

## The Impact of Human Capital Development on Economic Growth in Nigeria (1981-2018): An Empirical Analysis

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### ABSTRACT

The Impact of Human Capital Development on Economic Growth in Nigeria was done. The objective of the study was to determine the impact of human capital development on economic growth in Nigeria for the period 1981 - 2018. In specifying the model, an endogenous growth model was adopted in measuring the relationship between Gross Domestic Product (dependent variable) and the explanatory variables (capital stock, labour force, government expenditure on education, government expenditure on health and interest rate). The variables were tested for Stationarity using the Augmented Dickey-Fuller Unit Root Test. All the time series variables were stationary at levels except interest rate. The Engle-Granger cointegration technique was done to confirm the claim of long run relationship among the time series. The result of the Error Correction Model indicates that government expenditures on health and education (human capital development) were not statistically significant in determining economic growth ( $P(t) = 0.9071$  and  $0.7121$ ). The study discovered no causality relationship running from economic growth to government investment on health ( $P(F) = 0.1078, 0.7871, 0.0710$  and  $0.8245$ ). The study recommends that closer monitoring of education and health expenditure should be intensified. There is a need to increase budgetary spending on human capital investment in order to elicit higher growth potentials of the economy.

Keywords: Human, capital, development, expenditure on education, government and expenditure

### INTRODUCTION

Over the past four decades, various studies have affirmed the role of investment in human capital on economic growth [1, 2, 3]. Human capital as an economic term encompasses health, education and other human capacities that can raise productivity [4]. [5], posits that human capital is a very vital and valuable asset which needs to be mobilized. [6], describes capital and natural resources are passive factors of production while human resources are active factors of production. Human capital constitutes the most valuable resource of a country; in its absence there will be the non-performance of physical capital (tools, machinery, and equipment) which will impede economic growth [7]. Health and education are two closely related human (resource) capital components that work together to make the individual more productive. One

component cannot be considered important than the other [8]. Health connotes the ability to lead a socially and economically productive life [9, 10, 11, 12]. A healthy populace will be highly productive and the educated have the tendency to apply a degree of sophistication in the production process. Investment in human capital prepares people for participation in the political processes, particularly as citizens in a democratic society. From the social, economic and cultural points of view, human capital development helps to lead fuller and richer lives, less bound by tradition. It is a way to empower people; this in turn will help them contribute substantially to the growth process in the economy [13]. Human capital investment is crucial in the growth process of the Nigerian economy. Vision 2020 seeks to improve the educational system in terms

of access, equity, infrastructure, teacher quality, and cumulative relevance, funding and planning. The millennium development goals (MDGs) slated to be fully achieved in 2015 also places emphasis on human capital. As a result of this, this research work will greatly explore the contribution of health and education in the growth process of Nigeria. The concept of investment in human capital is not so new and so recent in social and economic discuss. The classical and neoclassical economists point out that in the process of economic growth, more priority is accorded to the accumulation of physical capital [14]. However, with the emergence of the new endogenous growth theories in the 1980s, the active role played by human capital in the growth of economies began to emerge. Human capital is the term economists often use for education, health, and other human capacities that can raise productivity when increased [15]. Health and education are two closely

#### **Statement of the Problem**

Nigeria is a developing economy whose GDP has been growing over the past decades. However, this increasing GDP has not been translated into improvement in the quality of lives of its citizens. The government in its annual budget claims to spend huge amount of money in providing education, health and training for the citizens. However, figures given by statistics show a deplorable condition as it relates to the progress in education, healthcare and training. This bad scenario is manifested in the increasing level of poverty, unemployment, low life expectancy, high infant, mortality rate and poor performance of other welfare indicators. Most of the indices of human welfare which incorporate income on education and health show that Nigeria's level of human development is low compared with several other countries in the African regions. Of great concern is the deterioration in the quality of education services at all levels, especially

related human capital components that work together to make the individual more productive [8]. Lack of funding is the major problem of human capital. This has led to shortage of skilled personnel, unemployment and above all poverty. There can be no significant growth in any country without adequate investment in human capital. A typical example is the Asian tigers; Taiwan, Singapore; whose economies experienced sharp improvements via substantial investment in human capital. The trend of life expectancy in Nigeria has not followed a smooth and increasing pattern between 1982 and 2000. However, there was a gradual sharp increase between year 2001 and 2012. This began to drop around year 2013 up till 2015. Factors like ravaging diseases, hunger and insecurity in the land may be said to have accounted for this. As a result of the foregoing, there is a need to examine the impact of human capital on economic growth in Nigeria.

the higher education levels where persons are trained to take up leadership roles in science, technology, management and [4]. Human capital formation in Nigeria is poor. Human capital must be developed to achieve meaningful economic growth. Strategies and priorities towards sustained human development, efficient investment in human capital and effective manpower planning and utilization policies need to be put in place by the government. This would in its way ultimately excite growth that will allow the nation and the people to progress and achieve the required economic turnaround [9]. This under optimal level of human capital formation in Nigeria has affected both economic growth and development and has created a problem to be examined. It is against this problem that this study aims to determine the impact of human capital (education and health expenditures) on economic growth in Nigeria.

#### **Research Question**

i. To what extent does human capital development on education impact on

economic growth in Nigeria? ii. To what extent does human capital development

on health impact on economic growth in Nigeria? iii. What is the direction of causality between human capital

development measures and economic growth in Nigeria?

**Objectives of the Study**

The overall objective of this study is to determine the impact of human capital development on economic growth in Nigeria. Specifically, this study is designed to:

- i. To determine the impact of human capital development on education on economic growth in Nigeria.
- ii. To determine the impact of human capital development on health on economic growth in Nigeria.
- iii. To ascertain the direction of causality between human capital measures and economic growth in Nigeria.

**Hypotheses of the Study**

- i. Ho<sub>1</sub>: Human capital development on education does not impact economic growth in Nigeria.
- ii. Ho<sub>2</sub>: Human capital development on education does not impact economic

- growth in Nigeria.
- iii. Ho<sub>3</sub>: There is no causality relationship between human capital measures and economic growth in Nigeria.

**METHODOLOGY**

**Research Design**

This research adopts the *Ex-Post Facto* research design. In this context, the phrase "after the fact" or "retrospectively" refers to those studies which investigate possible cause-and-effect relationship by observing an existing condition or state of affairs and searching back in time for plausible causal factors. In this type of design, the independent variable or variables have already occurred and in which the researcher starts with the

observation of a dependent variable or variables. This type of design establishes a causal link between the dependent and the independent variables. The researcher has no control over the variables under study simply because they have already been manipulated before they were applied in this study. From the foregoing, this present study examines and anchors its analysis on already published data.

**Method of Data Analysis**

The diagnostic tests of the time series data were conducted using the Augmented Dickey-Fuller Unit root test of Stationarity and Johansen cointegration. The method of analysis was the OLS method. Since in the literature, it has been shown that the regression analysis through OLS could be spurious, it is very important to check the variables used of

Stationarity. The long-run stability of the variables used was tested by making use of the Unit-root test. The cointegration test was also performed to detect whether the variables move along the same path in the long-run. Existence of cointegration is a pre-condition for Error Correction Modeling

**.Model for Estimation of Hypotheses I and II**

The Error Correction Model was also specified to estimate the long run growth-human capital equation and shown below: The Error Correction Model for the above linear equation is stated as

$$\Delta LGDP_t = \beta_0 + \beta_1 \Delta LKS_t + \beta_2 \Delta LLBF_t + \beta_3 \Delta LGXE_t + \beta_4 \Delta LGXH_t + \beta_5$$

Where  $\Delta$  is the first difference operator,  $ECM_{t-1}$  is the error correction term coefficient

**Model for Estimation of Hypotheses III**

The Granger Causality Model was employed for estimating the model for hypothesis three which seeks to

determine the causality relationship between economic growth human capital components in Nigeria.

**Sources of Data**

Time series data spanning from 1981-2018 were used for the regression analysis. The data were obtained from the

Central Bank of Nigeria Statistical Bulletin 2018 online edition.

**Econometric Software**

The study used Eviews 9 software for the data analysis. The package has

the necessary tools to estimate the model.

**RESULTS AND DISCUSSION**

**Unit Root Tests**

This section presents the result of the data investigation. It starts with the presentation of the result of the

diagnostics test: the unit root test for Stationarity and the cointegration tests.

**Table 1: Result of ADF Unit Root Test for Stationarity**

Variables	ADF t-statistic	5% Critical Value	Decision	Order of Integration
<i>LGDP</i>	-3.395063	-2.945842	Stationary	1(1)
<i>LKS</i>	-6.283497	-2.945842	Stationary	1(1)
<i>LLBF</i>	-4.621537	-2.945842	Stationary	1(1)
<i>LGXE</i>	-7.672065	-2.945842	Stationary	I(D)
<i>LGXH</i>	-9.991945	-2.945842	Stationary	1(1)
<i>INT</i>	-3.030411	-2.951125	Stationary	1(0)

**Source: Author's Eview Computations**

Table 1 above shows the result of the unit root test for Stationarity. The result of the Augmented Dickey Fuller unit test indicate s that all the time series variables are stationary at first difference, except the rate of interest (INT). This implies that these variables which were not integrated at levels contain unit root. Therefore,

there is need to check if all these variables can co-move together in the long run.

The Engle-granger cointegration Analysis cointegration test was done and presented in

Table 2 below:

**Cointegration Test**

**Table 2: Engle-Granger Cointegration Result**

Null Hypothesis: ECM has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, max lag = 9)

		t-Statistic
<b>Prob.*</b>		
<b>Augmented</b>	Dickey -Fuller test	
<b>Statistic</b>		-3.313113 0.0016
<b>Test</b>	Critical	
<b>Values:</b>	1% level	-2.628961
	5% level	-1.950117
	10%	
	Level	-1611339

In deciding the existence of cointegration, we compare the absolute value of the ADF t-statistic and the e% critical value. The absolute value of the ADF t-statistic exceeds the 5% critical value (-3.313113 >

-1.950117), therefore, cointegration exists. This implies a long run equilibrium relationship among all the time series variables.

**Regression Results of Model Estimation****Result of Model Estimation for Hypotheses I and II****Table 3: Result of Error Correction Model Analysis**

Dependent Variable: D(D(LGDP))

Method: Least Squares

Sample (adjusted): 3.38

Variable	Coefficient	Std. Error	t-Statistic	Prob,
D(D(LKS))	-0.059288	0.037609	-1.576457	0.1258
D(D(LLBF))	-2.642319	1.024886	-2.578159	0.0153
D(D(LGXE))	-0.001516	0.012872	-0.117764	0.90 <sup>v1</sup>
D(D(LGXH))	0.004075	0.010936	0.372623	0.7121
D(D(INT))	8.92E-05	0.001403	0.063567	0.9498
ECM(-1)	-0.189275	0.072352	-2.616029	0.0140
C	-0.000275	0.005703	-0.048160	0.9619
R-squared	0.422325	Mean dependent var		0.001031
Adjusted R-squared	0.302806	S.D. dependent var		0.040893
S.E. of regression	0.034145	Akaike info criterion		-3.743720
Sum squared resid	0.033811	Schwarz criterion		-3.435813
Log likelihood	74.38695	Hannan-Quinn criter.		-3.636252
F-statistic	3.533540	Durbin-Watson stat		2.066462
Prob(F-statistic)	0.009516			

*Source: Author's Eview Computations*

The result of the parsimonious error correction model is presented in Table 3. Jointly, all the explanatory variables are significant at 5 per cent. Individually, all the explanatory variable are not statistically significant, except labour force (LLBF) with a probability coefficient that is less than 5%. The relationship between capital stock and economic growth is negative. This outcome is against a priori expectation. The result shows that 1 per cent increase in capital stock leads to 0.05 per cent decrease in economic growth over the period under study. This could mean the investment in capital stock in the economy is counter-productive. Could it mean that the

machines are obsolete, or that are not put to effective use. The answer remains unknown unless further research proves otherwise. Surprisingly, the relationship between labour force and economic growth is negative. This outcome failed to meet economic expectations. The result indicates that one per cent increase in labour force, leads to a 2.64 per cent decline in national output. This is surprising. However, one explanation that could be adduced to this outcome is that the quality of the labour force in Nigeria is low. When such is the case, the contribution of labour force will not be positive in determining economic growth.

The relationship between education expenditure and economic growth is negative. This does not meet economic criterion. One percent increases in public expenditure leads a 0.05 decrease in national output. This outcome is not statistically significant at 5 per cent. This could imply that the money spent on education are not productively spent on the purpose they were meant for. They may have been put to other uses that were not productive. Therefore

authorities should track the use of such funds and ensure they are put to appropriate use. There is a positive relationship; between expenditure on health and economic growth. One per cent increase in health expenditure leads to 0.0041 per cent increase in national output. This outcome is not statistically significant at 5%. This implies that if the amount meant for health expenditure increases, it will be significant in determining economic growth positively.

**Result of Model Estimation for Hypotheses III**

**Table 4.: Result of Granger Causality Test**

Pairwise Granger Causality Tests

Sample: 1981 2018

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LGXE does not Granger Cause LGDP	36	2.46181	0.1018
LGDP does not Granger Cause LGXE		0.24128	0.7871
LGXH does not Granger Cause LGDP	36	2.88431	0.0710
LGDP does not Granger Cause LGXH		0.19419	0.8245

**Evaluation of Working Hypotheses**

Ho<sub>1</sub>: Human capital development on education does not impact economic growth in Nigeria.

*Decision Rule:* Reject the null hypothesis if the probability value of the computed t-statistic is less than 0.05 critical value, otherwise, do not reject.

*Conclusion:* From Table 4 the probability value of the t-statistic (0.9071) is greater than the 0.05. Therefore, the null hypothesis is rejected. It is concluded that human capital expenditure on education has no significant impact on economic growth in Nigeria.

H0<sub>2</sub>: Human capital development on education does not impact economic growth in Nigeria.

*Decision Rule:* Reject the null hypothesis if the probability value of the computed t-statistic is less than 0.05 critical value, otherwise, do not reject. *Conclusion:* From Table 4 the probability value of the t-

statistic (0.7121) is greater than the 0.05. Therefore, the null hypothesis is rejected. It is concluded that human capital expenditure on health has no significant impact on economic growth in Nigeria.

Ho<sub>3</sub>: To ascertain the direction of causality between human capital measures and economic growth in Nigeria

*Decision Rule:* Reject the null hypothesis if the probability value of the computed F-statistic is less than 0.05 critical value, otherwise, do not reject. *Conclusion:* In Table 4.4, the probability values of the F-statistic for the four null hypotheses (0.1078, 0.7871, 0.0710 and 0.8245) were all above 0.05 critical values. Therefore, it is concluded that there is no causality relationship between human capital expenditure on health and education and economic growth in Nigeria over the period under study.

**Discussion of Findings**

Table 3 above presents the result of the parsimonious error correction model for

the human capital-growth equation. In terms of individual significance of the



regression coefficients, government expenditure on education (LGXE) and government expenditure on health (LGXH) were not statistically significant in determining economic growth over the period under study, since their t-statistic values (0.90711 and 0.7121) lies above 0.05 critical values. Though, government expenditure on education was negatively related to economic growth, while government expenditure on health was positively related to economic growth. This outcome agrees with findings by Adeyemi and Ogunsola (2016) whose finding showed that public expenditure on education has insignificant statistical impact on economic growth. The finding by Dauda (2011) supports does not the present finding on the basis of a positive relationship between government expenditure on education and economic growth. Dauda (2011) disagrees with the present finding that public expenditure on education exerts statistically significant impact on economic growth. However, the present study enjoys the support of Jaiyeoba (2015) who claims that public expenditures on education and health, were not statistically significant in

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determining economic growth in Nigeria. This present finding agrees with the claim by Atoyebi *et al.* (2013) that human capital expenditure on health impacts economic growth positively. Supporting this same stance is the result of the study by Eigbiremolen and Anaduaka (2014). Private capital stock (KS) was also not statistically significant in determining economic growth during the period under study. This present finding agrees with Adeyemi and Ogunsola (2016) which found a significant relationship between gross fixed capital formation and economic growth. The Error Correction term indicates that the speed at which the economy is restored back to its original equilibrium after a shock is 18.93%. This measure was not very high, it is statistically significant, and meets apriori expectation as a result of its negative sign. Table 4 above presents the result of the pairwise Granger causality analysis which follows F-distribution at 5% significant level. The result indicated that causality result does not exist between GDP, government expenditure on health, and education.

## CONCLUSION AND RECOMMENDATIONS

### Summary of Findings

The following are summarized as the findings in this study as with regards to their impact on economic growth: Government expenditure on education was negative statistically insignificant in determining economic growth over the period under study ( $P(t) = 0.9071$ ). Government expenditure on health was

positive, but not statistically significant in determining economic growth over the period under study ( $P(t) = 0.7121$ ). There is no causality relationship between human capital variables and economic growth over the period under study ( $P(F) = 0.1078, 0.7871, 0.0710$  and  $0.8245$ ).

### CONCLUSION

This study was set out to determine the impact of human capital investment on economic growth in Nigeria for the period 1981 - 2018. After an extensive review of related literature, the Human capital theory was adopted as the theoretical framework for the study. In specifying the model, an endogenous growth model was adopted in measuring the relationship between Gross Domestic Product (dependent variable) and the explanatory variables (capital stock, labour force, government expenditure on education, government expenditure on health and

interest rate. The variables were tested for Stationarity using the Augmented Dickey-Fuller Unit Root Test. All the time series variables were stationary at levels except interest rate. The Engle-Granger cointegration technique was done to confirm the claim of long run relationship among the time series. The result of the Error Correction Model indicates that government expenditures on health and education (human capital development) were not statistically significant in determining economic growth ( $P(t) = 0.9071$  and  $0.7121$ ). The study discovered



no causality relationship running from economic growth to government

investment on = 0.1078, 0.7871, 0.0710 and 0.8245).

### RECOMMENDATIONS

In view of the above finding and their implications, the following recommendations become imperative. The study has shown that government expenditure on education does not amount to productivity. This means that such funds are either squandered or misappropriated.

The Government should increase not just monitor the amount of expenditure made on the education and health sectors, but also the percentage of its total

expenditure accorded to these sectors. There is the need for a legislative framework that would mandate every level of government in Nigeria to devote at least 25% of its annual budget to finance education and health programmes.

Government should give tax holidays to private sectors to encourage the increase investment in education and health sectors.

### REFERENCES

1. Adawo, M. A (2011). Has education (human capital) contributed to the economic growth of Nigeria? *Journal of Economics and International Finance* 3(1); 46-58.
2. Adebisi M. A. (2006) Public education expenditure and defense spending in Nigeria: An empirical investigation. *Journal of Science and Technology Education Research* 2(3)62-74.
3. Adeyemi, P. A & Ogunsola, A. J. (2016). The impact of human capital development on economic growth in Nigeria: ARDL Approach. *Journal of Humanities And Social Science* 21(3); 01-07.
4. Aigbokhan, B.; Imahe, O.& Ailemen, M.I. (2007). Education expenditure and Human capital development in Nigeria: Any correlation so far. *Research Paper*, Ambrose Alii University, Ekpoma, Nigeria
5. Aguayo-rico, A., Guerratarrabiates, I. A., & De Ocahernandez, R.M. (2005). Empirical evidence of the impact of health on economic growth. *Issues in political economy*, 14 ,1-17. Retrieved from <http://org.elon.edu/ipe/Vol%2014%202005>.
6. Jaiyeoba, S.V (2015). Human capital investment and economic growth in Nigeria. *An International Multidisciplinary Journal, Ethiopia* 9(7):30-46.
7. Jhingan, M.L. (2005). *The Economics of Development and Planning*. Delhi: Vrinda Publications (P) Ltd
8. Kerlinger, F. N. (1970). *Foundations of Behavioral Research*. New York: Holt, Rinehart & Winston.
9. Lawanson, O. I. (2009). Human capital investment and economic development in Nigeria: The role of education and health. *Oxford Business & Economics Conference Programme*.
10. Leeuwen, B. V.(2007). *Human Capital and Economic Growth in India, Indonesia, and Japan; A Qualitative Analysis 1890-2000*, Doctoral Thesis, Utrecht University.
11. Mincer, J. (1958). Investment in human capital and personal income distribution. *Journal of Political Economy*, University of Chicago Press, 66, 28 Ip
12. Nakamura, J.I.(1981). Human capital accumulation in pre-modern rural Japan,' *The Journal of Economic History*, 14; 263-281.
13. Oboh J. S.; Ismail, R.; & Shaari, A.H. (2010). The impact of human capital development on the economic growth of Nigeria. *Presiding Perkem V, Jilid 1* 63-72

14. Ogujiuba, K. (2013). The impact of human capital formation on economic growth in Nigeria. *Journal of Economics*, 4(2); 121-132
15. Okojie, C.E. (1995). Human capital formation for productivity growth in Nigeria. *Economic and Financial Review*. June pp. 44-5.