

## Human Capital Development and Economic Growth: The Nigeria Evidence

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### Abstract

*The impact of human capital development on economic growth cannot be over-emphasized. Evidence has shown that human capital is one of the major factors that drive economic growth. This paper examines the relationship between human capital development and economic growth in Nigeria between 1980 and 2017. The study adopts Autoregressive Distributed Lag (ARDL). The variables economic growth and secondary school enrolment are statistically significant in the short run. Also, in the long run analysis, secondary school enrolment and life expectancy are significant determinants of economic growth. Therefore, the study recommends that government should comply with the 26% bench mark of UNESCO recommendation on education and proposal by WHO of 5% national income allocation to health. For Nigeria to benefit from investment in human capital, the government should embark on infrastructural development in education and health sectors and provide enabling environment through macroeconomic stability.*

**Keywords:** Economic Growth; Health and Education; Human Capital Development; Nigeria.

### Introduction

Research interest in human capital development and economic growth in Nigeria is rife (Adeyemi & Ogunsola, 2016; Jaiyeoba, 2015; Ogujiuba, 2013; Adelakun, 2011). This is because the quality of human resource of a nation has a significant impact on her economic growth since no nation can attain meaningful economic growth without proper and adequate human capital development. Hence, human capital is seen as one of the most valuable assets of an economy.

Human capital development is the process of acquiring and increasing manpower skills, education, training and experience for economic growth and development. Similarly, human capital development is a human factor in the production process that consists of the combined knowledge, skills or competence and capability of workforce (Ejere, 2011). Human capital remains one of the factors of production that is capable to learn, adapt and creative. Therefore, investment in human capital in Nigeria is critical since it would help in ensuring that the nation's manpower is highly knowledgeable, skilled and healthy enough for economic growth. Availability and improvements in education and health services to the people gives room for healthy and well-trained personnel readily available for the nation's consumption (Bloom & Canning, 2003).

On the other hand, economic growth in Nigeria is of great concern to policy makers, researchers and captain of industries especially now that analysts and experts, including the Governor of Central Bank of Nigeria, Mr Godwin Emefiele in one of his public lectures titled: *Beyond the global financial crisis: monetary policy under global uncertainty* warned Nigerians to brace-up for another likely global economic crisis through reduction in unemployment rate, along with vibrant monetary and fiscal policy (Emefiele, 2019). It was further reported that Nigeria has experienced improvement and stability in economy by introducing investors and exporters window which hitherto helps in shoring up the country external reserve from \$23 billion in October, 2016 to \$45 billion in April, 2019 (Emefiele, 2019). Nigeria is a middle-income country, operating a mixed economy with robust financial, communication, manufacturing, services, and entertainment sectors. Nigeria remains the largest economy in Africa with a GDP of \$1.121 trillion, leading other countries in Africa continent with production of substantial proportion of goods and services in West African communities (PwC report, 2019). As opined by Hadir and Lahrech (2015) attaining high productivity and economic growth in both developed and developing

economies is a product of human capital development. Therefore, Nigeria as a nation must as a matter of necessity make education affordable, provides accessible health facilities for her teeming population, design an inclusive curriculum, provides incentives for the prevention of brain drain among her talents, and collaborate with private sector to support job creation for the attainment of economic growth.

The high rate of illiteracy, inadequate skills, knowledge and poor access to medical facilities in Nigeria often bring about low productivity, low income, low investment and low capital formation (Adeyori & Fajebi, 2018; Ogunjiuba, 2013). There exists several studies on the relationship between human capital development and economic growth across the globe (Md, Mohammed, Nezum & Shamim, 2018; Osoba & Tella, 2017; Jaiyeoba, 2015; Wakeel & Alani, 2012; Adelakun, 2011; Oluwatobi & Ogunriola, 2011; Ortigueira & Santos, 1997; Robelo, 1991) but most of these studies measured human capital development using variables of education, welfare, and health while some applied training, research and development. Therefore, this current study robustly employed health and education as the most important variables of human capital development in 21<sup>st</sup> century.

Similarly, the lack of consensus among researchers wherein some reported significant or non-significant relationship between human capital development and economic growth in Nigeria motivated further research in this discourse. For instance, Osoba and Tella (2017), Eigbiremolen and Anaduaka (2014), Wakeel and Alani (2012) Oboh, Rahman and Abu (2010) in their studies reported significant relationship while Uzodigwe, Umeghalu and Ozoh (2019), Jaiyeoba (2015), Ogunjiuba (2013) and Lawanson (2009) reported non-significant relationship. In other to fill this gap, this current study examined human capital development and economic growth in Nigeria with a view to adding to existing literature.

The major thrust of this study is to examine the relationship between human capital development and economic growth in Nigeria using new-fangled variables of health and education on economic growth. In addition to the abstract and introduction, this paper is structured as follows: literature review, methodology, result and discussions, conclusion and recommendation.

### **Literature Review**

Human capital development is the process of acquiring and increasing the numbers of people who have the skills, education and experience that are critical for the social-economic development of a country (Harbison, 1962). Therefore, human capital development can be link with the investment in human beings and their development as the agents of productivity and creativity. No economy develops without skilled human resource to drive growth. Hence, Nigeria must prioritise human capital development for via health and education for the attainment of economic growth (Zaka, 2019). For the purpose of this study, the two key parameters to measure human capital formation are education and health. It is unfortunate that Nigeria, as a country has performed below expectation in these areas. Both the education and health sectors are underfunded by successive government while the little fund allocated to these sectors were mismanaged. Capital flight continues to dominate these two sectors of Nigerian economy all in the name of medical and education tourism, and most of her professional jets out of the country at the slightest opportunity to seek greener pastures.

Nigeria is a middle-income country, operating a mixed economy. It is an emerging market with robust financial, communication, manufacturing, services, and entertainment sectors.

Nigeria is the largest economy in Africa Nigeria with a GDP of \$1.121 trillion, the country leads other countries in Africa continent and produces substantial proportion of goods and services in West African communities (PwC report, 2019). The economy experienced resources mismanagement while the current economic reforms and policies such as ease of doing business action plan, new national tax policy, power sector recovery programme, revised national health policy, national gas policy and whistle blowing policy which helps to put the economy back on track in achieving her developmental potentials.

Uzodigwe *et al.* (2019) examined the relationship between human capital development and economic growth in Nigeria between 1980 and 2015. The study adopted ordinary least square (OLS) for the analysis and the findings showed a positive relationship between labour, government expenditure on education, government expenditure on health and economic growth in Nigeria while the enrolment into primary, secondary and tertiary institutions showed negative relationship. Md *et al* (2018) investigates the relationship between human capital development and economic growth in Bangladesh using Unit root test, Johansson co-integration test and ordinary least square technique in data analysis. The study found significant positive relationship between the variables of human capital development and gross domestic product per capital.

Ogunleye, Owolabi, Sanyaolu and Lawal (2017) examined human capital development and economic growth in Nigeria using annual time series data between 1981 and 2015. The results showed the indicators of human capital development (secondary school enrolment, tertiary school enrolment, total government expenditure on health and total government expenditure on education) have positive and statistically significant impact on economic growth in Nigeria. However, life expectancy and primary enrolment showed negative and statistically insignificant relationship with economic growth in Nigeria.

Osoba and Tella (2017) observed human capital and economic growth in Nigeria for the period of 1986-2014 using secondary data. Fully modified ordinary least square technique was employed and the results showed a positive relationship between human capital development variables (education expenditure, health expenditure, gross capital formation) and real gross domestic product. In addition, Adeyemi and Ogunsola (2016) carried out an empirical investigation on human capital development and economic in Nigeria between 1980 and 2013. ARDL co-integration analysis was adopted in estimating the relationship among the variables and the result showed a positive long run relationship among secondary school enrolment, public expenditure on education, life expectancy rate, gross capital formation and economic growth while there is negative long run relationship among primary, tertiary school enrolment, public expenditure on health and economic growth.

In the study of Jaiyeoba (2015), the relationship between human capital development and economic growth in Nigeria from 1982 to 2011 was examined using the trend analysis, Johansson co-integration and ordinary least square techniques. The results showed a long-time relationship between government expenditure on education, health and economic growth. Also, expenditures on education and health, secondary and tertiary enrolments and gross capital formation showed a positive relationship and are statistically significant except government expenditure on education and primary enrolment which negate the apriori expectation.

Egbiremolen and Anaduaka (2014) investigated the impact of human capital development on economic growth in Nigeria using quarterly time series data from 1999 to 2012. It was found that human capital development variables (gross total capital formation, secondary school enrolment, total labour force, government total expenditure on education) exhibit significant positive impact on the national output. Ogujiuba (2013) similarly examined the impact of human capital formation on economic growth in Nigeria using error correction model as an analytical tool. Secondary data were used and the results showed that positive relationship exists between education, capacity building at the primary and secondary schools and economic growth while capital expenditure on education was insignificant to the growth process.

Wakeel and Alani (2012) investigated the relationship between human capital development and economic growth in Nigeria. The estimated regression and descriptive statistical analysis of trends of government commitment to human capital development showed that little attention was given to health sector compare to education and the result further revealed that both health and education components of human capital development are crucial to economic growth. Oluwatobi and Ogunrinola (2011) empirical

examined the impact of government expenditure on human capital development and economic growth in Nigeria. The data used for the study were from secondary source and Augmented Solow Model was adopted and the result revealed positive relationship between government recurrent expenditure on human capital development and the level of real output while capital expenditure has a negative relationship on the level of real output.

Adelakun (2011) also conducted a research to examine the relationship between human capital development and economic growth in Nigeria. Ordinary Least Square analysis was employed and the findings showed a positive relationship between human capital development and economic growth. Oboh *et al* (2010) reported the effect of human capital development on economic growth in Nigeria between 1970 and 2008. Co-integration technique and vector error analysis were used and the result showed that human capital development has a significant impact on economic growth in Nigeria. Lawanson (2009) assessed the impact of human capital investment on economic growth in Nigeria and found that human capital has a positive relationship though government expenditure on health and primary school enrolment negate the apriori expectation.

Researchers have carried out studies on relationship between human capital development and economic growth based on the existing economic theories that link human capital development with economic growth. Such theories include endogenous growth theory, neoclassical growth theory, dependence theory and many more. However, this study adopts Endogenous growth theory as the theoretical framework. This growth theory holds that economic growth is primarily the result of endogenous and not external forces. The theory says investment in human capital, knowledge and innovation greatly contribute to economic growth. It primarily holds that the long run growth rate of an economy depends on policy measures. Some economic growth theorists in the mid-1980s became dissatisfied with common accounts of exogenous factors that determine the long run growth. They replaced the exogenous growth variables with a model in which the key determinants of growth were explicit in the model. Paul Romer (1986), Robert Lucas (1988), Robelo Sergio (1991) and Ortigueira and Santos (1997) removed technological change and replaced it with human capital which had a spillover effect on the economy.

The AK model provides a constant-savings rate of endogenous growth and assumes a constant, exogenous, saving rate. Endogenous growth is also supported with models that the factors determined the consumption and saving, modeling the resources allocation to research and development leading to technological progress. Romer (1987; 1990) and the contributions researchers like Aghion and Howitt (1992) and Grossman and Helpman (1991), incorporated imperfect markets and research and development (R&D) to the growth model.

The AK model production function is a special case of a Cobb-Douglas production function:

$$Y = AK^\alpha L^{1-\alpha}$$

This is a Cobb-Douglas function. Y represents total factor of production, K is capital, L is labour and  $\alpha$  measures the output elasticity of capital. A research conducted by World Bank (2010) shows that Nigeria has difficulties in growing her economy while trying to turn the economy to knowledge-based economy because of numerous challenges facing her education sector. Some of the challenges are poor funding, corruption, inadequate infrastructure, obsolete method of teaching, inadequate research and development, brain drain.

There are numerous problems facing Nigerian education system. COLI (2001) examined the major problem which includes blending new knowledge into academic courses and programmes. The system finds it difficult to embrace new knowledge and discoveries, comfortable with the obsolete knowledge. Poor funding and corruption are also part of challenges facing education and health sectors of Nigerian

economy. The 6odeli resources allocated to these sectors are not enough to carry out research and development (R&D) needed to facilitates the creation of knowledge to drive the economy or end up in the pockets of corrupt officials.

### Methodology

Co-integration among variables shows the existence of stationarity among time series; although the series might not be stationary individually. To put differently, the variables of economic growth and human capital development are reported to be co-integrated if they are individually integrated of order one or of mixed order of one, I(1), and zero, I(0),. The possibility of cointegrating relationship between fundamental metrics and valuation indices is a necessary condition to avoid spurious regression. When the unit root with linear trend was tested, the results showed order of I(1) variables, the study therefore adopts Autoregressive Distributed Lag (ARDL) following the works of Pesaran, Shin & Smith (2001). This method allows for mixed order of series for investigating the long run relationship. The method therefore yields unbiased, consistent and correct estimates even in the presence of small sample dataset and endogeneity issues. This helps in investigating simultaneously both short and long run relationships. Following Pesaran *et al.* (2001) methodology, the empirical model on the relationship between human capital development and economic growth is self designed and specified functionally as follows:

$$GDP = f(LEXP, EXPHEL, PRYENR, SCHENR, TERENR)$$

The model, in its explicit (linear) form, is specified as:

$$GDP = \alpha_0 + \beta_1 LEXP + \beta_2 EXPHEL + \beta_3 PRYENR + \beta_4 SCHENR + \beta_5 TERENR + \mu$$

Where:

*GDP* = Gross Domestic Product (Annual percentage)

*LEXP* = Life Expectancy

*EXPHEL* = Total Government Expenditure on Health

*PRYENR* = Primary School Enrolment

*SCHENR* = Secondary School Enrolment

*TERENR* = Tertiary School Enrolment

$\mu$  = Error Term

$\alpha$  = Regression Constant

$\beta$  = Regression Coefficient

Apriori expectation =  $\beta_1, \dots, \beta_5 > 0$

### Results and Discussions

Before looking at the econometric results on the relationship, it is pertinent to examine the stationarity properties of the variables in the model to determine the appropriate technique for the analysis. This study employs time series unit root test of Augmented Dickey–Fuller for unit root test. The paper investigates the unit root properties of the variables using linear trends and unit root with linear trend models. The results of the unit root without linear trends show a combination of I(0) and I(1) variables while the results of the unit root with linear trend show that the variables GDP, TERENR, LEXP, EXPHEL,

SCHENR, and PRYENR are stationary at first differencing . To conserve space, the author reports the results of the unit root with linear trend. The results for the unit root without trend are available from the author on demand.

Table 1: Unit Root Test of the Variables

Variables	Level	First Difference
GDP	-4.243644	-4.234972***
LEXP	-3.540328	-3.540328**
EXPHEL	-4.667883	-4.728363***
SCHENR	-3.622033	-3.632896**
TERENR	-3.791172	-3.933364**
PRYENR	-3.562882	-3.568379**

\*\*\*1%, \*\*5%, and \*10%, significant levels

Source: Author's Computation (2019)

#### Autoregressive Distributed Lag (ARDL) Bound Test Result

The bound test enables us to test long run dynamic relationship among the variables in ARDL modeling approach. Wald test result analysis following Pesaran and Pesaran (1997) procedure, we estimated ARDL with Wald test (F- statistics) to test for joint (overall) significance of the co-efficient of all the variables. The rule is that if computed F-statistics falls below the lower bound value  $I(0)$ , it shows there is no long term relationship. Otherwise, if the computed F-statistics exceeds the upper bound value,  $I(1)$  and the lower bound, it indicates that there is long run relationship. If the Computed result falls between the lower and upper bounds, the test is inconclusive. This is in line with Pesaran *et al.* (2001) that in the case of inconclusive report, investigation may be based on short-run analysis.

Table 2 – Wald Bounds Test of Presence of Co-integration in ARDL

Test Statistics	Value	K
Calculated F-Statistics	4.45130	5
5%	2.62	3.79

Source: Author's Computation, 2019

The Table 3 reveals that F-statistics is 4.45130 which exceeds the upper bounds at 5% critical value and this implies that there is evidence of long run relationship. Therefore, the paper can proceed to ARDL Error Correction Model. The investigation would be based on short-run analysis and long-run analysis of ARDL to determine the dynamic relationship. The ECM of the ARDL model is sufficient to determine the long-run relationship among the variables. Table 3 reveals that in the short-run, economic growth (GDP) and secondary school enrolment are statistically significant at 1% while other variables are insignificant. Table 4 also show that both secondary school enrolment (SCHENR) and life expectancy

(LEXP) are significant at 5% level of significant in the long run while other variables are statistically insignificant.

Table 3: ARDL short-run dynamic analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30.94884	58.88341	0.525595	0.6035
GROWTH (-1)*	-0.546734	0.190932	-2.863499	0.0080
EXPHEL**	-1.355157	0.899005	-1.507396	0.1433
LEXP**	0.749090	1.372379	-0.545833	0.0897
PRYENR**	-0.040911	0.118489	-0.345270	0.7326
SCHENR (-1)	0.519324	0.178437	2.910412	0.0071
TERENR**	-0.358124	0.301394	-1.188227	0.2451
D(GROWTH (-1))	-0.308857	0.140997	-2.190530	0.0373
D(SCHENR)	-0.374964	0.366970	-1.021785	0.3160

Source: Author's computation (2019)

Table 4: ARDL long-run dynamic analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXPHEL	-2.478639	1.804747	-1.373399	0.1809
LEXP	1.370116	2.430191	-0.563790	0.0476
PRYENR	-0.074827	0.206381	-0.362567	0.7198
SCHENR	0.949865	0.393400	2.414502	0.0228
TERENR	-0.655024	0.612253	-1.069858	0.2942

Source: Author's computation (2019)

#### *The Effect of Human Capital Development Variables on Economic Growth*

Generally, the short run and long run results confirm the importance of life expectancy and secondary school enrolment for influencing economic growth. As shown in the results both the economic growth and secondary school enrolment of are statistically significant in the short run and secondary school enrolment and life expectancy are significant in the long run of the models. This shows that secondary school enrolment is a key determinant of economic growth in Nigeria. The post estimation test shows that the models do not suffer from post-estimation tests of serial correlation and Heteroskedasticity, hence, they are well specified. Also, the CUSUM stability test shows that the model is stable at 5% level of significance.

### Conclusions and Recommendations

This study examined the relationship between human capital development and economic growth between the period of 1980 and 2017. This study employed health and education as components of human capital development which turns out to be great predictors of economic growth. The study revealed that economic growth and secondary school enrolment are statistically significant in the short run while secondary school enrolment and life expectancy are significant in the long run. It is established that high rate of secondary school enrolment and life expectancy would lead to improvement in economic growth. There is need for compliance by Nigerian government with the bench mark of 26% specified by UNESCO as minimum recommendation for education sector and WHO 5% of national income on health. More resources should be allocated to capital expenditures on health and education to build more facilities. The Federal Government policy in education sector (such as increasing primary school enrolment through the free compulsory Universal Basic Education) should be given priority. Furthermore, Government should continue to establish more tertiary institutions to cater for those that the existing tertiary institutions could not accommodate. Moreso, government should provide enabling environment through macroeconomic stability that will encourage improved human capital development.

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