

Assessing the Effect of Human Capital Financing on Nigeria's Economic Growth: A Time Series Approach

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Abstract- The paper focuses on the effects of human capital funding on economic growth in Nigeria and the time frame of 2000-2024. In particular, it examines the contribution of education, health, defence expenditure, fixed capital formation and labor to gross domestic product (GDP). The Augmented Dickey-Fuller (ADF) unit root test, Johansen cointegration method and the Vector Error Correction Model (VECM) were used to analyze time series data to determine both the long-run and short-run dynamics. According to the unit root outcomes, all the variables are all I(1), indicating an absence of order two, I(2) integration and the Johansen cointegration test indicates that three long-run relationships exist between the variables. The VECM findings show that health expenditure positively and significantly influences economic growth in the long-run but education, defence, and labor have negative or weak implications which indicate inefficiencies in the use of human capital. The error correction term is negative but large, which means that there is a slow movement towards the long-run equilibrium. The results substantiate Human Capital Theory and Endogenous Growth Theory, which highlights the significance of human capital investment in the long-run economic growth. The paper concludes that human capital investment is critical to the growth of the economy but its contribution in Nigeria is still limited by inefficiencies. It consequently suggests that there should be more and better investment in the health sector, education sector, creation of jobs, good governance and policies that should be put in place to diminish brain drain in order to make human capital contribution in sustainable economic growth.

Keywords: *Economic Growth, Human Capital Funding, VECM, Health Expenditure, Education Expenditure.*

I. INTRODUCTION

Over the years, the role of human capital in driving economic growth has gained increasing attention,

especially in developing countries like Nigeria where achieving sustained economic progress remains a key priority. Human capital can be defined as the knowledge, skills, health and competencies that individuals develop and that make them productive and national development. Investment in other sectors like education, health and acquisition of skills is thus believed to be critical in the enhancement of economic performance. According to Tang (2025), economies which make sound investments in human capital are likely to have improved levels of productivity and long term growth. A number of studies have been conducted in Nigeria to find out the relationship between human capital development and economic growth, but the results have shown varied results. As an example, Obafemi (2025) and Ibrahim (2025) note that despite the efforts put by Nigeria to invest in human capital, the outcomes have not been commensurate to the expectations. Likewise, Ovenserri-Ogbomo and Obasuyi (2026) claim that Nigeria continues to have an insufficient level and quality of human capital growth that can facilitate any significant economic change. These issues indicate the significance of not only investing in human capital, but also making sure that the investments are well capitalized and operated.

Secondly, there is the overall economic environment, which has effects on the efficiency with which human capital investments can be converted into growth. Onyemaechi and Clever (2026) stress that successful execution of the budget is essential in delivering desirable economic performance, whereas Okpunor et al. (2025) indicate the importance of financial development in order to mobilize resources to invest. This has also been supported by empirical evidence that human capital investment positively impacts

industrial growth and sector performance in Nigeria (Braimah & Apoloko, 2025; Ezeunwo et al., 2025). Nonetheless, with these results, Nigeria still experiences some problems on lack of funding, ineffective resource distribution, and institutional flaws. There are also problems such as brain drain and ineffective implementation of policies that further reduce the possible gains of human capital investment (Keji, 2025; Goshit & Zumba, 2025). These issues necessitate the need to re-analyze the impact of human capital financing on the economic growth in Nigeria.

Although the development of human capital has been recognized to be crucial in promoting economic growth, Nigeria has not realized the desired economic growth in comparison to the investments in education and health. This poses some significant questions of how effective human capital financing is in the country. Although and government expenditure on human capital has been rising over the years, the effect on major economic variables like productivity, employment and output growth is rather low (Odey et al., 2025; Udu, 2025). The inefficiency in management and use of funds set aside to develop human capital is one of the major problems. Onyemacchi and Clever (2026) note that poor budget execution diminishes the efficiency of the government spending, which restricts the role of the government spending in economic growth. Besides that, institutional problems and governance issues also tend to lead to the misallocation of resources. The other issue is that the education and the skills obtained after it fail to match the labor market requirements. This gap, according to Ibrahim (2025) and Ovenseri-Ogbomo and Obasuyi (2026) is a factor behind high unemployment and underemployment rates as graduates in most cases lack the skills needed by industries. Consequently, the possible gains of human capital investment is not achieved. Moreover, issue of brain drain remains a problem in the development of Nigeria. The other countries tend to lose skilled professionals to other countries where they seek greater opportunities, leaving behind the provision of qualified labor to boost the economy. According to Keji (2025), this trend has a negative effect on the productivity of industries and the general economic performance.

Even though past research has delved into the development of human capital and growth in an

economy, there has been little emphasis on how financing plays a particular role in this relationship. Numerous studies focus on results without a complete consideration of the impact of funding structures, efficiency of allocation, and sustainability on results. With these gaps, the proposed study aims at investigating the impacts that human capital financing has on economic growth in Nigeria. It will seek to give a better insight on whether the increased investment on human capital brings about any significant economic gains and the issues that contribute to the barriers in effective financing and utilisation of human capital resources.

II. LITERATURE REVIEW

Hypothetical Problems: Economic Growth and Human Capital Development.

Economic growth and development of human capital are closely related two concepts that have attracted a lot of academic attention in the economics and development studies. The human capital is the personification of knowledge, skills, competencies and health in human beings that enhances productivity and economic value (Gary Becker, 1989). The development of human capital can thus be regarded as a deliberate investment in education, training and healthcare which aim at improving the efficiency and national productivity of the workforce.

In terms of Gross Domestic Product (GDP), economic growth can be simply defined as the increase in the production in the country in terms of output of goods and services over the long run. The classical and neoclassical schools of thought of economics initially explained the accumulation of physical capital and labour as drivers of growth (Economist, 2007). Later theoretical developments, notably endogenous growth theory, however, shifted the focus towards that of human capital.

The growth models that have been advanced by such researchers as Paul Romer (1990) and Robert Lucas Jr. (1988) are known as endogenous growth models, according to which long-term economic growth is achieved through investments in human capital leading to the creation of innovations, knowledge spillovers and technological progress. Here, human capital is not just a factor of production, but also, a

source of technological development. The other conceptual issue that is important is that human capital is multidimensional. Schooling years has been the most popular proxy in past research efforts but recent studies have placed emphasis on broader indicators as health, acquisition of skills and cognitive abilities (Theodore Schultz, 1961). This more inclusive strategy is based on the realization that a productive and flexible workforce is healthier and well-skilled.

The issue of quality and quantity of education is a controversial one, as well. Education availability does not necessarily translate to improved economic performance until quality of education is good and matched with the needs of the labor market. Research papers like those by Eric Hanushek and Ludger Woessmann (2008) point out that cognitive skills and learning outcomes have a stronger correlation with economic growth as opposed to school attainment alone. Also, the question of causality is still the focus in the literature. Though human capital development leads to economic growth, economic growth also ensures resources necessary in further investment in education and health. This two way relationship renders it hard to analyze and formulate policies empirically (Daron Acemoglu, 2001).

Another important issue is inequality in development of human capital. By not providing equal access to both education and healthcare, the inequality can stifle productivity and ensure no one gets to develop inclusively. According to Amartya Sen (1999), development is to be seen as expansion of human capability and not only the increase in income. The increased human capital in the globalization enabled countries with increased rates to be in a better position to compete in the knowledge based economies, to receive foreign direct investment and adapt to change in the technology. On the other hand, nations that have a poor human capital development could be stagnated and marginalized in the global economy.

Theoretical Framework

This paper relies mostly on the Human Capital Theory and is supported by the Endogenous Growth Theory. The two theoretical frameworks offer a solid foundation to explain the association between human capital financing and economic growth in Nigeria. The theories provide useful information on how the

investment in human capital, education, care, and skill development can help to boost productivity and, therefore, economic growth.

Human Capital Theory

The Human Capital Theory was formulated by Schultz (1961) and Becker (1964), as skills, knowledge and health are important assets that contribute to productivity and economic growth. It states that education and healthcare investment enhances labor efficiency that results in increased output and general economic development. Human capital is thus regarded as a kind of capital that can be accumulated by constantly investing in individuals. Human capital financing is a practice in Nigeria where the government and individual households invest in education, health, and skills training to enhance the quality of workforce and to trigger economic growth. Its success, however, is pegged on effective resource allocation, good governance and effective implementation. It goes further to highlight that the conditions in the labor market, institutional quality, and the efficiency of education and health systems are crucial in the translation of the human capital investment into the sustainable economic growth (Schultz, 1961; Becker, 1964).

Endogenous Growth Theory

Endogenous Growth Theory, proposed by Romer (1986) and Lucas (1988) focuses on the fact that economic growth is sustained by internal factors with the most important one being human capital. This theory suggests that investments in human capital promote innovation, technological advancement and knowledge spillovers which in the long run leads to growth, a point that is contrary to other models which considered technological progress as an external phenomenon.

According to the theory in Nigeria, a culture of innovation and entrepreneurship, which is crucial in economic growth, can be developed through consistent investments in education, health and skills development. With the skilled workforce, this leads to productivity, adoption of technology and new business development. The success of these investments however is determined by complementary factors like financial development, availability of capital and

institutional quality. The entire potential of human capital investments in Nigeria might not be achieved without dealing with these systemic issues.

Combined with the Endogenous Growth Theory, Human Capital Theory provides a complete picture of how economic growth can be stimulated by human capital financing. Human Capital Theory describes the direct connection between human capital investments (in education, healthcare, defence and skills) and labor productivity, whereas the Endogenous Growth Theory has a more macroeconomic viewpoint, that human capital is an important source of technological innovation and long-term growth. This theory will be used to analyse the ways in which human capital funding can be used to enhance Nigeria long term economic development.

Empirical Review

Many empirical studies have investigated the linkage between financing human capital and economic growth in Nigeria, with the majority of results indicating a positive yet usually limited effect. The previous works like Werigbelegha and Peter (2018) offered the background information because they examined the impact of human capital investment on the economic development of Nigeria in the 1990–2017. In the study, an ordinary least squares (OLS) method was used to proxy the human capital by government spending on education and health, and gross domestic product (GDP) was economic growth. According to their findings, human capital investment has a positive and significant effect on economic growth but due to inefficiency in using the available resources, this effect was minimized.

By expanding upon this, Awogbemi (2023) analysed the nexus between the human capital development and the economic growth in Nigeria, applying a descriptive analytical method. The variables included in the study included education, health, and labor productivity and the results showed that though the development of human capital is a positive contributor to economic growth, poor funding and poor execution of policies still limit its effectiveness. In a similar manner, Ojonye and Chidrom (2023) in their empirical investigation conducted in the form of a conference also reported the positive relationship between human capital development indicators, i.e.,

education and health investment, and economic growth in the country of Nigeria but noted that structural inefficiencies were major limitations.

Recent research has used more sophisticated econometric methods and extended time horizons. As an example, Amadi (2024) used time-series data to determine how the development of human capital affected the growth of the Nigerian economy. The paper used education and health spending as proxies of human capital and it was discovered that the effect was positively associated with GDP, but the effects were diluted due to the systemic economic issues. Similarly, Udu (2025) compared human capital development and economic growth nexus between 1992 and 2024 using the co-integration and error correction modeling techniques. The results showed that there was a significant long run relationship, implying that long term investment in human capital has substantial effect on economic performance.

Odey, Aladejare, and Odzie (2025) also investigated the effect of human capital investment on economic growth in Nigeria using econometric methods. They have included education and health expenditures as some of the explanatory variables in their study and discovered that the two have a positive and statistically significant effect on the economic growth. In line with this, Goshit and Zumba (2025) developed a composite index of human capital development based on the principal component analysis, thus representing various dimensions of human capital. Their results also supported a positive and strong correlation of human capital development and economic growth in Nigeria.

More disaggregated, sector-specific research offers more information. Braimah and Apoloko (2025) concentrated on the industrial growth and discovered that investment in human capital contributes to an industrial productivity in Nigeria significantly. Similarly, Ezebunwo, Robert, and Gbarawae (2025) investigated the influence of human capital investment on the output of the industrial sector with the help of time-series regression methods and found that the impact is positive and significant. Nevertheless, a relevant dimension was added by Keji (2025) using a dynamic system Generalized Method of Moments (GMM) method where human capital migration was

considered. The researchers concluded that although human capital skills have a positive impact on industrial output, migration of skilled labor (brain drain) has a negative impact on growth, which negates some of the benefits of domestic investment in human capital.

Along with direct human capital indicators, complementary macroeconomic factors have been studied in some studies. Through co-integration and error correction, Okpunor, Echekeba, and Ekpo (2025) explored the impact of financial development in Nigeria between 1984 and 2024. Their results suggested that financial development contributes to economic growth greatly through the promotion of investment, which includes human capital investment. On the same note, Onyemaechi and Clever (2026) investigated the growth and budget implementation with the help of econometric analysis. The paper has noted that good budget implementation is essential in converting the public spending to actual economic results, meaning that the achievement of human capital financing relies mainly on fiscal discipline and efficiency.

Moreover, Oveneri-Ogbomo and Obasuyi (2026) evaluated how human capital development affects economic performance in Nigeria and reported a positive yet weak effect, indicating that the degree of investment in human capital is still unsatisfactory to catalyze significant economic change. The study by Ibrahim (2025) also proved the significance of the positive correlation between human capital development and economic growth by applying regression analysis, but it was also pointed out that inefficiencies in investment diminish the possible benefits.

In the qualitative aspect, Obafemi (2025) conducted an extensive literature review on human capital development and economic growth in Nigeria, which highlighted structural issues like underfunding, ineffective institutional frameworks, and ineffective coordination of policies. Likewise, Azu (2021) has found major limitations such as poor infrastructure, low budgetary allocation, and governance problems, which prevent effective human capital development and its contribution to economic growth. At a high level, Tang (2025) developed a positive correlation

between human capital investment and economic development across the world, which further supports the significance of human capital as a principal stimulus of economic growth.

On the whole, the existing body of empirical evidence confirms the impression that human capital investment, especially in education and health, positively and significantly impacts economic growth in Nigeria. But the magnitude of this effect is usually restricted by ineffective allocation of resources, poor budget execution, mismatch of skills and the slow issue of brain drain. These restrictions imply that besides growing investment, more effort has to be focused on the effectiveness, organization, and sustainability of human capital financing to attain a significant economic growth.

III. METHODOLOGY

The research design used is a quantitative research design, namely an ex-post facto. This design is suitable as the design does not involve manipulation of the variables and uses already existing data. It enables one to examine past trends and correlations between human capital funding and economic growth. The research study relates to the years 2000-2024 in Nigeria. It is chosen because of better data availability and reliability and relevance in terms of reflecting the post-democratic economic reforms in Nigeria, and the recent changes in human capital financing. Also, the period offers adequate observations to make strong econometric analysis using pertinent national and global sources like Central Bank of Nigeria (CBN) Statistical Bulletin, World Bank Development Indicators, and National Bureau of Statistics (NBS).

Model Specification

To investigate the relationship between human capital financing and economic growth, the study specifies a functional model based on the principles of Endogenous Growth Theory.

The model is expressed as:

$$GDP = f(EDU, HEL, DEF, GCF, LAB) \text{ -----} \\ \text{-----} (1)$$

Econometrically, the above model can be re-organized as follows:

$$GDP_t = \beta_0 + \beta_1 EDU_{t-1} + \beta_2 HEL_{t-1} + \beta_3 DEF_{t-1} + \beta_4 GCF_{t-1} + \beta_4 LAB_{t-1} + \mu_t \text{} (2)$$

Where:

GDP = Gross Domestic Product (a proxy for economic growth)

EDU = Government expenditure on education

HEL = Government expenditure on health

DEF = Defence

GCF = Gross Capital Formation (Investment)

LAB = Labor force.

$\beta_0, \beta_1, -\beta_5$ = parameter estimates

μ = stochastic error term.

A Priori Expectation

The a priori expectation of this study is based on economic theory and existing empirical evidence, which suggest a positive relationship between human capital financing and economic growth in Nigeria. It is therefore expected that all explanatory variables included in the model will have positive coefficients.

Specifically, the study expects that:

$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0$.

4.1 Data Presentation and Analysis

Table 1: Descriptive statistics result

	GDP	EDU	HEL	DEF	GCF	LAB
Mean	56332.15	328.6268	201.7916	303.1596	14534.84	81578951
Median	60670.05	335.8000	195.9800	274.5300	14820.00	79317244
Maximum	80606.53	802.9700	499.7600	792.5500	27115.00	1.13E+08
Minimum	25430.42	39.88000	15.22000	43.40000	4533.000	59281872
Std. Dev.	17394.86	242.0980	156.3164	248.5698	6769.746	16018029
Skewness	-0.396360	0.526735	0.516862	0.614030	0.102599	0.403778
Kurtosis	1.754365	2.018631	1.948456	2.045444	1.876796	2.060935
Jarque-Bera	2.270845	2.159257	2.264927	2.520112	1.358014	1.597904
Probability	0.321286	0.339722	0.322238	0.283638	0.507120	0.449800
Sum	1408304.	8215.670	5044.790	7578.990	363371.0	2.04E+09
Sum Sq. Dev.	7.26E+09	1406675.	586435.4	1482886.	1.10E+09	6.16E+15
Observations	25	25	25	25	25	25

Source: *E-Views 10 output extract*.

The data in table 1, covers 25 observations for GDP, education, health, defence, investment (GCF), and labor. On average, GDP is 56,332.15, education (EDU) is 328.63, health (HEL) is 201.79, defence (DEF) is 303.16, investment (GCF) is 14,534.84, and labor (LAB) is 81,578,951. The means are not far apart than median values (as GDP (60,670.05) and LAB (79,317,244) indicates), implying rather balanced distributions. The variables are all moderately varying, with GDP, defence, and labor exhibiting greater changes with the time (greater standard deviations). The skewness values indicate that the skewness of

most variables leans on the positive with high values being more frequently represented, with the exception of GDP which is slightly skewed on the negative side. The values of kurtosis are less than 3, which implies flatter distributions than normal (there is a smaller number of extreme values). All the Jarque-Bra test values are greater than 0.05, which indicates that the variables are normally distributed. The data is reasonably well-behaved with no deep-seated problems of non-normality and can be further analyzed in other econometric analysis.

Table 4.2: Presentation of Results of Unit Root Test: (Augmented Dickey-Fuller Test) at Level and First Difference.

Variable	Level I(0)				1st Difference I(1)				Order of Integration
	ADF statistics	5% Crit value	P-value	Remark	ADF statistics	5% Crit value	P-value	Remark	
GDP	-	-	0.946	Non-stationary	-	-	0.044	Stationary	I(1)
	0.84854	3.61219	1		3.67829	3.62203	8		
EDU	-	-	0.601	Non-stationary	-	3.62203	0.010	Stationary	I(1)
	1.94256	3.61219	6		5.10817	3	0		
HEL	-	-	0.300	Non-stationary	-	-	0.002	Stationary	I(1)
	2.55697	3.61219	8		5.15676	3.63289	3		
DEF	-	-	0.699	Non-stationary	-	-	0.005	Stationary	I(1)
	1.74429	3.61219	4		4.72289	3.63289	6		
GFC	-	-	0.477	Non-stationary	-	-	0.010	Stationary	I(1)
	2.18287	3.61219	1		4.39546	3.62203	4		
LAB	-	-	1.000	Non-stationary	-	-	0.039	Stationary	I(1)
	4.53415	3.56837	0		3.68880	3.57424	4		

Note: Statistical decisions are based on 5% level of significance.

Source: Author's computation.

The ADF test in table 4.2 above indicates that GDP, education, health, defence, investment and labour do not remain constant at their initial levels meaning that they are considered to drift with time. When we differentiate the first time, we get the variables

stabilized which means that there will no longer be any fluctuation in the variables, but they can be analyzed in a consistent and reliable manner. This implies that it is suitable to test the long-run relations and the results of the Johansen cointegration are reliable.

Table 4.3: Johansen Cointegration Test Results

Date: 04/20/26 Time: 18:12
 Sample (adjusted): 2002 2024
 Included observations: 23 after adjustments
 Trend assumption: Linear deterministic trend
 Series: GDP EDU HEL DEF GCF LAB
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
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None *	0.912346	167.5926	95.75366	0.0000
At most 1 *	0.893259	111.6023	69.81889	0.0000
At most 2 *	0.750526	60.14320	47.85613	0.0023
At most 3	0.613251	28.20999	29.79707	0.0753
At most 4	0.218333	6.360441	15.49471	0.6529
At most 5	0.029763	0.694934	3.841466	0.4045

Trace 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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Source: *E-Views 10 output extract.*

Table 4.3 shows that the Johansen trace test shows that there are three (3) cointegrating relationships between GDP, education, health, defence, investment, and labor. This implies that the variables will move in long run, although they may be different in the short run. In

light of this a Vector Error Correction Model (VECM) would be suitable to both describe short run corrections and long run behavior. Nevertheless, the sample size is small and thus the findings are to be treated with caution.

Table 4.4: Vector Error Correction Model (VECM) Test Output

Vector Error Correction Estimates

Date: 04/20/26 Time: 18:51

Sample (adjusted): 2002 2024

Included observations: 23 after adjustments

Standard errors in () & t-statistics in []

Cointegrating Eq:	CointEq1
GDP(-1)	1.000000
EDU(-1)	-271.6128 (83.9726) [-3.23454]
HEL(-1)	1086.739 (107.500) [10.1092]
DEF(-1)	-225.5154 (69.7802) [-3.23180]
GCF(-1)	-1.184775 (1.58652) [-0.74678]

LAB(-1) -0.004628
 (0.00088)
 [-5.26346]

C 275031.4

Error Correction:	D(GDP)	D(EDU)	D(HEL)	D(DEF)	D(GCF)	D(LAB)
CointEq1	-0.006438 (0.02307) [-0.27910]	-2.68E-05 (0.00076) [-0.03530]	-0.001732 (0.00044) [-3.93534]	-0.000885 (0.00084) [-1.05790]	-0.008486 (0.01300) [-0.65265]	-7.743711 (13.9408) [-0.55547]
D(GDP(-1))	0.475798 (0.28405) [1.67505]	-0.004678 (0.00934) [-0.50113]	0.003732 (0.00542) [0.68860]	0.008481 (0.01030) [0.82359]	0.038711 (0.16011) [0.24178]	-229.1556 (171.669) [-1.33487]
D(EDU(-1))	15.24262 (11.0554) [1.37875]	-0.260939 (0.36333) [-0.71819]	-0.436486 (0.21095) [-2.06917]	-0.556409 (0.40079) [-1.38827]	12.19004 (6.23145) [1.95621]	-3458.893 (6681.44) [-0.51769]
D(HEL(-1))	-10.11256 (15.8541) [-0.63785]	-0.317169 (0.52104) [-0.60873]	0.439727 (0.30251) [1.45358]	1.000315 (0.57476) [1.74040]	-9.578448 (8.93631) [-1.07186]	4049.552 (9581.63) [0.42264]
D(DEF(-1))	-16.03897 (8.55865) [-1.87401]	0.698876 (0.28128) [2.48467]	0.383310 (0.16331) [2.34716]	-0.067808 (0.31028) [-0.21854]	-5.418937 (4.82415) [-1.12329]	-2069.437 (5172.52) [-0.40008]
D(GCF(-1))	-0.351923 (0.64680) [-0.54410]	0.017965 (0.02126) [0.84514]	0.020507 (0.01234) [1.66157]	-0.008636 (0.02345) [-0.36830]	-0.205573 (0.36458) [-0.56387]	-26.26007 (390.903) [-0.06718]
D(LAB(-1))	-0.000253 (0.00055) [-0.46201]	7.39E-06 (1.8E-05) [0.41128]	-2.84E-05 (1.0E-05) [-2.72289]	1.06E-05 (2.0E-05) [0.53588]	1.13E-05 (0.00031) [0.03679]	0.511938 (0.33050) [1.54900]
C	2350.384 (1190.40) [1.97445]	4.157642 (39.1217) [0.10627]	49.19766 (22.7140) [2.16597]	-3.442415 (43.1557) [-0.07977]	1021.569 (670.977) [1.52251]	1788693. (719430.) [2.48626]
R-squared	0.424828	0.422042	0.732861	0.356994	0.375864	0.524561
Adj. R-squared	0.156415	0.152328	0.608196	0.056925	0.084601	0.302690
Sum sq. resids	28155938	30410.44	10251.14	37005.20	8945432.	1.03E+13
S.E. equation	1370.059	45.02624	26.14210	49.66904	772.2449	828011.5
F-statistic	1.582738	1.564777	5.878650	1.189707	1.290461	2.364257
Log likelihood	-193.8400	-115.2866	-102.7816	-117.5438	-180.6539	-341.1360
Akaike AIC	17.55130	10.72058	9.633179	10.91685	16.40469	30.35965
Schwarz SC	17.94626	11.11553	10.02813	11.31180	16.79964	30.75460
Mean dependent	2333.531	33.17783	20.66261	32.41217	963.6957	2284727.

S.D. dependent	1491.677	48.90484	41.76438	51.14612	807.1416	991569.9
Determinant resid covariance (dof adj.)	1.72E+31					
Determinant resid covariance	1.32E+30					
Log likelihood	-993.4054					
Akaike information criterion	91.07873					
Schwarz criterion	93.74467					
Number of coefficients	54					

Source: *E-Views 10 output extract.*

IV. DISCUSSION OF FINDINGS

The outcomes of the VECM indicate a long-run equilibrium between human capital variables (education, health, defence, investment and labor) and GDP in Nigeria. This observation is in line with Human Capital Theory and Endogenous Growth Theory and the general body of empirical research.

In the view of the Human Capital Theory, the result that health spending has a positive and significant impact on GDP in the long run supports the notion that people investments directly affect productivity and performance in an economy. This is especially applicable in the Nigerian context whereby enhancement of healthcare would lead to better efficiency of labour, decreased absenteeism rates as a result of illnesses, and a general rise in the productivity of the workforce. This is in line with the main argument of the theory that human capital (education, health, and skills development) investment is translated into greater output, which is also confirmed by other studies, including Awogbemi (2023) and Odey et al. (2025).

Nevertheless, the negative or weak effects of education and labour on GDP observed imply that the productivity gains as predicted by the Human Capital Theory are not entirely achieved in Nigeria. This is a mirror of real-life issues like low quality of education, lack of skills, unemployment among graduates and brain drain which decrease the effectiveness of human capital investment. These results are in line with Ibrahim (2025) and Ovenseri-Ogbomo and Obasuyi (2026) who also reported that the human capital investment in Nigeria does not necessarily lead to commensurate economic returns as a result of structural inefficiencies.

In terms of Endogenous Growth Theory, the findings also indicate the notion of human capital as one of the primary determinants of economic growth in the long run by knowledge accumulation and productivity improvement. The cointegration between GDP, education, health, defence, investment and labor lends credence to the fact that, these variables are all that will define the long run path of growth in Nigeria. This is in line with the theoretical speculation that the long term growth of an economy through long term investment in human capital comes through the increase in innovation potential and economic efficiency as shown in research by Udu (2025) and Goshit and Zumba (2025).

The adverse long-term effect of defence spending on the GDP also contributes to the results of Keji (2025) who has observed that the increasing security threats and military expenditure may crowd out fruitful investments in education and health, thus constraining the growth of the economy. This lends credence to the theoretical implication that loss of resources that could be invested in productive human capital formation may undermine future growth.

The small and inconsequential error correction is a sign of slow adaptation to long-run equilibrium. This is in line with Ojonye and Chidorom (2023) and Amadi (2024) who have found that despite the positive impact of human capital on growth, the transmission process is sluggish because of institutional and structural bottlenecks. This partially questions the optimistic adjustment process as suggested in the Endogenous Growth Theory, and a rather reiteration of the institutional realities of Nigeria, including inconsistent policies, insecurity, and poor institution of governance. As highlighted by Obafemi (2025), these limitations hinder how fast human capital

investments can lead to long-term economic transformation.

V. SUMMARY OF FINDINGS

Based on GDP, education, health, defence, gross fixed capital formation, and labor, this paper explored the correlation between human capital financing and economic growth in Nigeria during the year 2000 to 2024. The unit root test indicated that all the variables are of order one (I(1)) hence they can be analyzed using the cointegration method. The Johansen cointegration test indicated the three long-run equilibrium relationships between the variables. The findings of the Vector Error Correction Model (VECM) showed that the human capital variables were in a stable long-run relationship with economic growth. Health expenditure has positive impacts on GDP in the long run whereas education, defence and labor have negative or mixed impacts indicating lack of efficiency in the use of human capital. The error correction was negative but small and this means that there was a slow movement to the long run equilibrium.

VI. CONCLUSION

The paper finds that human capital finance contributes greatly yet disproportionately to the economic development of Nigeria. Despite the evidence of existence of long-run relationship between human capital variables and GDP, structural and institutional difficulties undermine the expected benefits. The results are highly convincing to the Human Capital Theory and Endogenous Growth Theory which postulates that economic growth in the long run is due to investment in education, health, and skills. The case of Nigeria however is limited due to poor implementation, brain drain, insecurity and poor governance structures. All in all, although human capital is an important growth factor, the full potential of the human resource has not yet been exploited in Nigeria because of the systemic inefficiencies.

VII. RECOMMENDATIONS

Based on the findings, the following recommendations are made:

1. Government needs to focus more on investing in the health sector, and making sure that the resources are utilized effectively since health was discovered to have been the most significant positive influence on economic growth.
2. The education system should be guided by policies that aim to reform the education system through better quality, lessening of skills mismatches and matching of the curriculum with the needs of the labour market to improve the productivity.
3. The job creation strategies should be enhanced in an attempt to curb unemployment and underemployment to enhance the input of labour in economic growth.
4. Defence spending must be well controlled and made more effective to prevent unnecessary allocation of resources which could otherwise be used to promote other productive sectors like education and health.
5. Institutional quality and governance should be enhanced by enhancing accountability, transparency and good policy implementation to make sure that investments in human capital lead to tangible economic gains.
6. Lastly, policies are to be implemented to promote retention of talents and diminish brain drain by coming up with incentives that can encourage skilled workers to stay in the country and build the country.

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