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Significance of Human Capital Development as a Panacea for Economic Growth in Nigeria

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ABSTRACT

The aim of this study is to examine human capital development as a panacea for economic growth in Nigeria. Specifically, it tries to examine the linkage between human capital development and economic growth. The data for the study which include real GDP, labour force rate, total government expenditure on education, total government expenditure on health, total government expenditure on tertiary school enrolment, secondary school enrolment and primary school enrolment were sourced from the World Development Indicator (WDI, 2015). The model of the study was adopted from Mankin, Romer and Weil (1992) with modification and was analysed using the Ordinary Least Square (OLS). The time series property of the variables used in the models was investigated using the Augmented Dickey Fuller (ADF) and Phillip-Perron test for unit root, while the cointegration test was carried out using the Johansen Cointegration approach. From the estimation result all the explanatory variables of human capital development were integrated of order one $I(1)$ using both the Augmented Dickey Fuller (ADF) and Phillip-Perron tests, the regression result shows that the a priori expectation of the variables was not with regard to their signs except total government expenditure on education. The study recommends among others, the need for the government to intensify effort on capital expenditure on education in the form of huge investment in both infrastructure and human resource development.

Keywords: Human capital development, education, health, economic growth.

INTRODUCTION

There is no doubt that there can be no significance of economic growth in an economy without development in human capital, as health and education are closely related human capital elements that work together to make the individual more productive and none can be considered more important than the other (Lawanson, 2009)[1]. Education is the process by which an individual gains knowledge or develops attitudes and skill. Education is an economic investment which raises not only the quality of life but also

increases the productivity in market and non-market work. Education also improves health, productivity and access to paid employment (Anyanwu, et al., 1997)[2]. Health on the other hand is fundamental to economic growth and development and is one of the key factors to growth. Schuttz (1992)[3] had argued that population quality is the enabling factor to production and emphasized the merits of investing in education and health.

Human capital investment is an indispensable component in the development process and it is a tool for achieving equitable income distribution and a vehicle for tackling poverty and expediting overall economic growth (Chete and Adeoye,2003)[4].

In Nigeria since independence in 1960 to the present time, various governments have formulated and implemented series of policies on health and education aimed at promoting good living and qualitative education for achieving sustainable growth and development. The policy outcomes include increase in the number of tertiary institution (colleges of educations, Monotechnics/Polytechnics, State and Federal Universities) while the number of enrolments at the various levels of educational institutions has continued to increase. Health centers, general and teaching hospital have also increased following health policies and programmes in Nigeria (Dauda, 2010)[5]. However, these policies have achieved little or nothing toward improving education and health in Nigeria. To buttress this assertion, in the year 2000, the percentage allocation to education from the budget was only 9.6 percent, 6.3 per cent in 2005, 2007 and 2012, recorded 8.7 percent and 8 percent respectively, allocations below the 26 per cent bench mark of United Nation Educational Scientific and Cultural Organization (UNESCO). Meanwhile, the allocations to health over the years have fallen below the international standard[6].

Comparatively, available statistics have shown that about 48% of Nigerians are illiterates, compared to 40% in China, 33% in Zambabwe, 23% in Indonesia and less than 20% in Brazil and Mexico (United Nations, 2010)[7]. Most indices of human capital development also shows that Nigerian level of improvement in the indices is low

compared with several other countries in the African region. Particularly worrisome is the deterioration in the quality of educational services of all levels, especially at higher educational levels (tertiary institution as the graduate are unemployable in the labour market). Also, recent estimates have shown that between 700,000 and 2.7 million people die annually from malaria in Africa and it accounts for about 50 percent out-patient consultation and 15 percent of hospital admission in Nigeria (Alaba and Alaba, 2014)[8]. Malaria is not only a health problem; it is also an economic problem. The connection between malaria and human capital comes in a number of dynamic ways. For example, malaria at the house- hold level affects productivity and when productivity growth is affected, the entire economy is also affected.

The development of education and health system in Nigeria and its nexus to economic growth needs studying based on the relevance of human capital development to overall economy productivity. Although there has been series of studies on the subject matter, its re-examination becomes necessary at this period of Nigeria's economic growth and development process. This is the motivation behind the study.

STATEMENT OF THE PROBLEM

In explaining the performance of health and education sectors in some selected countries, United Nations Development Programme (UNDP, 2014)[9] admitted that in the last quarter of the twenty century, many countries made remarkable advances in education and health. In that survey, Nigeria was not included. By implication, the performance of health and education performed poorly in Nigeria when compared to the UNDP selected countries In 1980 for example, the level of enrolment in primary school was 12.2 million which declined to 11.5 million in 1987 (Federal Ministry of Education, 2000); Seven years later. In 2010, the value increased to 46.3 million while the student/ teacher ratio in primary school which stood at 35:1 in 1980 rose to 44:1 in 1986, 60:1 in 1995 and 63 in 2010 [6]. When compared to the United Nations stipulated minimum of 25:1, Nigeria has not performed well. The unemployment rate by educational groups

throws more light to the problem at hand. All categories of educational levels below postgraduates had double digit unemployment rates above 20 per cent (20.2 per cent for bachelor's degrees to 33.4 per cent for Junior Secondary School Certificates) (Iwayemi, et al., 2014)[10]. There is a growing development that is generating serious concern among unemployed educated and young people. Besides, unemployment based on age group classification shows that those aged between 15 and 24 have the highest unemployment rate of 37.7 per cent, followed by those of 25-44 age group with unemployment rate of 22.4 per cent (Ogujiuba, 2013)[11]. Most striking is the rising unemployment rate among the educated youth who are graduates of the 120 universities each year with skills and training that relatively does not match the labour market requirements. The millions of youth made up of a mix of educated and poorly educated young people willing to find decent works which are almost non-existent is the paradox of high but jobless human capital and economic growth in Nigeria. Moreover, in spite of the expansion in the educational system resulting from government policies and programmes, the educational system in Nigeria has been accompanied by structural defects, inefficiency and ineffectiveness which affect the level of and utilization of human capital development in Nigeria (Ogujiuba, 2013)[11]. The development in the health sector is virtually the same problematic situation. Malaria contributed over 90 per cent of the case of tropical diseases reported in Nigeria, suggesting that malaria may be the largest contributor to total burden and loss of productivity in Nigeria. Reported mortality from tropical diseases in Nigeria indicates that out of all the major tropical diseases, malaria inflicts the greatest stress on households (Alaba and Alaba, 2014)[8]. The study further posited that as much as 13 per cent of total small farming households expenditure in Nigeria is currently being used in treating malaria, while many are simply too poor to pay for adequate prevention and treatment of the disease. This situation has resulted to increase in population per hospital bed and patient to doctor ratio due to resistance of malaria to drugs. This affects time allocation and general productivity.

The poor educational system in Nigeria with unskilled graduates and loss of productivity resulting from sickness constitute a major challenge to human capital development and economic growth nexus in Nigeria which is the focus of this re-examination.

OBJECTIVES OF THE STUDY

The main objective of the study is to examine the impact of human capital development on economic growth in Nigeria. Specifically, it seeks to:

1. Examine the structure of human capital development in national economic trend.
2. Examine the various means of human capital development in relation to human productivity.

RESEARCH HYPOTHESES

The following hypotheses will guide the study to achieve the objectives;

- (1) H_0 : Human capital development has no impact on economic growth in Nigeria.
- (2) H_0 : There is no structure of human capital development in national economic trend.
- (3) H_0 : There is no various means of human capital development in relation to human productivity.

LITERATURE REVIEW

THEORETICAL REVIEW

The *fundamental growth theory* is premised on the work of Solow (1956) popularly referred to as Solow Growth Model. The original Solow (1956)[12] model appeared to be of variance with some of the stylized facts of modern growth. For this reason, most of the recent testing has adopted the augmented Solow model of Mankiw, Romer and Weil (1992)[13], which includes human capital with endogenous theories. In 1956, Robert Solow popularized a theory that built a model that relates diminishing returns to capital and labour but added a third factor of technical knowledge that continued to stimulate economic growth. The model emphasizes that steady state differences of per capita

income across countries could be explained from differences in saving and population growth rates. High saving implies high per capita income and high population growth rates. High saving implies high per capita income and high population growth means low per capita income. This idea permits the use of decreasing returns, but only at the cost of excluding technology from the economic model itself. Technology is assumed to be subject to determination by forces outside the economy. However, the exogeneity factors that argument productivity have been criticized in the literature by Romer (1986), and Mankiw, Romer and Weil (1992)[13],[14]. In their perspectives, the factor that promotes productivity is not an exogenous factor, but an endogenous one that is assumed to have a functional relationship with the knowledge and behavior of the people responsible for the accumulation of physical capital. By implication, human capital in health and education becomes endogenous factors in the growth process. The focus of the endogenous growth theory in Romer (1986) and Barro (1991)[14],[15] views was directed at the importance of other endogenous factors such as government expenditures in Health and education, tax and other factor endogenous factors that could affect economic growth.

Mankiw, Romer and Weil (1992)[13] demonstrated using Augmented Solow model that the result will be a per capital income growth function with physical capital and human capital investment rates entering the model separately among the endogenous variables. The initial level of human capital can replace the human capital investment rate. They therefore augmented the original Solow model with human capital accumulation. They observed that exclusion of human capital factors could affect the influence of physical saving rate and population growth rate on per capital income in two ways. First higher accumulation of physical capital induces higher per capita income and higher per capita income induces higher accumulation of human capital. It follows that physical capital accumulation will have higher impact on per capital income when human capital (health and education) is considered. The reverse will be the case of higher population growth

rates. Second, physical capital accumulation and population growth rate may be correlated with human capital accumulation. Therefore, the estimated impact of physical capital accumulation on per capital income may be biased when capital accumulation is omitted from the estimated function. From the analysis, Mankiw, et al (1992)[13] approach has some information it conveys. First, by proposing a role for the human capital investment rate, it provides a link between education and health expenditure and growth. Secondly, there are still constant returns to all the three factors (K, AL, H) and diminishing returns to the two reproducible factor (K and H), but the approach however does not provide for externalities to education and health.

The *neoclassical theory of growth* developed by Solow and Swan centred macroeconomists' attention throughout the 1960's and 1970's on tangible (physical) capital formation as the driver of economic growth. However, the theory showed that, because of decreasing marginal returns in substituting physical capital for labour, the accumulation of capital would not indefinitely support a steady rate of growth in labour productivity.

The recent literature on "endogenous economic growth" emerged primarily as an attempt to encompass the sources of technological progress and hence of sustained productivity growth *within* the general equilibrium framework of neoclassical growth theory.

Human Capital Theory: This theory shows how education leads to increase in productivity and efficiency of workers by increasing the level of their cognitive skills. Theodore, Schultz, Gory Bucker and Jacob Mincer introduced the notion that people invest in education or as to increase their stock of human capabilities which can be formed by combining innate abilities with investment in human beings[16].

Examples of such investments include expenditure on education, on- the- job training, health, and nutrition. However, the stock of human capital increases in a period only when gross investment exceeds depreciation with the passage of time, with intense use

or lack of use. The provision of education is seen as a productive investment in human capital, an investment which the proponents of human capital theory considers to be equally or even more equally worthwhile than that in physical capital. Human capital theorists have established that basic literacy enhances the productivity of workers low skill occupations. They further state instruction that demands logical and analytical reasoning that provides technical and specialized knowledge increases the marginal productivity of workers in high skill or profession and positions.

The Modernization Theory: This theory focuses on how education transforms an individual's value, belief and behavior. Exposure to modernization institutions such as schools, factories, and mass media inculcate modern values and attitudes. The attitude include openness to new idea, independences from traditional authorities, willingness to plan and calculate further exigencies and growing sense of personal and social efficacy. According to the modernization theorists, these normative and attitudinal changes continue throughout the life cycle, permanently altering the individual's relationship with the social structure. The greater the number of people exposed to modernization institutions, the greater the level of individual modernity attained by the society.

Thus, educational expansion through its effects on individual values and benefits sets in motion the necessary building blocks for a more productive workforce and a more sustained economic growth.

The Dependence Theory: This theory arose from Marxist conceptualizations based on the dynamic world system that structures conditions for economic transformation in both the core and periphery of the world economy. Certain features of the world polity such as state fiscal strength, degrees and regime centralization and external political integration may contribute to economic growth in the developing world.

EMPIRICAL LITERATURE REVIEW

Several studies, in Nigeria have been examined on the relevance of human capital investment -education and health on economic growth. For example Dauda (2010)[5] examined investment in education and economic growth in Nigeria using annual time series data from 1977 to 2007. They study employed Johansen co-integration techniques and error correction methodology. Empirical result indicates that there is a long-run relationship between investment in education and economic growth. The main variable of interest, the growth rate of educational expenditure had positive and significant effect on economic growth in Nigeria.

Adelakun (2011)[17] examined human capital development and economic growth in Nigeria between the periods 1986 to 2008 using the ordinary least square technique. They study evaluated human capital using gross domestic product (GDP) as proxy for economic growth; total government expenditure on education and health, and the enrolment pattern of tertiary, secondary and primary schools as proxy for human capital. They study concluded that there is a positive relationship between government expenditure on education and health as well as pattern of enrolment in primary, secondary and tertiary institution enhancing economic growth in the long-run.

Amassoma and Nwosa (2011)[18] studied the causal relationship between human capital investment and economic growth in Nigeria for sustainable development in Africa at large between 1970 and 2009 using a Vector Error Correction (VEC) and Pairwise granger causality methodologies. The findings of the model and pairwise estimate reveal no causality between human capital development and economic growth. The study recommends the need to increase budgetary allocation to the education and health sector and the establishment of fund and well-functioning vocational institute needed to bring about the needed growth in human capital that can stimulate economic growth.

Oluwatobi and Ogunrinola (2011)[19] examined the relationship between human capital development efforts of the government and economic growth in Nigeria between the periods 1986 to 2010 using the ordinary least square technique. The result shows that

there exists a positive relationship between government recurrent expenditure on human capital development and the level of real output while capital expenditure is negatively related to the level of real output.

Adawo (2011)[20] using econometric model examined the contributions of primary education, secondary and tertiary education to economic growth in Nigeria from the period 1970 to 2010. They study found out that primary school input, physical capital formation and health were found to contribute to growth. Meanwhile, secondary school input and tertiary institutions were found to dampen growth.

Ishola and Alani (2012)[21] evaluated the contribution of different measures of human capital development to economic growth in Nigeria from the period 1986 to 2010. They study used data from Nigeria and adopted the growth account model which specifies the growth of gross domestic product (GDP) as a function of labour and capital. Based on the estimated regression and a descriptive statistical analysis of trends of government commitment to human capital development, it was found that little commitment had been accorded health compared to education in Nigeria. Empirical analysis showed that both education and health components of human capital development are crucial to economic growth in Nigeria.

Egibiremolen and Anaduaka (2014)[22] investigated the impact of human capital development on national output a proxy for economic growth, using quarterly time series data from 1992-2012 and employing co-integration and Error correction techniques, the empirical results shows that human capital development, in line with theory, exhibits significant positive impact on output level. This implies that human capital development is indispensable in the achievement of sustainable economic growth in Nigeria as there is an increase in economic performance for every increase in human capital development. The result further reveals a relatively inelastic relationship between human capital development and output level. In a related study carried out by Lustig (2006)[23] on the relationship between health and growth in Mexico between the

periods 1970-1995 showed that health is responsible for approximately one third of long-term economic growth in Mexico. He considered health to be an asset with an intrinsic value as well as instrumental value.

LIMITATIONS OF PREVIOUS STUDIES

The review of the literature shows that there is increasingly a consensus that economic development and the associated growth is a multidimensional process that involves interaction among different goals of development as it relates to education and health. The fundamental growth theory reviewed is the work of Solow (1986) popularly referred to as Solow Growth Model. The model is built around diminishing returns to capital and labour adding technical knowledge as a factor that enhances productivity and growth. However, the Solow model appeared to be a variance with some of the stylized facts on modern growth theories and for this reason the augmented Solow Model of Mankiw, Romer and Weil (1992)[13], which includes human capital has been adopted in recent studies on human capital investment and economic growth.

These are myriads of research works on the effects of human capital investment in Nigeria. Some of the reviewed studies include: [5],[17],[18],[19],[20],[21],[22].

From the reviewed empirical works, much emphasis has been placed on the education as major component of human capital in Nigeria. Investment in education and health as a driver of economic growth in Nigeria is the major focus of the present study. The knowledge gap will be filled by examining these concepts together rather than individually as in previous studies.

METHODOLOGY

The central purpose of this section is to provide the study plan, and its description on how the objectives of the study will be achieved. The section also deals with model specification.

THEORETICAL FRAMEWORK

The fundamental theoretical framework for growth analysis has been with the neoclassical Solow production function of the form

$$Y_{(t)} = f(K_{(t)}, A_{(t)} L_{(t)}) \text{-----}(1)$$

Where Y_t is the aggregate real output, K is the capital stock, L is labour, A is the efficiency factor and E is a function of accumulation of capital and an expansion of labour force and exogenous factor, technological progress, which makes physical capital and labour more productive.

MODEL SPECIFICATION

Following the neoclassical growth model augmented by the Mankiw, Romer and Weil (1992),^αwhen^β human capital is introduced into the neoclassical production function, we have a new version of the production function. The capital stock is made up of two components: physical capital $K_{(t)}$ and human capital $H_{(t)}$, such that when human capital is introduced in the production function, the model is given as:

$$Y_{(t)} = K_{(t)}^\alpha H_{(t)}^\beta (A_{(t)} L_{(t)})^{1-\alpha-\beta} \text{-----}(2)$$

$\alpha > 0, \beta > 0, \alpha + \beta < 1$

Where, Y = output, K = physical capital, H = stock of human capital, L = labour force (number of workers), A = level of technology. The $(A_{(t)} L_{(t)})$ component implies the effectiveness of labour and is expected to grow at the rate of $n+g$. It also assumes that there is decreasing returns to capital, i.e $\alpha + \beta < 1$; also a constant fraction of output is invested.

When equation (2) is log-transformed or linearized to ensure linearity and elasticity or marginal values, we have:

$$\text{Log } (Y_{(t)}) = \alpha \text{ log } (K_{(t)}) + \beta \text{ log } (H_{(t)}) + (1 - \alpha - \beta)\text{log } A(t)L(t)\text{.....}(3)$$

From model (3), we represent our instrument variables as follows: $\text{log } Y_{(t)}$ is identically proxy as the log of gross fixed capital formation, $\text{log } H_{(t)}$ is proxy as log of human capital formation, and this include LFPR, LTGEE, LTGEH, LSSER and LPSE, where LFPR

stands for labour force rate; LTGEE stands for log of total government expenditure on education; LTGEH stands for log of total government health, LTSER stands for log of total government expenditure on tertiary school enrolment; LSSER stands for log of secondary school enrolment and LPSER stands for log of primary school enrolment. Log is identically represented as 'Ln', therefore the model of our study is as follows:

$$\text{Ln RGDP} = \alpha_0 + \beta_1 \text{Ln FPR} + \gamma_2 \text{LnTGEE} + \lambda_3 \text{LnTGEH} + \theta_4 \text{LnTSER} + \theta_4 \text{LnSSER} + \Psi_6 \text{LnPSER} + E_t \text{---}$$

-----(4)

$$\beta_1, \gamma_2, \lambda_3, \theta_4, \theta_5, \Psi_6 > 0$$

RGDP as used as specified represents economic growth in real terms. The exogenous variables are TGEE, TGEH, TSER, SSER and PSER are human capital variables. The a priori as stated under the model shows that human capital investment have a positive functional relationships with economic growth proxy ads RGDP, $\beta_1, \gamma_2, \lambda_3, \theta_4, \theta_5, \Psi_6 > 0$ are parameter coefficients.

ESTIMATION TECHNIQUE AND PROCEDURE

The basic methodological approach is the Ordinary Least Square (OLS). The choice of this technique is simply because of its desirable properties of unbiasedness, consistency and efficiency. However, the time series property of the variables used in the model will be investigated before the co-integration test (relationship test). For any series to be co-integrated, the series must be of the same order of integration. The series may not necessarily be stationary in level, but when series are combined, the residual generated from their combination must necessarily be stationary. To guarantee the adequacy of any regression analysis, it is of great importance to test if the series in the regression equation contain unit roots problem. In other words, to test if there is the tendency for the analysis to generate spurious regression. The order of integration of each time series must be identified which implies that the series must be capable of being differenced. The two types of test employed are the Augmented Dickey Fuller (ADF) and Philips-Perron tests. The fundamental assumption when experimenting with co-integration is

that the variables are integrated of the same order. The set of variables X_t is to co-integrate if a linear combination of the variables will result in a stationary process i.e. $I(0)$. For a regression relation to be robust and meaningful, the various series must be co-integrated; if otherwise, the equation retains its unit root property and hence spurious regression. The Johansen approach is adopted and co-integration is achieved by determining the co-integration rank i.e. the number of co-integration relations. This achieved by carrying out Johansen Co-integration Likelihood Ratio test by comparing the Likelihood Ratio test statistics with the critical values.

DATA ANALYSIS AND DISCUSSION

This section presents and explains the results of the analysis. In line with section 3, we subject all the time series employed in the model to stationarity test. The result of the test is reported in table 1.

UNIT ROOT REST

Table 1a: Unit Root Tests of the Variables without Trend (1970-2015)-ADF

Variables	ADF Slat	Test	Test Critical Values	Level of Integration	Remark
LFPR	-5.353670		1% = -3.724070	I (1)	Stationary
RGDP	-3.388662		5% = -2.986225	I (1)	Stationary
TGEE	-6.525879		10% = -2. 632604	I (1)	Stationary
PSER	-4.408646			I (1)	Stationary
SSER	-3.111433			I (1)	Stationary
TGEH	-5.737853			I (1)	Stationary
TSER	-3.871445			I (1)	Stationary

Source: Author’s Analysis

Table 1b: Unit Root Tests of the Variables without Trend (1970-2015)-Philips-Perron

Variables	Philips-Perron	Test Critical Values	Level of Integration	Remark
LFPR	-5.353670	1% = -3.724070	I (1)	Stationary
RGDP	-3.388662	5% = -2.986225	I (1)	Stationary
TGEE	-6.525879	10% = -2. 632604	I (1)	Stationary
PSER	-4.408646		I (1)	Stationary
SSER	-3.111433		I (1)	Stationary
TGEH	-5.737853		I (1)	Stationary
TSER	-3.871445		I (1)	Stationary

Source: Author’s Analysis

The ADF and Philips- Perron tests are conducted against the null hypothesis that there is unit root-I(1)- non stationarity of the series. The critical values for the ADF and Philips-Perron (without trend) at 5% significance level are -2.986225 for both ADF and PP. Absolute values of ADF and PP less than the critical values indicate a rejection of the null hypothesis. The result as shown above depict that both ADF and PP tests statistics confirmed that differencing the variables once will guarantee their stationarity.

TEST OF CO-INTEGRATION

The results of the unit root tests show that all the variables are random walk processes. It does not however, imply that in the long run the variables could not achieve long run convergence, that is, long run equilibrium. Hence the need to subject the residuals generated from their long-run static regression to ADF or PP tests to see if they are stationary. However, the Johansen co-integration test using both the trace statistics and max-eigen at 0.05 critical values suggests the presence of co-integration among the variables. For the trace statistics, the absolute values of 225.9182, 148.4949, 92.39812, 160.45896, 36.76871, 18.59581 and 4.117959 is more than the critical values of 125.6151, 95.7533, 69.8138, 47.85613, 29.79707, 15.49471 and 3.841406 at 5 percent significance level.

Table 2a: Johansen Co-integration Test Result (Trace Statistics)

Hypothesized No. of CE(s)	Eigen Values	Trace Statistic	0.05 Value	Critical	Prob
None *	0.949096	225.9182	125.6154		0.0000
At most 1*	0.884394	148.4949	95.75366		0.0000
At most 2*	0.707248	92.39812	69.81889		0.0003
At most 3*	0.597944	60.45896	47.85613		0.0021
At most 4 *	0.502897	36.76871	29.79707		0.0067
At most 5*	0.426983	18.59581	15.49471		0.0165
At most 6*	0.0146477	4.117959	3.841406		0.0424

Source: Author’s Analysis

Table 2b: Johansen Co-integration Rank test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigen Values	Max- Eigen Statistic	0.05 Value	Critical	Prob **
None *	0.949096	225.9182	46.23142		0.0000

At most 1*	0.884394	148.4949	40.07757	0.0004
At most 2*	0.707248	92.39812	33.87687	0.0836
At most 3*	0.597944	60.45896	27.58434	0.1459
At most 4 *	0.502897	36.76871	21.31362	0.1235
At most 5*	0.426983	18.59581	14.26460	0.0463
At most 6*	0.0146477	4.117959	3.841466	0.0424

Source: Computation by the Author using E - View 8

Table 3: Ordinary Least Square Estimation Result

Variables	Coefficient	Std. Error	T-Statistic	Prob
LFPR	0.123941	0.056931	2.777035	0.0423
TGEE	-0.000487	0.008985	-0.054170	0.9574
TGEH	0.025623	0.012456	2.057011	0.0537
TSER	0.052512	0.020016	2.624550	0.0167
SSER	0.000896	0.004523	0.198082	0.08451
PSER	0.000211	0.001684	0.125141	0.9017
ECM (-1)	-0.526824	0.238914	-2.205075	0.4000
C	0.021280	0.013341	1.595168	0.1272
R² 0.434801, Adjusted R² 0.226570, Prob. (F-Stat.) 0.095734, DW 1.681				

Source: Author's Analysis

Table 4: Serial Correlation Tests

Variables	Coefficient	T. Error	T-Statistic	Prob
C	0.00385	0.014477	0.23820	0.8179
LFPR	-0.008940	0.060117	0.148716	0.8835
TGEE	0.001984	0.10058	0.197246	0.8460
TGEH	-0.000959	0.012958	-0.074040	0.9418
TSER	-0.005223	0.021645	-0.241290	0.8122
SSER	-0.000157	0.004726	-0.033125	0.9740
PSER	2.17E-05	0.001768	-0.012294	0.9903
ECM (-1)	-0.291884	0.0433330	-0.673584	0.5096
RESID (1-)	0.453463	0.540429	0.839980	0.4131
RESID (-2)	0.680369	0.292346	0.274911	0.7867
R² 0.039907; Adjusted R² -0.468377; F-Statistic 0.078514; Prob (F-Statistic) 0.999742, DW 1.794738				

Source: Author's Analysis

Having checked for co-integration between the variables of human capital investment, we obtained the long run results of human capital investment and economic growth

nexus by estimating the general model with results as presented in table 3 above. The table shows the estimated result (OLS) of the model. The variables of the model that is, LFPR, TGEH, TSER, SSER, and PSER all conform to the prior expectations. The variable TGEE does not conform to the expected sign and magnitude. Its coefficient value is -0.00487 and it is significant with a probability value of 0.9575. The interpretation of the above is that a ten per cent increase in TGEE will generate 4.87 reductions in the value of real GDP. This is not saying that total expenditure on education does not generate improvement in the economic growth proxied as real GDP, but it implies that any wrong decision or investment in government expenditure on education will definitely produce a counter-productive effect on economic growth. The negative sign of TGEE also implies that the government expenditure on education is insignificant and has not contributed adequately to economic growth in Nigeria. This assertion is supported by the result of the R-Squad and adjusted R² (0.434801 and 0.226570) which indicates the significance of the explanatory variables is, the degree to which variation in the rates of economic growth are explained by variations in human capital investment indicators. The Durbin Watson statistics value of 1.681 indicates that there is no first order serial autocorrelation supported by the serial autocorrelation test in table 4. The explanatory power of the regression line is not too high at 43 per cent. This means that the regression line explains about 43 per cent of total variations of dependent variable around its mean. The hypothesis test using the Breusch- Godfrey test shows that the statistics is about 0.9997, and the probability of obtaining such a statistics under the normality assumption is about 78 per cent. Therefore, we do not reject the hypothesis that the error terms are normally distributed. This suggests that the OLS estimator is unbiased; has minimum; consistence and follows a normal distribution. The coefficient of the ECM is statistically significant at 10 percent level. It confirms a long-run relationship between the variables and the value of -0.526824 suggests the adjustment process. This implies that the disequilibrium can be adjusted at the rate of 5.

SUMMARY OF FINDINGS

This section summarizes the findings of the study, conclusion and possible recommendations on the way forward to improving human capital investment and ensuring sustainable economic growth and development. The summary of the findings are as follows:

1. All the explanatory variables of human capital investment are integrated of order one using both the Augmented Dickey Fuller (ADF) and Philips-Perron (PP) tests.
2. The co-integration tests based on trace and Max-eigen tests suggests that there are seven and two co-integrating variables of both 1 percent and 5 percent significance levels. This indicates a long-run relationship between human capital investment and economic growth nexus in Nigeria.
3. The regression result shows that the prior expectation of the variables was met with regard to their signs except the TGEE (Total government expenditure on education).
4. The error correction modeling (ECM) result is appropriately and significantly signed at -0.53. Its magnitude implies that about 53 per cent of the previous year's disequilibrium in the real gross domestic product (RGDP) is adjusted for in the following year. The implication of this result rightfully indicates that economic growth is endogenously determined in Nigeria.
5. The serial correlation LM test which is a test for heteroscedasticity was found to be significant with F- Statistics of 0.35 and probability value of 0.5835. Similarly, the cumulative sum of squares test (CUSUM) for model stability and reliability, though not reported here were significant and within the bounds of 5%.

CONCLUSION

The conclusion that can be inferred from the results is clear. The findings which indicates negative result of total government expenditure on education in consonance with previous studies Federal Ministry of Education. (2000)[24] implies that the focus of the Nigerian government expenditure on education was mainly on recurrent expenditure as against capital which is of utmost importance to human capital investment in Nigeria. This observation can be further explained using the 2016 budget ('Budget of Change') of NGN 6.7trn that has allocations to education and health that is below the UNICEF and WHO standards.

POLICY RECOMMENDATIONS

On the basis of the conclusion, the study recommends the following:

1. Government should intensify effort on capital expenditure on education in the form of huge investment in educational equipment, building, infrastructure development in schools and human resource development than on recurrent expenditure. Improvement and development of more technical and vocational educational system to boost the general educational system in Nigeria should be the right step towards economic growth and development in Nigeria.
2. Still on education, private sector participation in educational development in Nigeria is highly needed now. This partnership will support Government with declining oil receipt and revenue with the aim of promoting investment in the education sector.
3. Quality and standard should be maintained in the educational system at all levels of education in Nigeria so as to produce the required manpower.
4. There is need to improve the funding through the budget of the educational and health systems in Nigeria in compliance with the UNICEF and WHO standards. The aim is to ensure effective and healthy contribution to the growth of the Nigerian economy.

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