EFFECT OF HUMAN CAPITAL DEVELOPMENT ON INCLUSIVE GROWTH IN NIGERIA

Kazeem Opeyemi Oladapo,
Department of Economics,
Osun State University,
Osogbo, Nigeria.
opeyemi.oladapo@pgc.uniosun.edu.ng

Rasheed Oyaromade
Department of Economics,
Osun State University,
Osogbo, Nigeria.

ABSTRACT

Human capital development plays a critical role in driving sustainable and inclusive economic growth by enhancing productivity, innovation, and workforce efficiency. In Nigeria, despite various policies aimed at improving education, healthcare, and skills acquisition, the country continues to face challenges in achieving broad-based economic growth that benefits all segments of society. This study investigates the effect of human capital development on inclusive growth in Nigeria from 1985 to 2023, analysed key indicators such as education, healthcare, and labour force participation. Secondary data sourced from the World Development indicators of World Bank and statistical bulletin of the Central Bank of Nigeria, the study applies the Vector Error Correction Model (VECM) to examine both short-run and long-run relationships between inclusive growth (IGRT) and explanatory variables, including gross fixed capital formation (GFC), labour force participation (LAB), secondary school enrollment (SES), and life expectancy (LEX) to proxy human capital development. Findings revealed that human capital development significantly influences inclusive growth in Nigeria. Secondary school enrollment (SES) and life expectancy (LEX) show a negative relationship with inclusive growth in the long run with (β= -0.063, $p<0.05$) and (β = - 0.054, $p>0.05$) respectively, This weak connection might point to structural issues, such as a mismatch between increased life expectancy and the economic systems' capacity to accommodate and benefit from a healthier population. Labour force participation (LAB), on the other hand, shows a positive and significant relationship with inclusive growth with (β= 0.99, $p<0.05$). Gross fixed capital formation (InGFC) also has a positive influence in promoting inclusive growth with (β= -0.76, $p<0.05$). The study concludes that sustained investment in human capital through education, healthcare, and skill development is essential for fostering inclusive growth in Nigeria. Policymakers should integrate vocational training with formal education to enhance workforce skills. Expanding affordable healthcare and tackling key health issues, like maternal and child mortality, will boost productivity and inclusivity.

Keyword: *Human capital development, inclusive growth, Nigeria, education, healthcare, labour force, economic growth.*

Corresponding author:
Kazeem Opeyemi Oladapo,
Department of Economics,
Osun State University,
Osogbo, Nigeria.
opeyemi.oladapo@pgc.uniosun.edu.ng

1. Introduction

Nigeria, Africa's largest economy and most populous nation, continues to grapple with economic challenges that hinder sustainable and inclusive growth.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

Despite its vast natural and human resources, the country has struggled with issues such as high poverty rates, income inequality, unemployment, and low productivity. One of the fundamental reasons behind these challenges is the inadequate development of human capital, which limits the nation's ability to achieve broad-based economic growth that benefits all segments of society (World Bank, 2020). Human capital development encompasses education, healthcare, and skill acquisition, critical elements that drive economic productivity and social well-being. Studies have shown that investment in human capital leads to improved labour market outcomes, higher wages, and increased innovation, which are essential for economic progress (Adeleke & Anuolam, 2023; Keji, 2021). However, in Nigeria, the reality remains far from ideal. The country faces persistent underinvestment in education and healthcare, poor infrastructure, and a mismatch between the skills produced by the educational system and the demands of the labour market (Okonkwo & Uchenna, 2019). These deficiencies contribute to widespread economic exclusion, where significant portions of the population remain trapped in poverty and underemployment.

Education, a primary component of human capital development, has not been effectively leveraged to drive inclusive growth in Nigeria. The nation struggles with high rates of out-of-school children, low literacy levels, and declining educational quality (UNESCO, 2021). According to recent statistics, millions of Nigerian children remain out of school due to financial constraints, cultural factors, and insecurity (UNICEF, 2022). Additionally, many tertiary education graduates face difficulties in securing gainful employment due to skill mismatches and inadequate training. This disconnects between education and employability has led to high youth unemployment rates, fueling social unrest and economic stagnation (Adebayo, 2019). Healthcare, another critical pillar of human capital development, also poses significant challenges to inclusive growth. Nigeria has one of the highest maternal and infant mortality rates globally, and access to quality healthcare remains a privilege rather than a right (WHO, 2020). The lack of a robust healthcare system reduces life expectancy and workforce productivity, limiting economic output. Malnutrition, preventable diseases, and inadequate healthcare funding further exacerbate these issues, making it difficult for a significant portion of the population to contribute meaningfully to economic development (Adelakun, 2018). This reality creates a cycle of poverty and exclusion, preventing the country from achieving sustainable and inclusive economic growth.

The lack of inclusive growth in Nigeria is evident in the country’s high Gini coefficient, which reflects deep income inequality (National Bureau of Statistics, 2022). The concentration of wealth among a small elite, combined with widespread poverty among the majority, has led to socio-economic instability. The rural-urban divide further exacerbates this inequality, as rural populations suffer from limited access to quality education, healthcare, and employment opportunities (Olawale & Akinola, 2020). Women and other vulnerable groups face additional barriers in accessing economic opportunities due to cultural and systemic constraints. These inequalities undermine social cohesion and slow down national development.

Despite various government interventions aimed at promoting human capital development, the impact has remained limited due to poor policy implementation, corruption, and inadequate funding (Eneji et al., 2013). Programmes such as the Universal Basic Education (UBE) scheme, the National Health Insurance Scheme (NHIS), and various youth empowerment initiatives have not been sufficiently effective in addressing the root causes of economic exclusion. Moreover, the lack of synergy between educational institutions and the labour market further weakens the effectiveness of these interventions (Ibok & Bassey, 2014).

Recent empirical studies emphasize the importance of human capital development in fostering inclusive growth. Adeleke and Anuolam (2023) found that government expenditure on education and healthcare has a statistically significant positive effect on Nigeria's GDP growth. Similarly, Keji (2021) highlighted the long-term benefits of human capital investment in economic productivity, recommending higher budgetary allocations for education and healthcare. Furthermore, Omokugbo and Imogiemhe (2020) demonstrated that human capital development positively impacts key economic sectors, including agriculture and petroleum. In the face of these challenges, human capital development remains a crucial strategy for achieving inclusive growth in Nigeria. Countries that have successfully transformed their economies, such as South Korea and Singapore, have done so through sustained investments in education, healthcare, and skills development (Kim, 1997). By prioritizing human capital, Nigeria can unlock the potential of its vast population, enhance productivity, and foster equitable economic opportunities for all citizens. Addressing these gaps is imperative for reducing poverty, minimizing inequality, and ensuring that economic growth translates into improved living standards for all Nigerians.

However, it is imperative for a study like this to provide a comprehensive analysis of how human capital development influences inclusive growth in Nigeria. By identifying the key barriers and proposing practical solutions, the study will offer valuable insights for policymakers, development practitioners, and stakeholders seeking to promote a more equitable economic landscape. A deeper understanding of these dynamics will not only help bridge the existing socio-economic divides but also position Nigeria on a path toward sustainable development, ensuring that economic progress benefits all, rather than a privileged few.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

2. Literature

2.1 Empirical Literature

A growing body of research underscores the critical role of human capital and financial development in driving inclusive growth and sustainable development in Africa. Oyinlola and Adedeji (2017) highlight that financial development enhances human capital's contribution to inclusive growth, a relationship further affirmed by Oyinlola et al. (2021), who identify a direct and substantial positive impact of human capital on economic inclusivity. Health, a critical component of human capital, also plays a significant role in fostering inclusive growth. Tella and Alimi (2016) find that financial allocations to the health sector yield a greater impact on inclusivity compared to other sectors, a conclusion repeated by Raheem (2018), who emphasizes the complementary role of natural resources in maximizing the benefits of health expenditure in sub-Saharan Africa.

Education remains a crucial driver of inclusive growth, with research emphasising both its quantity and quality. Oyinlola and Adedeji (2021) show that various human capital indicators significantly enhance inclusive growth, while Adeniyi et al. (2021) highlight that while years of schooling matter, the quality of education plays an even more critical role in determining individual productivity and economic contribution. Oluwadamilola and Adediran (2018) reinforce the long-term impact of education-related factors on inclusive growth, urging policymakers to integrate health and education investments while considering institutional and temporal dynamics. Canlas Dante (2014) stresses the importance of higher education, advocating for loan programs, rationalised state university systems, and standardized curricula to enhance economic growth through advanced knowledge and skills.

The interplay between human capital development (HCD) and sustainable development extends beyond economic considerations to environmental impact. Babasanya et al. (2017) explore the short-term environmental benefits of HCD in Nigeria, using a Vector Error Correction Model (VECM) to demonstrate that while HCD initially enhances environmental sustainability, its influence weakens over time, necessitating continuous investment. Conversely, Akanbi (2023), employing a Descriptive and Dynamic Ordinary Least Squares (DOLS) approach, finds that ICT penetration, trade openness, and regulatory quality significantly drive economic growth, while secondary school enrollment, a conventional human capital metric, lacks statistical significance. This underscores the shifting dynamics of development, where the knowledge economy and digital infrastructure increasingly overshadow traditional educational benchmarks.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

These findings highlight the need for an integrated approach to sustainable development in Nigeria, balancing human capital investments with the expansion of the information and knowledge economy. Policymakers must recognize the synergies between education, technology, and regulatory quality, ensuring that short-term gains in environmental and economic sustainability are reinforced by long-term strategies aligned with evolving development drivers.

However, Abaneme and Aworinde (2025), in their study on government education expenditure and inclusive growth in Nigeria, employ an Autoregressive Distributed Lag (ARDL) model and find that government spending on education has a negative but insignificant short-term effect on inclusive growth, with a significantly negative impact in the long run. Furthermore, when moderated by institutional quality, education expenditure continues to exert a negative influence in both the short and long run. The study concludes that weak institutional frameworks hinder the potential benefits of education investment and recommends strengthening governance structures to ensure that public spending on education translates into improved economic productivity and inclusive growth.

Despite the substantial body of research on human capital and financial development in driving inclusive growth, importance of education is emphasise. For instance, Canlas Dante (2014) focuses on higher education, but there is limited research using health and education effectiveness of secondary enrollment, and life expectancy in Nigeria economic contexts.

3. Methodology

3.1 Data source and Model specification

The data employed for this study are annual data from 1985 to 2023 and they were sourced from the World Bank World Development Indicators (2015) and Central Bank of Nigeria Statistical Bulletin (2015). These datasets are adequate and contain data on the variables for Nigeria as it pertains to the objectives of the study. The study also used estimation techniques in achieving the stated objectives. Preliminary tests conducted includes unit root test for stationarity of the series, Johansen test to test for co-integration and the VECM for long run and short run dynamics. The model and estimation procedures are further explained below.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

Method (model specification)

The study adopted the endogenous growth model, which extends the neoclassical growth model by incorporating the positive externalities associated with the accumulation of human capital. This model explains the relationship between human capital and economic growth. It is therefore defined as follows:

The study adopted the endogenous growth model, which extends the neoclassical growth model by incorporating the positive externalities associated with the accumulation of human capital. This model explains the relationship between human capital and economic growth. It is therefore defined as follows:

$$Y_t = f(A_t, K_t, L_t, H_t) \qquad t= 1,2,3,\ldots N \qquad (1)$$

Where;

Y_t = level of aggregate output, K_t = stock of physical capital, L_t = size of labour force

H_t = stock of human capital, A_t = total factor productivity (endogenous technological progress).

Hence, instead of measuring the effect of foreign trade and other control variables on growth this study implicitly assumed that effect of foreign trade, and other control on growth operate through total factor productivity (A_t).

Hence, given this theoretical relationship the model is specified as follows in a functional form:

$$IGRT_t = f(GFC_t, LAB_t, SES_t, LEX_t) \qquad t= 1,2,3,\ldots \qquad (2)$$

Therefore, equation 3.3 in econometric form will be:

$$IGRT_t = a_0 + a_1 InGFC_t + a_2 LAB_t + a_3 InSES_t + a_4 LEX_t + \varepsilon_t \qquad (3)$$

Where;

$IGRT_t$ = inclusive growth, LAB_t = labour force participation, GCF_t = physical capital stock,

LEX = life expectancy, SES = school enrolment secondary, *In = natural logarithm*

ε_t = error term.

3.2 Measurement of Inclusive Growth

The index of inclusive growth was constructed using the analytical framework developed by Anand et al (2014) to articulate the model that will be estimated, where growth in income and equity are combined into an index of inclusive growth as follows:

$$\frac{dy*}{y*} = \frac{dy}{y} + \frac{dw}{w} \qquad (4)$$

Where, $\frac{dy*}{y*}$ denotes Inclusive Growth, $\frac{dy}{y}$ is the growth in income per capita and $\frac{dw}{w}$ is the growth inequality.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

3.3 Estimation Technique

The VECM is a restricted Vector Autoregression (VAR) model that allows a short run and long-run is an appropriate modeling strategy when the variables are cointegrated. It is useful when long-run forecast is desired; as VAR does not explicitly takes into account the long-run relationship dynamics.

$$\Delta\begin{bmatrix} \mathrm{IGRT_t} \\ \mathrm{InGFC_t} \\ \mathrm{LAB_t} \\ \mathrm{InSES_t} \\ \mathrm{LEX_t} \end{bmatrix} = \alpha_0 + \sum_{i=1}^{K-1} \delta_i \, \Delta \begin{bmatrix} \mathrm{IGRT}_{t-i} \\ \mathrm{InGFC}_{t-i} \\ \mathrm{LAB}_{t-i} \\ \mathrm{InSES}_{t-i} \\ \mathrm{LEX}_{t-i} \end{bmatrix} + \quad \varphi \begin{bmatrix} \mathrm{IGRT}_{t-1} \\ \mathrm{InGFC}_{t-1} \\ \mathrm{LAB}_{t-1} \\ \mathrm{InSES}_{t-1} \\ \mathrm{LEX}_{t-1} \end{bmatrix} + \mu_t \qquad (5)$$

Where;φ captures the long-run cointegration relationships, δ captures short-run dynamics

α is a constant, μ_t = error term, all other variables remain this same as stated above

Where; ⊓ captures the long-run cointegration relationships, λ captures short-run dynamics, α is a constant, all other variables as stated above.

4. Results and Discussion

4.1 Stationarity Analysis

Table 1 indicates the results of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests indicate that all the variables under consideration are non-stationary at their levels but become stationary after first differencing. For instance, inclusive growth (IGRT), secondary school enrollment (SES), and life expectancy (LEX) exhibit significant stationarity at first difference, with highly significant p-values (0.0000) across both tests. This establishes that these variables are integrated of order one, I(1), and must be differenced once to attain stationarity. The consistency in results between the ADF and PP tests further strengthens the validity of these findings.

However, some variables like gross fixed capital (GFC) and labour force participation (LAB) show clear non-stationarity at levels, their test statistics and p-values after first differencing strongly confirm stationarity. For example, LAB transitions from p-values of 0.3818 and 0.4616 at levels to highly significant values (0.0000) after first differencing. Similarly, GFC, which initially shows weak stationarity at levels, achieves strong stationarity at first difference, as reflected in significant p-values (0.0022 for ADF and 0.0019 for PP). These results highlight that all variables in this study are also integrated of order one, I(1).

Table 1: Augmented Dickey-Fuller (ADF) and Philips Perron (PP) Unit Root Tests

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

Variables	Level		First Difference		Integration Order
	ADF	**PP**	**ADF**	**PP**	
IGRT	-4.113243	-4.030324	-4.549185	-24.50942	I(1)
	0.0027	0.0033	0.0009	0.0000	
	*	*	*	*	
SES	-2.7092	-2.6806	-6.9086	-6.9086	I(1)
	0.2388	0.2498	0.0000	0.0000	
	n0	n0	*	*	
LEX	-6.4411	-6.5493	-6.6157	-37.6373	I(1)
	0.0000	0.0000	0.0000	0.0000	
	*	*	*	*	
GFC	-1.6856	-1.8189	-4.8112	-4.8733	(1)
	0.7382	0.6758	0.0022	0.0019	
	n0	n0	*	*	
LAB	-2.3835	-2.2273	-6.3888	-6.6843	I(1)
	0.3818	0.4616	0.0000	0.0000	
	n0	n0	*	*	

Notes: a: *(*)Significant at the 10%; ( )Significant at the 5%; (*) Significant at the 1% and (no) Not Significant, b: Lag Length based on SIC, c: Probability based on MacKinnon (1996) one-sided p-values.*
Source: Author's computation based on E-view 9 (2025).

4.2 Lag Order Selection Criteria

The VAR lag order selection criteria presented in the Table 2 indicates that the appropriate lag length for the model depends on the specific criterion used. Each of the criteria—sequential modified likelihood ratio (LR) test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Criterion (HQ)—offers guidance for selecting the optimal lag length, with differing results. The sequential modified LR, SC and HQ test statistic select lag 1 as optimal, as the test statistic for lag 1 (219.9859, 18.93845 and 18.6550) respectively are significant at the 5% level. These suggest that one lag is sufficient to explain the relationships among the variables. However, additional lags may be considered based on other criteria for improved model performance. The Final Prediction Error (FPE) criterion, which focuses on minimizing prediction error, selects lag 4 as optimal, with the lowest FPE value (25.49277) at this lag. This implies that a four-lag structure provides the most accurate predictions, balancing complexity and precision. The Akaike Information Criterion (AIC) also identifies lag 4 as the best choice, as it has the lowest AIC value (16.49631). AIC typically prioritizes model fit while penalizing for overfitting, and its agreement with FPE reinforces the case for a lag length of 4. Hence, selection of lag 4 (AIC) in this study suggests that including additional lags might capture more information about the relationships between the variables at the expense of simplicity.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

Table 2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-410.84	NA	14373.4	23.7624	23.98463	23.83914
1	-278.09	219.9859*	30.9695	17.6053	18.93845*	18.06550*
2	-255.87	30.4732	39.8388	17.7642	20.20826	18.60786
3	-223.8	34.82629	34.325	17.3598	20.91484	18.58697
4	-183.69	32.08825	25.49277*	6.49631*	21.16235	18.10703

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion

Source: *Author's computation based on E-view 9 (2025).*

4.3 Cointegration test

In Table 3 Akaike information criterion (AIC) is used to select the optimal lag length of the model. The test are conducted with maximum permissible lag length of 4. Table 3 indicates that all the variables in the model are not stationary at levels, until after taking the first differences of all the variable they became stationary. It is however, important that we need to investigate the cointegration properties of the model before we proceed with the model estimation.

Therefore, the Table 3 summarizes the results of the cointegrating equations in the model, the trace test indicates that there are 4 cointegrating equaitons in the model while the maximum eigen-value test indicates that there are 4 cointegrating equations.

Table 3 Result of Unrestricted Cointegration Rank Test (Trace)

Hypothesized		**Trace**	**0.05**	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.
None *	0.999268	324.4139	69.81889	0.0001
At most 1 *	0.733251	78.92327	47.85613	0.0000
At most 2 *	0.481417	33.99412	29.79707	0.0155
At most 3	0.178561	11.66781	15.49471	0.1736
At most 4 *	0.136251	4.980099	3.841466	0.0256

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

Maximum Eigenvalue test

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.**
None *	0.999268	245.4907	33.87687	0.0001
At most 1 *	0.733251	44.92915	27.58434	0.0001
At most 2 *	0.481417	22.32631	21.13162	0.0338
At most 3	0.178561	6.687715	14.26460	0.5267
At most 4 *	0.136251	4.980099	3.841466	0.0256

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
MacKinnon-Haug-Michelis (1999) p-values
Source: Author's computation based on E-view 9 (2025).

4.4 Short run estimate regression results

The results of the short-run dynamics reveal how changes in human capital development variables affect inclusive growth in Nigeria over a shorter time frame. The error correction term (ECM) has a coefficient of -0.210012, which implies a moderate speed of adjustment toward the long-run equilibrium when inclusive growth deviates from its steady state. However, the associated t-statistic of -1.20036 indicates that this adjustment is not statistically significant. This suggests that short-run deviations from inclusive growth equilibrium are not quickly corrected, potentially reflecting inefficiencies in the system.

Looking at the lagged differences of inclusive growth (D(*IGRT*_(-1)), D(*IGRT*_(-2)), and D(*IGRT*_(-3))), all coefficients are negative, with values ranging from -0.086181 to -0.222926. None of these coefficients are statistically significant, as indicated by their t-statistics being well below the critical value. This implies that past changes in inclusive growth do not significantly influence its current short-term dynamics, hinting at potential volatility or weak short-term links in the drivers of inclusiveness.

The effects of secondary school enrollment (SES) and life expectancy (LEX) are mixed. Lagged of secondary school enrollment (SES) (D(SES(-1)), D(SES(-2)), and D(SES(-3))) consistently have negative coefficients, though they are small and statistically insignificant. This finding suggests that, in the short run, variations in school enrollment have limited influence on inclusive growth. Conversely, the lagged differences of life expectancy (LEX) yield both positive and negative coefficients, with D(LEX(-1)) and D(LEX(-2)) showing slight positive effects and D(LEX(-3)) reflecting a negative effect. None of these are statistically significant, indicating that life expectancy's short-term impacts on inclusive growth are weak and inconsistent.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

Finally, the role of labour force participation (LAB) and gross fixed capital formation (*INGFC*) provides further insights. Changes in LAB show mixed coefficients (positive and negative), all of which are statistically insignificant. However, the first lag of *INGFC* (D(*INGFC*(-1))) demonstrates a large positive coefficient (2.619) with a marginally significant t-statistic of 1.42481. This suggests that short-term increases in physical capital may positively impact inclusive growth. Yet, the second lag (D(*INGFC*(-2))) shows a large negative effect (-3.795208), indicating possible overinvestment or inefficiencies. The overall R-squared value of 0.743941 indicates that the model explains about 74% of the variability in inclusive growth, while the adjusted R-squared of 0.516334 suggests some loss in explanatory power when adjusted for the number of variables.

Table 5: Estimate of the effect of Short run dynamics of human capital development on Inclusive growth in Nigeria.

	Coefficient	Standard error	t-statistics
ECT	-0.210012	(0.17496)	[-1.20036]
D(*IGRT*_(-1))	-0.222926	(0.18613)	[-1.19770]
D(*IGRT*_(-2))	-0.086181	(0.20358)	[-0.42332]
D(*IGRT*_(-3))	-0.202267	(0.19092)	[-1.05943]
D(SES(-1))	-0.011273	(0.07410)	[-0.15214]
D(SES(-2))	-0.102313	(0.08394)	[-1.21893]
D(SES(-3))	-0.088399	(0.09187)	[-0.96222]
D(LEX(-1))	0.128624	(0.25372)	[0.50696]
D(LEX(-2))	0.096735	(0.19088)	[0.50679]
D(LEX(-3))	-0.192436	(0.14540)	[-1.32346]
D(LAB(-1))	-0.014565	(0.06223)	[-0.23404]
D(LAB(-2))	0.038431	(0.05682)	[0.67633]
D(LAB(-3))	-0.042292	(0.04970)	[-0.85096]
D(*INGFC*(-1))	2.619464	(1.83847)	[1.42481]
D(*INGFC*(-2))	-3.795208	(2.16837)	[-1.75026]
D(*INGFC*(-3))	-0.10859	(2.24190)	[-0.04844]
C	0.248918	(0.52858)	[0.47092]
R-squared	0.743941		
Adj. R-squared	0.516334		
F-statistic	3.268525		

Source: Author's computation based on E-view 9 (2025).

4.5 Long run estimate (normalise cointegrating) regression results

The normalised cointegrating coefficients reveal the long-term relationship between inclusive growth (IGRT) and key variables related to human capital development. Secondary school enrollment (SES), life expectancy (LEX), labour force participation (LAB), and gross fixed capital formation (InGFC) are analyzed to understand their contribution to growth inclusiveness in Nigeria. The coefficients, standard errors, and t-statistics shed light on the nature and significance of these relationships. Secondary school enrollment (SES) has a negative coefficient of -0.062902, implying that an increase in SES is associated with a slight decline in inclusive growth. However, with a standard error of 0.01308 and a t-statistic of 4.81, this result is statistically significant. This finding is counterintuitive, as higher school enrollment typically improves human capital and growth inclusiveness. It may reflect inefficiencies in translating educational enrollment into meaningful economic opportunities or inclusive outcomes. Meanwhile, life expectancy (LEX) also has a negative coefficient of -0.055623, suggesting that improvements in life expectancy are linked to a decrease in inclusive growth. The high standard error of 0.08379 and a low t-statistic of 0.66 indicate that this relationship is not statistically significant. This weak connection might point to structural issues, such as a mismatch between increased life expectancy and the economic systems' capacity to accommodate and benefit from a healthier population. Moreso, Labour force participation (LAB), on the other hand, shows a positive and significant relationship with inclusive growth. The coefficient of 0.996658 indicates that higher labour force participation strongly contributes to inclusiveness in growth. This result is robust, as evidenced by the small standard error of 0.01262 and a very high t-statistic of 78.97. This finding underscores the critical role of workforce engagement in fostering inclusive economic outcomes in Nigeria. Gross fixed capital formation (*InGFC*) also has a positive coefficient of 0.75874, highlighting its importance in promoting inclusive growth. The t-statistic of 4.74 confirms its statistical significance, though the standard error of 0.16011 suggests a relatively wider confidence interval around the estimate. This result supports the idea that investment in physical capital enhances growth inclusiveness by creating jobs and improving infrastructure.

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

Table 4: Long run effects (Normalise Cointegrating equation) of human capital development on Inclusive growth in Nigeria.

Normalized cointegrating coefficients (standard error in parentheses)

*IGRT**	SES	LEX	LAB	*INGFC*
1.000000	0.062902	0.055623	-0.996658	-0.75874
Standard Error	(0.01308)	(0.08379)	-0.01262	(0.16011)
t-statistic	4.81	0.66	78.97	4.74

Source: Author's computation based on E-view 9 (2025).

$$1^* \, IGRT + 0.063\,(SES) + 0.056(LEX) + 0.997(LAB) + 0.759(INGFC) = 0 \quad (6)$$

$$IGRT = -0.063\,(SES) - 0.056(LEX) + 0.997(LAB) + 0.759(INGFC) \quad (7)$$

4.6 Diagnostic tests

Table 6 presents the results of the serial correlation and heteroskedasticity tests for the short-run model. The results show that the model passes both diagnostic tests at the 5% confidence level. Specifically, there is no evidence of autocorrelation, as indicated by the Breusch-Godfrey Serial Correlation LM Test, with a probability value of 0.6630. Additionally, the model passes the Breusch-Pagan-Godfrey Heteroskedasticity Test, which shows no signs of white heteroskedasticity, with a probability value of 0.4220. These findings confirm the robustness of the model in meeting the required diagnostic criteria.

Table 6: VECM diagnostic test results

Tests		
	Breusch-Godfrey Serial Correlation LM Tests	Breusch-Pagan-Godfrey Heteroskedastici ty Tests
Probability values	0.6630	0.4220

Source: **Authors' computations**

4.7 Discussion and Findings

These findings of negative effects of human capital development on inclusive growth are surprising not in conformity with theoretical assertion of human capital theory (Schultz, 1961; Becker, 1975 & Mincer, 1981) who are of the opinion that the more greater provision of schooling in the society, the greater the increase in growth, this findings is also not in line with endogenous growth model (Arrow, 1962; Lucas, 1988 & Romer, 1989) but is consistent with the study of Oluseye and Gabriel, (2017), Asif and Amjad, (2018), Abaneme and Aworinde, (2025) who found level of education reduces inclusive growth, however, these findings contrast with Oyinlola and Abdulfatai, (2021), Tella and Alimi, (2016), Adeniyi et al., (2021), Oluwadamilola and Adediran, (2018) and Canlas, (2014) that typically found positive associations between human capital development and growth inclusiveness. Potential explanations for this divergence may include inefficiencies in the Nigerian education system, such as low-quality schooling or truancy among student, mismatches between graduates' skills and labour market needs. Similarly, the weak link between life expectancy and inclusive growth may reflect structural economic challenges, such as insufficient job opportunities for a healthier population or limited access to productive resources.

However, these results highlight the importance of complementary policies and institutional support. Investments in education must be matched with initiatives to improve quality, align curricula with labour market demands, and create economic opportunities for graduates. Similarly, health improvements must be accompanied by policies that enable a healthier workforce to participate fully in the economy, such as job creation and access to credit facilities.

5. Conclusion and Recommendations

This study analyses the dynamics between human capital development and inclusive growth in Nigeria from 1985 to 2023. Secondary school enrolment (SES) and life expectancy (LEX) show a negative association with inclusive growth in the long run, suggesting that improvements in these areas may not always translate into economic inclusivity. The negative coefficients observed for both variables highlight potential inefficiencies in the educational and healthcare systems that hinder the realisation of inclusive growth, despite their traditional roles in enhancing human capital. On the other hand, labour force participation (LAB) and gross fixed capital formation (InGFC) have positive and significant relationships with inclusive growth, underscoring the importance of active workforce engagement and physical capital investment in driving more inclusive economic outcomes.

In the short run, the dynamics of human capital development revealed mixed results, with some indicators showing weak or statistically insignificant effects. The error correction term (ECT) indicates that the system does not adjust rapidly to long-term equilibrium, reflecting a sluggish response to changes in inclusive growth. Labour force participation and secondary school enrolments show limited short-term influence on inclusive growth, while gross fixed capital formation suggests some positive impact, although with potential inefficiencies in the form of overinvestment. The findings highlight the complexity of promoting inclusive growth, emphasizing that while human capital development is essential, tackling structural inefficiencies in critical sectors like education and healthcare, along with increasing investment in the workforce and infrastructure, is key to achieving sustained and inclusive economic growth in Nigeria. Policymakers should supplement formal education with vocational training and skills development to better align workforce

@A Publication of the Department of Economics, ADSU, Mubi. ISSN- Print: 2550- 7869; ISSN-Online: 3043-5323. Journal homepage: https://ajaefm.adsu.edu.ng

capabilities. Additionally, expanding access to affordable healthcare and addressing major health challenges, such as maternal and child mortality, will improve productivity and inclusivity in the long term.

Reference

Abaneme, E. N., & Aworinde, O. (2025). Effect of government education expenditure on inclusive growth in Nigeria: The role of institutions. *Asian Journal of Economics, Business and Accounting, 25*(1), 147-161. https://doi.org/10.9734/aje/2025/v25i113903

Adebayo, S. (2019). Youth Unemployment and Economic Growth in Nigeria. *African Journal of Economic Policy,* 6(3), 45-60.

Adelakun, O. (2018). Healthcare and Economic Growth in Developing Nations: A Case Study of Nigeria. *Journal of Public Health Research*, 12(2), 23-34.

Adeleke, O., & Anuolam, S. (2023). Impact of Human Capital Development on Economic Growth in Nigeria. *International Journal of Management Research and Applications*, 6(6), 57-72.

Akanbi, B. (2023). The impact of information and knowledge economy on economic development in Nigeria. *In readings in development economics and planning*. Department of Economics, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria.

Ananad R., Tulin V. and Kumar N. (2014). India: Defining and explaining inclusive growth and poverty reduction. *International Monetary Fund Working Paper 14(*63), IMF Washington, DC.

Asif, M., Rehman, F. U., Zheng, L., & Shah, S. H. (2019). Does trade with China can make growth in Pakistan more inclusive? Pre and post empirical impact of China-Pakistan economic corridor. *Developing Country Studies, 9*(3), 57-67.

Babasanya, A. O., Ogunleye, A. G., & Ogunyomi, O. O. (2017). Human capital development as a catalyst for environmental sustainable development in Nigeria: A VECM approach. *Journal of Economics and Policy Analysis, 2*(2), 200-219.

Canlas Dante, B. (2016). Investing in human capital for inclusive growth: Focus on higher education. *Philippine Institute for Development Studies*.

Keji, T. (2021). Human Capital and Economic Growth in Nigeria (1981-2017). *Financial and Business Journal*, 4(2), 119-134.

Kim, J. (1997). South Korea's Economic Development: Lessons for Developing Countries. *Asian Economic Journal*, 11(2), 119-135.

National Bureau of Statistics. (2022). Nigeria's Gini Coefficient and Economic Inequality Report.

Okonkwo, C., & Uchenna, M. (2019). The Impact of Human Capital Development on Economic Growth in Nigeria. *International Journal of Development Studies*, 9(2), 67-83.

Oluwadamilola, O., & Adediran, O. (2018). Human capital development and inclusive growth: Implications for achieving SDG-4 in Nigeria. *African Population Studies, 32*(1), 4088–4096.

Omokugbo, J., & Imogiemhe, A. (2020). Human Capital Development and Real Sector Growth in Nigeria. *Journal of Development Economics*, 8(1), 72-91.

Oyinlola, M. A., & Adedeji, A. (2017). Human capital, financial sector development, and inclusive growth in sub-Saharan Africa. *Economic Change and Restructuring*, WDI 2016. https://doi.org/10.1007/s10644-017-9217-2

Oyinlola, M. A., Adedeji, A. A., & Onitekun, O. (2021). Human capital, innovation, and inclusive growth in sub-Saharan African Region. *Economic Analysis and Policy, 72,* 609–625. https://doi.org/10.1016/j.eap.2021.10.003

Raheem, I. D., Isah, K. O., & Adedeji, A. A. (2018). Inclusive growth, human capital development and natural resource rent in sub-Saharan African. *Economic Change and Restructuring, 51*(1), 29–48. https://doi.org/10.1007/s10644-016-9193-y

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

UNESCO. (2021). Education in Nigeria: Challenges and Opportunities.

UNICEF. (2022). Out-of-School Children in Nigeria: Causes and Solutions.

WHO. (2020). Global Health Observatory Report on Nigeria.

World Bank. (2020). Human Capital Index Report for Nigeria.