Human Capital Development and Economic Growth: The Nigerian Experience

Oru, Patricia[1], Kalu, Ndukwe Olugu[2]

[1]*(Department of Accounting Education, Federal Collage of Education, Technical, Asaba, Nigeria)*
[2]*(Department of Economics, University of Nigeria, Nsukka & Community Resource Center, Owerri, Nigeria)*

Abstract: *Human capital has been identified as the best indigenous choice available for economic growth. Over the years, government has made budgetary allocations in key human capital development sectors of education, health, and other forms of human resource areas with a view to accelerating economic growth. Making funds available is one thing; meeting the growth objective of such expenditure is another. This study explores the effects of human capital on Nigeria's economic growth within the ambience of neoclassical growth model with time series covering 1961-2010 period. The result shows that gross fixed capital formation exerts positive influence on output. That of labour force is also positive and statistically significant which implies that physical components of human capital development contribute positively to the output growth. On the other hand, non-physical human capital coefficients of education and health variables are negative but health is not statistically significant. The research outcome shows that physical capital attributes play a more positive role in boosting Nigerian's economic growth than the non-physical attributes of education and health. We therefore, recommend that, Nigeria increases investment in human capital development especially, the active workforce and capital formation to improve economic growth.*
Keywords: *Economic Growth, Human Capital Development, Neoclassical Growth Model.*

I. Introduction

1.1 Background of Study

The place of human capital resource in accelerating growth of any economy has been an object of discussion among scholars in economics and allied disciplines for decades. Adawo (2010) notes that accumulation of physical capital was considered a near-singular factor for economic growth in the very past but with inquiry into the determinants of economic growth subsequently, human capital began to earn a pride of place among economic variables that promote economic prosperity of nations. [1] In most cases, human capital has been identified as the best indigenous choice available for economic growth of any economy (Amir, et al. 2011). [2] Kasim et al. (2010) agrees with Amir et al. (2011), having observed that human resource has not only been a major growth determinant but of much importance in building or improving the quality of human beings in general. [3] This is premised upon the fact that investment in human capital plays an important role in improving competitiveness and quality of life of the populace.

This observation is a follow-up to an early human resource development revolution which sparked off in mid-1950s with scholars like Swan (1956) and Solow (1957) playing a prominent role. [4] [5] Their seminal papers produced an exogenous growth model anchored within the shades of the Keynesian, Neo-classical, and Schumpeterian schools of thought. The early neo-classical theory lays much emphasis on exogenous demographic factors that affect the growth rate of nations which include population growth rate, labour force and the rate of technology. Another popular growth theory that follows the exogenous growth theory in the mid-1980s is the endogenous growth models with Paul Romer and Robert Lucas credited for popularizing the growth theory in the mid-1980s. The works of the duo identify a number of factors that determine the growth rate of an economy viz: increasing returns to scale, innovation, openness to trade, international research and development and of course, human capital formation.

An early research effort by Schultz (1961), unravelling the importance of human capital in growth process, suggests five categories by which human capital can be developed. [6] These include health care, vocational training, and quality education at all levels including continuing education programme for the adult. Others include extension programs mostly in agriculture and job mobility and are all aimed at improving an individual's productive efficiency which lends support to economic growth of nations.

It is therefore, understandable why there has been persistent call on economies of the world especially, developing economies to invest in human capital formation; a call that has been considered in Nigeria's policy space over the years. This is reflected in the various Nigeria's development plans such as the First (1962-1968), Second (1970-1974), Third (1970-1974) and Fourth (1975-1980 and 1981-1985) development plans. Others include Operation Feed the Nation of 1976, Green Revolution Programme of 1979-1981, and Structural

Adjustment Programme of 1985-1993 (see Dawodu, 2010). [7] More recent policy programmes of Nigerian government are the National Economic Empowerment and Development Strategy (NEEDS) of 2004-2008 and the current Vision 20:2020 (Dawodu 2010). [7] With Vision 20:2020, Nigeria plans to launch its economy among the twenty most developed countries in the world by year 2020.

In effect, human capital development has been severally emphasized in these development plans and has been aimed at providing efficient manpower in various areas of Nigeria's socio-economic and other development needs. For instance, NEEDS stipulates a goal of increasing government's budgetary allocation to health and education up to 10% between 2004 and 2007. While listing selected targets, education and health are rightfully noted as worthy of closer attention (Lawanson, 2009). [8] Also, the thrust of the human capital development in the Vision 20:2020 is building a productive, competitive and functional human resource base for economic growth and social advancement. The human capital and social development thematic area covers the eight critical social sectors of the economy which include: education, health, labour employment and productivity; women affairs and social development, youth development, sports development; food and nutrition and social protection. The plan projects 611.658 billion naira total investment for education sector covering the plan period while that of health sector is 487.448 billion naira.

For Nigeria to achieve effective measures that will guarantee the well-being of its human capital stock, it is important to learn from previous policy outcomes vis-a-vie investment in human capital over the years. We are therefore, motivated to contribute in this regard; hence, this paper.

1.2 Statement of The Problem

Nigeria remains abundantly blessed with enormous human and material resources that if properly harnessed, will launch the economy into the frontiers of economic development. On the contrary However, Owolabi and Okwu (2010) observe that the country is severely rocked by socio-economic problems including that of human capital development. Nigeria is already the world's eighth largest country with about 170 million people. [9] By 2030, it is estimated to have an additional 68 million people and an additional 63 million by 2050; making it the fifth most populous nation in the world after India, China, the United States, and Pakistan.

Over the years, the government has increased budgetary allocations towards the improvement of education, health and other means of human capital development. Aigbokhan et al. (2007) however, warns that the magnitude and trend of increases in allocation might be misleading in passing judgment on the budgetary performance until they are placed side by side with their percentage allocations. [10] A closer look at percentage allocation as a percentage of the total budget shows a gross inconsistency; meaning human capital development has not been a major policy target in the overall budgeting (see Lawanson, 2009). [8]

Nigerian Vision 20:2020 document (2010) agrees that school infrastructures generally, are dilapidated. The gross enrolment in schools remains a major concern as less than 30% of eligible secondary school children within 14-17 age bracket are enrolled nationwide. [11] The story is far worrisome for tertiary education and adult literacy in Nigeria. The health sector suffers similar challenges. Though the primary healthcare facilities account for about 85.8% in the country, they are mainly health posts and dispensaries that provide only basic curative services due to the fact that the facilities are underfunded. The private Out-of-Pocket expenditure in Nigeria accounts for more than 60% of the estimated $10 per capita expenditure on health and this deepens non-equitable access to quality health services. A report from United Nations Development Program in 2009 puts Nigeria's human development index far below most of the developing countries in Africa and Asia. [12] Nigeria is rated 10th out of 10 developing countries selected and 158th position out of 182 countries assessed globally. In the area of job security, Nigeria faces a serious unemployment and underemployment crises. The Next Generation report roughly estimates that three in ten Nigerians are currently unemployed. It is only when a Nigerian passes the age of 30 that 25 unemployment levels drop below about 25%. Three in ten graduates of higher education are not working and closely as many of those who have completed secondary education, remain unemployed. The proportion of graduates in technical and professional jobs is also reported to be nose-diving.

From the forgoing, it is obvious that human capital in Nigeria has a serious development challenge and this is quit inimical to the realization of Nigeria's dream of being launched among the 20 biggest economies of the world by 20:20. There exists a plethora of studies investigating the effects of human capital on growth but most of these studies however, adopt panel technics where conclusions are often made following a general observation. Besides, much of the observation arising from these studies involves developed economies who do not share common economic characteristics with a developing economy like Nigeria. On the other hand, there is a dearth of recent domestic studies in existing literature and most of these treat education as a sole proxy for human capital and in few others, the health variable is considered but the incorporation of the labour variable is grossly lacking in these studies (see Augustine, 2009; Adawo, 2010; Owolabi and Okwu, 2010). [13] [1] [9] In this study, we employ a multiple regression analysis involving neoclassical growth model with data covering 1961-2010.

The study is of relevance in a numbers of ways: It adds to knowledge as it unravels the impact of human capital development on growth in Nigeria; thereby contributing in closing the gap in existing literature. As a reference material, researchers, policy makers, investors and the like will find it useful in arriving at decisions and goals. The following research questions are necessary in achieving the objectives of this study: what is the long term relationship between education, health and growth; and economic growth in Nigeria? What effects have these variables had on the economy's growth from 1961 to 2010? What policy measures can be advanced in other to improve the quality of human capital in Nigeria?

1.3 Objectives of The Study
The study is generally guided by the objective of investigating the effect of human capital development on Nigeria's economic growth. Specifically, we examine the relationship and impact of labour, education, and health outcomes on Nigeria's Gross Domestic Product.

II. Literature Review
2.1 Theoretical Literature
Economic theories linking economic growth to human capital development come under different shades and have been extensively discussed in economic literature. These theories are mainly traced to Keynesian, neoclassical and Schumpeterian schools of thought. Solow (1957) and Swan (1956) are among those who made early inquiry into human capital and economic growth under neoclassical growth theory. [5] [4] The early neoclassical theory has been found to lay much emphasis on exogenous demographic factors that affect the growth rate of nations. Such factors which include population growth rate, labour force and the rate of technological change are often seen as the determinants of long-run equilibrium growth rate in the economy. Hence, the neoclassical growth theory is concerned with the determinants of long-term economic growth through the accumulation of factor inputs which includes physical capital and labour (see Agiomirgianakis, et al. 2002; Hiro and Huggins (2004). [14] [15] Neoclassical theory holds that capital accumulation increases an economy's growth in the medium term but the steady state growth is constrained by the rate of growth of the labour force. The theory also shows a significant contribution from technical progress which it sees as an exogenous variable, and this technical progress remains a major driving force in economic growth and development. The discourse on role of technology and human capital is generally credited to Nelson and Phelps (1966). [16] Their enquiry into the relationship between structures of capital and technological development reveals that countries rich in technology experience has higher returns to education more than accompanying factors which include technical progress. An economy that invests more resources in human capital formation invariably gathers increased dynamic indigenous technology (Amir, 2012). [2] The neoclassical model follows an aggregate production function, a constant returns to scale in labour and reproducible capital as represented in the functional form (equation 2.1) below:

$Y = F (K, L)$ ………………………………………….. (2.1)

where, Y is output (or income), K is the stock of capital while L is the labour force. The function explains the output, Y, under a given state of knowledge with a given range of available techniques and a given array of different capital, intermediate goods and consumption goods. With constant returns to scale, labour productivity measured by output per worker $y \equiv Y/L$ will depend on the capital stock per worker (i.e. capital intensity, $k \equiv K/L$). Under the assumption of constant returns to scale, the relationship each unit of labour has with capital in production does not change with the quantity of capital or labour in the economy.

A crucial property of the aggregate production function is that there are diminishing returns on the accumulation of capital. In other words, each additional unit of capital used by a worker produces a decreasing amount of output (2). A form called the Cobb-Douglas function usually expresses the relationship:

$$Y = L^{1-\alpha}K^{\alpha}, 0 < \alpha > 1 - - - - - - - - - - - - - (2.1)$$

Alternatively, the per worker production function can be written as:

$$Y = f(K) = K^{\alpha} - - - - - - - - - - - - - - - - (2.2)$$

Implying that labour productivity can increase given that if that capital deepens. An important aspect of the neoclassical model lies in decreasing returns on capital in which output per worker is deemed not to increase indefinitely. Let individuals save a constant fraction say s, of their total income y; let the constant fraction, δ, of the capital stock be gone each year due to depreciation. Suppose the population growth rate is n, and population growth causes capital stock per worker, k, to fall at an annual rate, nk; the neoclassical model holds that net rate of increase in k is as represented in the equation (2.3) bellow:

$$\frac{dk}{dt} = sf(k) - (n + \delta)k = sk^{\alpha} - (n + \delta) - - - - - - - - - - - (2.3)$$

The neoclassical model states that while the decline in the capital stock per worker as a result of depreciation and population growth is proportional to the capital stock, the growth of per worker capital through saving is constrained by decreasing returns on capital in production such that when the marginal product of capital per worker falls to a sufficiently low level, gross investment will be just sufficient to maintain the existing stock of capital. Therefore, the capital stock per worker will in the long term, converge asymptotically to k* as defined in the equation (2.4) below:

$$sk^{\alpha} - (n + \delta)k^{*} = 0 - (2.4)$$

This is the neoclassical steady-state equilibrium where output and capital stock will both continue to grow though only at the rate of population growth. As a result, the neoclassical model is modified by introducing a productivity (or technology) parameter, A, in the aggregate function; reflecting the current state of technological know-how. Hence,

Y = *f(A, K, L)* --- (2.5)

Supposing productivity increases steadily over time at a constant growth rate, g, as in equation (2.6)

$Y = A_0 e^{gt} K^{\alpha} L^{1-\alpha}$ --- (2.6)

The above equation shows that increases in income level are determined by productivity growth, g, and the growth of capital per worker. Thus, even if the capital stock and labour force grow at the same rate, output per worker will increase given that rate of technical progress exceeds zero.

The endogenous growth models have also been widely discussed as another area in economics linking economic growth to human capital. Paul Romer and Robert Lucas are credited for popularizing the endogenous growth theory models in the mid1980s. The works of the duo identify a number of factors that determine the growth rate of an economy which include increasing returns to scale, innovation, openness to trade, international research and development and of course, human capital formation. A major area of departure from neoclassical Solo-Swam model is the fact that the endogenous growth models treats technical progress as an exogenous factor while endogenous growth models take into consideration the innovation and technology diffusion. Lucas (1988) particularly states that investment in human capital and constant returns can be avoided (see Agiomirgianakis, et al., 2002), Hiro and Huggins 2004; Amir, 2012). [17] [14] [15] [2] However, in a latter growth model, the new growth theory, Lucas (1990) incorporates human capital as a factor of production while Romer (1990) incorporates human capital as a major source of technological progress hence, economic growth. [18] [19] Though the endogenous growth models are credited to Paul Romer and Robert Lucas, endogenous growth models take a theoretical root in Frankel's (1962) AK model where each firm, *j,* in the economy has a production function specified as: [20]

$Y_j = \bar{A} K_j^{\alpha} L_j^{1-\alpha}$ --- (2.7)

Where, K_j and L_j are the firm's own employment of capital and labour. Then function is extended to reflect a similar scenario, the entire economy in assumption that all firms face the same technology and the same factor prices, and will hire factors the same proportion as stated in equation (2.8) below:

$Y = \bar{A} K^{\alpha} L^{1-\alpha}$ --- (2.8)

2.2 Empirical Evidence

Scholars have shown an appreciable level of interest trying to unravel the interaction between human capital development and economic growth in recent times. Augustine (2009) examines specifically the impact of human capital development on long-run economic growth in Nigeria using time series for a-27-year period (1981–2007). [13] The Ordinary Least Square multiple regression is adopted in estimating the models. The regression results show that the components of human capital development defined by ratio of primary education enrollment, ratio of post-primary education enrollment and ratio of tertiary education enrollment are positive but not significant in promoting economic growth in Nigeria. Adawo (2010) examines the contributions of primary education, secondary education and tertiary education to economic growth in Nigeria. [1] The independent variables are proxied by school enrolments at various levels. Other variables include physical capital formation, health measured through total expenditure on health. In all, primary school input, physical capital formation and health are found to contribute to growth while secondary school input and tertiary institutions were found to dampen growth. Owolabi and Okwu (2010) study the role of human resource

development in Nigeria's economic growth. [9] The study employs quantitative analysis and considers human resource development from education and health perspectives. The variables such as education and health, primary education enrolment rate, secondary education enrolment rate, tertiary education enrolment rate and gross domestic product are used. Using a multiple regression analysis, result shows that only secondary and tertiary education enrolment rates exerts statistically significant effect on economic growth in Nigeria. Others exert positive but insignificant effect on economic growth.

Amir, et al. (2011) studies the impact of education sector of Pakistan on economic growth using a recent data. Taking technology as a dynamic rather than exogenous variable, he examines the impact of human capital on economic growth through technology. [2] So, impact of human capital is studied in detail with technology both as exogenous and endogenous. Johansen co-integration test is employed and the result establishes a long run relationship between human capital and economic growth. Agiomirgianakis, et al. (2002) examine the role of human capital on economic growth by using a large panel of data comprising 93 countries. [14] The analysis indicates that education has indeed, a significant and positive long-run effect on economic growth. Moreover, the result shows that the size of this effect is stronger as the level of education increases. Solaki (2010) investigates the long-run and short-run relationship between human capital and economic growth in Greece over the period, 1961-2006. [21] Solaki uses bi-variate causality analysis to examine the dynamics using different methods of estimation in the study. The results show that there is a positive relationship between education and economic growth and that Tertiary Education should be considered as exogenous variable, which implies that education contributed to economic growth in Greece during the estimation period. Jones, et al. (2005) make a survey of the psychological literature on cross-cultural IQ tests and conclude that modern intelligence tests provide one useful measure of human capital. [22] With a new database of national average IQ alongside a methodology derived from Sala-i-Martin, et al. (2004), result reveals that in growth regressions that include only robust control variables, IQ is statistically significant at the 95% level in 99.8% of about 1330 regressions. [23] IQ is significant in most regressions at the 0.0001% level. A one point increase in a nation's average IQ is associated with a persistent 0.11% annual increase in GDP per capita.

III. Methodology

The framework for analysis in this study follows the neoclassical growth model popularized by Solow (1956) and this has been widely applied in related studies (see Agiomirgianakis, et al. 2002, Solaki 2010; Amir, et al. 2011). [14] [12] [2] The model shows that output, Y, is a function of inputs especially Labour, L, and Capital, K.

$$Y = F(A, K, L) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(3.1)}$$

where, productivity parameter, A, is exogenously determined. The model has over the decades been variously improved to include more inputs given that the function remains homothetic. The function below is an augmented version where human capital, H, has been incorporated by Mankiw et al. (1992). [24]

$$Y = K, H, (AL\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(3.2)}$$

Equation (3.2) is transformed into a Cobb-Douglas production function as follows:

$$Y_{(t)} = K_{(t)}{}^{\alpha} H_{(t)}{}^{\beta} (A_{(t)}L_{(t)})^{1-\alpha-\beta} e_{(t)} \dots\dots\dots\dots\dots\dots\dots\dots \text{(3.3)}$$

In specifying our model therefore, we transform the Cobb-Douglas production function into a linear equation by taking the log of both sides:

$$\ln\{Y_{(t)}\} = \ln\{K_{(t)}{}^{\alpha} H_{(t)}{}^{\beta} (A_{(t)}L_{(t)})^{1-\alpha-\beta} e_{(t)}\} \dots\dots\dots\dots\dots\dots\dots\dots \text{(3.4)}$$

We expand the logarithmic equation as follows:

$$\ln GDP_{(t)} = \beta_0 + \beta \ln Capf_{(t)} + \beta \ln Labf_{(t)} + \beta ln Eexp_{(t)} + \beta \ln Hexp_{(t)} + v_{(t)} \dots\dots \text{(3.5)}$$

where, lnGDP = log of Gross Domestic Product, a proxy for economic growth, lnCapf =log of gross Fixed Capital Formation, lnLabf = log of Labour Force, lnEexp = log of Education Expenditure while lnHexp = log of Health Expenditure. B_0 is the intercept, $\beta_{i's}$, the model parameters. t is the trend while v is the error term.

We source time series covering 1961-2010 from Central Bank of Nigeria statistical bulletin. Prior to model estimation, we carry out some important tests which include the unit root and co-integration tests. Unit root test is aimed at examining the stationarity properties of the data while co-integration test is aimed at checking if there exists a long run relationship among the variables. A set of variables are said to be co-integrated if there exists a long run relationship between or among them. Johansen (1988), and Johansen and Juselius (1990) are credited for co-integration technique where the trace statistics and Eigenvalue are often used to determine co-integration outcomes. [25] [26]

IV. Empirical Results

We first of all, investigate the time series properties. The results of the ADF test on the levels and first differences of the variables are in Table 1. We select the lag length using Schwarz Criterion. For the country's human capital development and GDP. We observe three possible outcomes: series can be stationary, both can be non-stationary, or one variable can be stationary and other variable can be non-stationary.

3.1 Unit Root Result

We consider the estimation at constant and trend levels using Augmented Dickey-Fuller Test at 5% Critical Value of -3.5066 as summarized in table 4.1 which yield the following result:

Table (4.1): Augmented Dickey-Fuller Test (5% Critical Value -3.5066)

variable	t-statistic	p.value
D(LOG(GDP(-1)))	-4.106819	0.0002
D(LOG(GFCAP(-1)))	-4.022881	0.0002
D(LOG(LABFORCE(-1)))	-0.672257	0.5050
D(LOG(EDU(-1)))	-6.801389	0.0000
D(LOG(HEALTH(-1)))	-5.551274	0.0000

In table 4.1, the variables are taken at first difference [I(1)] except labour force. For consistency therefore, all series are considered at I(1) and taken at their first difference.

We proceed by determining the number of long run equilibrium relationships or cointegrating vectors among the variables. An equilibrium relationship exists among variables if series are integrated of the same order say I(1) as in this case. The result shows that both the maximum eigenvalue and the trace statistic suggest the presence of one cointegrating equation among the variables at 5% level in line with the Osterwald-Lenum critical values. This shows the existence of a long run equilibrium relationship between GDP and the independent variables.

3.2 Co-Integration Test

Johansen procedure is used to determine the rank (r) and to identify a long-run relationship. The number of lags used in the VAR is based on the evidence provided by the Akaike Information Criteria. However, in the case of serial correlation, sufficient numbers of lags are introduced to eliminate the serial correlation of the residuals. The cointegration tests include: LOG(GDP) LOG(GFCAP) LOG(LABFORCE) LOG(EDU) LOG(HEALTH) which includes one lag in the VAR. The results of the conducted Johansen tests for cointegration amongst the variables is specified in table 4.2a below: The results indicate that there are at most two cointegrating vectors.

Table (4.2a) Co-integration Test Result

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Hypothesized No. of CE(s)
0.689404	59.33836	47.21	54.46	none **
0.561795	34.78386	29.68*	35.65	at most 1 *
0.514750	17.45741	15.41*	20.04	at most 2 *
0.102564	2.272482	3.76	6.65	at most 3

*(**) denotes rejection of the hypothesis at 5% (1%) significant level

Table (4.2b) Johansen Co-integration Test

Test assumption: Linear deterministic trend in the data

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Hypothesized No. of CE(s)
0.506762	88.84832	87.31	96.58	none *
0.384646	54.92369	62.99	70.05	At most 1
0.267653	31.61692	42.44	48.45	At most 2
0.220537	16.66490	25.32	30.45	At most 3
0.093383	4.705670	12.25	16.26	At most 4

*(**) denotes rejection of the hypothesis at 5%(1%) significance level

L.R. test indicates 1 cointegrating equation(s) at 5% significance level

Based on the cointegrating relations obtained in table (4.2b), we apply the Johansen procedure to obtain the long run coefficients of the model. The test results are presented in Table (4.2b). As seen in the table, Johansson test confirms one long run equilibrium relationship among the variables. According to Granger representation theorem, a long run equilibrium relationship implies Error Correction Mechanisms (ECM).

Table (4.2c) Normalized Cointegrating Coefficients

LOG(GDP)	LOG(GFCAP)	LOG(LABFORCE)	LOG(EDU)	LOG(HEALTH)	@TREND(62)	C
1.000000	0.155081	41.32789	-1.574259	-0.986206	-0.690265	-707.6

						258
	(0.94609)	(71.5883)	(1.95000)	(1.24411)	(1.22859)	
Log likelihood	142.4490					

The test result at I cointegrating equation shows that gross fixed capital formation exerts positive influence on output. That of labour force is also positive and statistically significant which implies that labour force contributes positively to the output growth. The coefficients of education and health variables are negative but education is statistically significant while health expenditure is insignificant. This means that increases in education expenditure exerts significant negative pressure on the country's growth process. Health expenditure also exerts negative pressure on the country's growth process.

V.   Conclusion and Policy Recommendation

Result outcome of this study shows that gross fixed capital formation and labour force exert significant positive influence on output. Non-physical human capital coefficients of education and health variables are negative with education being the only statistically significant variable. The result is in line with the neoclassical growth model in use. We therefore, conclude that there is a relationship between human capital development and economic growth in Nigeria. Human capital development also have significant positive effects on Nigeria's economic growth. We therefore recommend, Nigeria increases investment in human capital development especially, the quality of the physical components of workforce, and fixed capital to improve its growth level.

References

[1]. M. A. Adawo, Has Education Contributed to The Economic Growth of Nigeria? Journal of Economics and International Finance 3(1), 2010, 46-58.
[2]. M. Amir, M. Bilal and S. Muhammad, Impact of Human Capital on Economic Growth with Emphasis on Intermediary Role of Technology: Time Series Evidence from Pakistan. African Journal of Business Management Vol. 6(1), 2011, 280-285.
[3]. M., Kasim, K. Mori, and J. Sylvia, Human Capital Investment: Literature Review Analysis and a Study Case among Kadazan-Dusun of Pulutan Village, Menggatal, Kota Kinazan, Sabah, Malaysia. Medwell Journals 5(3) 2010, 31-43.
[4]. T.W. Swan, Economic Growth and Capital Accumulation. Economic Record (Oxford: Blackwell Publishing, 1956).
[5]. R. Solow, Technical Change and the Aggregate Production Function. Review of Economics and Statistics Vol. (39) 1957, 312-320.
[6]. T. Schutz, Investment in Human Capital, American Economic Review, 51(1) 1961, 279-297.
[7]. A. M. Dawodu, Human Resources Development Challenges in the Face of the Current Global Economic Meltdown: The Nigeria Perspective. (Lagos, Nigeria: Principal Partner; DAAM & Associates, 2010)
[8]. O. I. Lawanson, Human Capital Investment and Economic Development in Nigeria: The Role of Education and Health, Pro. 11th OBEC Conference on Business & Economics, 2009, 8-13, Oxford University Oxford, UK.
[9]. S. A. Owolabi, and A. T. Okwu, A Quantitative Analysis of the Role of Human Resource Development in Economic Growth in Nigeria European, Journal of Economics, Finance and Administrative Sciences European Journal of Economics, Finance and Administrative Sciences (EJEFAS), Issue 27, 2010.
[10]. B. Aigbokhan, O. Imahe and M. Ailemen, Education Expenditure and Human Capital Development in Nigeria: Any Correlation so far? Research Paper, 2007, Ambrose Alli University.
[11]. Nigerian Vision 20:2020 Document, Nigeria Vision 20:2020: The First National Implementation Plan (2010–2013), Vol. 2: Sectoral Plans and Programmes; May, 2010.
[12]. United Nations Development Program, Overcoming Barriers: Human Mobility and Development. Published for the United Nations Development Programme (UNDP), 2009.
[13]. A. Ujunwa, Human Capital Development and Economic Growth: Evidence from Nigeria, International Journal of Development Studies, 4(3), 2009, 80-85.
[14]. G. Agiomirgianakis, D. Asteriou, and V. Monastiriotis, Human Capital and Economic Growth Revisited: A Dynamic Panel Data Study, International Advances in Economic Research (IAER), 8(3) 2002.
[15]. I. Hiro, and R. Huggins (2004), Impact of Education and Training Third Report on Vocational Training Research in Europe: Background Report. Luxembourg: Office for Official Publications of European Communities, 2004 (Cedefop Reference Series, 54).
[16]. [16] R. R. Nelson and E. S. Phleps, Investment in Humans, Technological Diffusion, and Economic Growth. American Economic Review (1966), 56(2): 67-75.
[17]. R. Lucas, On the Mechanics of Economic Development, Journal of Monetary Economics, Vol. (22), 1988, 2-42.
[18]. R. Lucas, Supply-Side Economics: An Analytical Review, Oxford Economic Paper, 42(2), 1990, 293-216.
[19]. P. M. Romer, Endogenous Technological Change. Journal of Political Economy (Chicago: University of Chicago Press, 1990).
[20]. A. Frankel, The Production Function in Allocation and Growth: A Synthesis. American Economic Review. Nashville: American Economic Association, Vol. 52, 1962, 995-1022.
[21]. M. Solaki, Relationship between Education and GDP Growth: A Bi-variate Causality Analysis for Greece, doctoral diss., Harokopio University, Athens, Greece 2010.
[22]. Jones, Garett and Joel, Schneider (2005). Intelligence, Human Capital, and Economic Growth: A Bayesian Averaging Of Classical Estimates (BACE) Approach. This Version: June 2005, First published in Journal of Economic Growth, March 2006.
[23]. Sala-I-Martin Xavier Sala-I-Martin & G. Doppelhofer & R. Miller, Determinants of Long-Term Growth: A Bayesian Averaging of Classical Estimates (BACE). Approach American Economic Review 94(4), 2004. 813-835.
[24]. N. Mankiw, Romer, D. and D. Weil, A Contribution to the Empirics of Economic Growth, Quarterly Journal of Economics, Vol. 107, 1992, 407-37.
[25]. S. Johansen, Statistical Analysis of Cointegrating Vectors, Journal of Economic Dynamics and Control, Vol. 12, 1988, 231-254.
[26]. S. Johansen, and K. Juselius, Maximum Likelihood Estimation and Inference on Cointegration, Oxford Bulletin of Economics and Statistics 52(2), 1990, 169-210.