be addressed by aligning educational outcomes with skills that are needed in the labour market.

Furthermore, effort should be made in strengthening institutional frameworks to ensure that government investment in education contributes positively to inclusive growth in Nigeria.

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References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of economic growth*, *1*, 385-472.

Adeyemi, T. O. (2011). Financing of education in Nigeria: An analytical review. *American Journal of social and management sciences*, *2*(3), 295-303.\

Ali, I., & Son, H. H. (2007). Measuring inclusive growth. *Asian Development Review*, *24*(1), 11.

Aslam, A. (2020). The hotly debate of human capital and economic growth: why institutions may matter? *Quality & Quantity*, *54*(4), 1351-1362.

Ayeni, A. O., & Omobude, O. F. (2018). Educational expenditure and economic growth nexus in Nigeria (1987-2016).

Babasanya, A. O., Oseni, I. O., & Awode, S. S. (2018). Human capital development: A catalyst for achieving SDGs in Nigeria. *Acta Universitatis Danubius. Oeconomica*, *14*(4).

Dias, J., & Tebaldi, E. (2012). Institutions, human capital, and growth: The institutional mechanism. *Structural change and economic dynamics*, *23*(3), 300-312.

Ejemeyovwi, J. O., & Osabuohien, E. S. (2018). Investigating the relevance of mobile technology adoption on inclusive growth in West Africa. *Contemporary Social Science*.

Ianchovichina, E., & Lundström, S. (2009). Inclusive growth analytics: Framework and application. *World Bank Policy Research Working Paper*, (4851).

Karaçor, Z., Güvenek, B., Ekinci, E., & Konya, S. (2017, October). Relationship with education expenditure and economic growth in OECD countries: A panel data analysis. In *DIEM: Dubrovnik International Economic Meeting; 3(1); 255-269.*

Keçili, M. Ç., & Ethem, E. S. E. N. (2020). The Relationship between Educational Expenditure and Economic Growth: The Case of Turkey. *Equinox Journal of Economics Business and Political Studies*, *7*(2), 114-126.

Keçili, M. Ç., & Ethem, E. S. E. N. (2020). The Relationship between Educational Expenditure and Economic Growth: The Case of Turkey. *Equinox Journal of Economics Business and Political Studies*, *7*(2), 114-126.

Lapinskas, A., Makhova, L., & Zhidikov, V. (2021). Responsible resource wealth management in ensuring inclusive growth. *Polish Journal of Management Studies*, *23*(2).

Lehne, J., Mo, J., & Plekhanov, A. (2014). What determines the quality of economic institutions? Cross-country evidence.
Ogunyemi, A. O. (2005). A historical reconstruction of the colonial government's education expenditure in Nigeria and the place of the girl-child. *Historical Research Letter*, *27*, 21- 29.

Olanrewaju, G. O., Aremo, A. G., & Binuyo, B. O. (2020). Inclusive growth effects of institutional quality in Nigeria. *European Scientific Journal, ESJ*, *16*(1), 85-105.

Oluwadamilola, O., Akinyemi, O., & Adediran, O. (2018). Human capital development and inclusive growth: Implications for achieving SDG-4 in Nigeria. *African Population Studies*, *32*(1).

Omoke, P. C., & Opuala–Charles, S. (2021). Trade openness and economic growth nexus: Exploring the role of institutional quality in Nigeria. *Cogent Economics & Finance*, *9*(1),.

Osiobe, E. U. (2020). Human capital, capital stock formation, and economic growth: A panel ranger causality analysis. *Journal of Economics and Business*, *3*(2).

Pouw, N., Rohregger, B., & Schüring, E. (2018). *Social protection in Kenya and Ghana through an inclusive development Lens: complexity, risks and limitations* (No. 18/3). IZNE Working paper series.

QadirMushtaq, A., & Afzal, M. (2017). Arab spring: Its causes and consequences. *Journal of the Punjab University Historical Society*, *30*(1), 1-10.

Rodriguez, J. P., & Loomis, S. R. (2007). A new view of institutions, human capital, and market standardisation. *Education, Knowledge & Economy*, *1*(1), 93-105.

Rumbogo, T., McCann, P., Hermes, N., & Venhorst, V. (2021). Financial inclusion and inclusive development in Indonesia. *Challenges of Governance: Development and Regional Integration in Southeast Asia and ASEAN*, 161-181.

Sajid, A., & Ali, A. (2018). Inclusive Growth and Macroeconomic Situations in South Asia: An Empirical Analysis. *Bulletin of Business and Economics (BBE)*, *7*(3), 97-109.

Suryanarayana, M. H. (2008). What Is Exclusive about 'Inclusive Growth'? Economic an Political Weekly, 93-101.

Tella, S. A., & Alimi, O. Y. (2016). Determinants of inclusive growth in Africa: Role of health and demographic changes. *African Journal of Economic Review*, *4*(2), 138-146.