Analysis of the Relationship between Human Capital Development and Economic Growth in Nigeria

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Abstract

This research aimed at examining the relationship between human capital development and economic growth in Nigeria. We made use of co-integration techniques and The vector error correction model (VECM). It was observed that there is significant long-run relationship between human capital development and economic growth in Nigeria. This is confirmed by the Johansen co-integration. Also the result of vector error correction model (VECM) indicates that 1% increase in the government expenditure on education (TEDU), on the average, led to 23.8% increase in GDP while 1% increase in the government expenditure on health (THEA) caused 37.6% decrease in GDP. The two variables, as human capital development factor, were found to have significant effect on economic growth. However, government expenditure on education has positive relationship with GDP. This implies that increase in expenditure on education contributes positively to the growth of the economy. The policy implications are in three directions: To retain the continuous long run relationship with GDP and human capital development, effort should be made to harmonize the activities in the health and education sector with much attention on funding; Government expenditure on education was found to have positive effect on the economy. In the light of this, government should try as well to meet up with world standard benchmark on education expenditure in the annual budget. In so doing, this will improve on the economy and Government expenditure on health was found to have negative effect on the economy. Therefore, effort should be made by government to address the agitations by the health workers which always make them to resort to frequent strike actions. If these worrying issues are looked into, perhaps the instability experienced in the health sector would be addressed. Efforts should be made to equip our health sector so that capital flight in the name of foreign medical treatment is reduced.

Keywords: Human Capital development, Government Expenditure on Education, Government Expenditure on Health, Nigeria.

INTRODUCTION

In developing countries, such as Nigeria, the role of government is important, both scope and significance, for accelerated economic growth. Economic growth is fundamental for sustainable development. It is usually difficult for a country, especially a developing country, to improve the quality of life of its growing population without economic growth. This latter aspect of growth is mainly achieved by the expansion and repair of infrastructures, the improvement of education and health services, and the encouragement of foreign and local investments, among others (Saad and Kalakech, 2009). Hence, sustained and equitable economic growth is clearly a predominant objective of public expenditure policy. Many public programs are specifically aimed at promoting sustained and equitable economic growth. Public expenditures have played an important role in physical and human capital formation over time. Appropriate public expenditures can also be effective in boosting economic growth, even in the short run, when limits to infrastructure or skilled manpower become an effective constraint to an increase in production.

Economic growth is the increase in the amount of goods and services produced by an economy over a period of time. It is conventionally measured as the percentage rate of increase in real gross domestic product, or real GDP. Economic growth can be measured as a percentage change in the Gross Domestic Product (GDP) or Gross National Product (GNP).

The major source of per capita output in any country, whether developing or developed, with a market economy or centrally planned is an increase in productivity. Per capita output growth is however an important component of economic welfare (Abramowitz, 1981). Theory has it that human beings are the most important and promising source of growth in productivity and economic growth. Equipment and technology are products of human minds and can only be made productive by people. The success of any productive program depends on human innovative ideas and creativity.

The effect of human capital development on economic growth in recent times is emphasized on the growth theory (Romer, 1986; Lucas, 1988). An interesting idea in their work was that in the long run, output per unit of input could increase even when inputs were exhaustively accounted for. Technically, advanced human capital and a growing knowledge base appear to be part of this wellspring of growth. An implication of Lucas' hypothesis on human capital is thus associated with investment in man and his development as creative and productive resources (Harbison, 1962). Human capital is the stock of competencies, knowledge, social and

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personality attributes, including creativity, cognitive abilities, embodied in the ability to perform labour so as to produce economic value (Adelakun, 2011).

The nation's quest of spending more on education and health sector, etc has been on the front burner. Analysts have posited that to meet the target of becoming one of the leading world economies by the year 2020, efforts must be made to implement the government plans on human capital development so that it can contribute to the growth of Nigerian economy in its entirety. It was in this consciousness that the federal government has been meeting to proffer a possible solution in human capital development management so that it can contribute meaningfully to the growth of Nigerian economy. In the light of the above mentioned issues, this study aims at examining the effects of human capital development on economic growth in Nigeria.

Governments in Nigeria, for instance, over the years have been making frantic efforts at ensuring that there is an increase in the level of human capital development. Government expenditure on education and health has been on the increase in absolute and relative terms. For instance, from 1970 to 1975 the sum of ₦18.402 million was budgeted for the education sector in Nigeria. But from 1976 to 1980, education budget rose from ₦18.402 million to ₦37.7 million (about two hundred percent in five years) (CBN, 2000). It rose to ₦58.733 million from 1981 to 1986. From 1987- 1991 education budgetary provisions rose to N75.279 million and recorded a phenomenal rise to ₦87.341 million from between 1992-1995. It jumped to ₦102.285 billion between 1996- 2000. From 2001 to 2008, it rose to ₦605.899 billion, about eight hundred percent increase in seven years. Within the period under review, the budgetary allocation to the education sector stood at ₦1.9 trillion (CBN, 2013).

In the health sector the budget provision stood at ₦8500 million by1975 increased to ₦79.2 million between 1976 and 1980. It increased to ₦99.87 million from 1981-1985. It increased again to ₦118.324 million from 1986-1990 before jumping to ₦120.056 million between 1991 and 1995. Health budget increased again to ₦162.247 billion from 1996 -2000. It rose significantly to ₦567.923 billion between 2001- 2008. Available statistics show that total budgetary allocation to health from 1970 to 2013 stood at ₦846.9 billion. In all, the overall budgetary provision to **human capital sector** within the period under review amounted to ₦2.9 trillion. This is far bigger than the total National Budget of Nigeria in 2008 for instance which was slightly above ₦2.3 trillion (CBN, 2009).

The challenge on how to determine the effect of total health expenditure on economic growth is important for its amelioration. It is therefore necessary to determine the extent to which public aggregate and sectoral expenditures have impacted on economic growth. This is why this study is on the effects of human capital development on economic growth using public expenditures on health and education as the benchmark indicators of human capital development. Hence this **seminar** aims at investigating the effects of human capital development on economic growth in Nigeria (1970-2013).

2.0 REVIEW OF RELATED LITERATURE
2.1 Theoretical Review
2.1.1   Human Capital Theory
The theoretical framework of this study is hinged on the Human Capital theory as postulated by Paul Romer (1986). The AK model, which is the simplest endogenous model, gives a constant-saving-rate of endogenous growth. It assumes a constant, exogenous, saving rate. It models technological progress with a single parameter (usually A). It uses the assumption that the production function does not exhibit diminishing returns to scale to lead to endogenous growth. Various rationales for this assumption have been given, such as positive spillovers from capital investment to the economy as a whole or improvements in technology leading to further improvements (i.e. learning-by-doing). However, the endogenous growth theory is further supported with models in which agents optimally determined the consumption and saving, optimizing the resources allocation to research and development leading to technological progress. Romer (1987, 1990) and significant contributions by Aghion and Howitt (1992) and Grossman and Helpman (1991), incorporated imperfect markets and R&D to the growth model.

2.1.2   Health and Education as Components of Human Capital Resource
Adequate recognition has not been given to the health component of human capital resource. Even in classroom sessions on economic development, discussions usually do not emphasize health as a component of human resource development. Schultz (1961), as cited in Lawanson (2009), saw human capital as those resources that are inherent in each human being, which can be traced between the users and the owners to improve their respective living conditions. He outlined these inherent resources in human beings to include knowledge (knowing what to do), skills (knowing how to do what is to be done), and attitude (behavioural demonstration of a favourable inclination while doing that which is to be done). No mention is made here of health (Lawanson, 2009).

2.1.3   Government Expenditure on Education
Education in Nigeria is a constitutional matter, which makes it the responsibility of the government though it is

financed by the public sector in conjunction with the private sector and external bodies. It follows that the sources of education investment funds are mainly public in nature. One of the approaches the government adopts in financing education is the annual budgetary allocation to the sector that is distributed as subvention or grants to the different levels of education. These grants or subventions to educational institutions are made through the respective Education Ministry of the levels of government by the coordinating agencies of education like the National Universities Commission (NUC), NCCE, NBTE, etc. Data available on federal government expenditure on education in Nigeria reveal dynamic changes over the period under review (1970-2013). From available data as shown in the appendix, gross domestic product (GDP) and federal government budgetary expenditures on human capital (education and health), it is obvious that federal government budgetary allocation to the education sector stood at ₦25.84 million in 1970. It rose from ₦17.14 million in 1971 to ₦47.23 million in 1972 representing about 300% growth rate from -3.85% 1971 level. From 1972 to 1976 federal government allocation to education grew phenomenally. For instance the growth rate was 8.1% in 1972, 341.8% in 1974, 331.47% in 1975 and 23.67% in 1976. Budgetary allocation to education hit its billion naira mark in 1976 standing at ₦33940.7 billion. However the education expenditure fell to ₦569.6million in 1978, representing a negative growth rate of 452.04%. The reason for the monumental growth in allocations to education in the early 1970s could be attributed to the policy of reconstruction, rehabilitation and reconciliation (3Rs) embarked upon by the Federal Government in response to the massive destruction of public infrastructures during the civil war.

2.1.4 Government Expenditure on Health

From the available data in appendix 1, one can see that human capital expenditure on health has showed unstable trend. From ₦49.96 million in 1970 it rose to ₦1051.7 million in 1976. It decreases to ₦173.57 million in 1977, representing a negative growth of 605 percent. It recorded a further decrease in 1978 at -1.05 percent. Prior to the introduction of SAP, health expenditure stood at ₦152.65 million in 1984 and increased to ₦215.32m in 1986, representing 61.97 percent growth . Though health expenditure appears to have fared well in growth terms but it has not performed well when looked at in relation to federal government budgetary expenditure. For instance, health expenditure has dwindled between 1% and 5% for the period under review. Health expenditure as a percentage of total expenditure remained low and ranged between 0.58% and 1.46% between 1970 and 1980. However, the sector witnessed stable growth from 2000 to 2013 during the civilian administrations. In general, Federal Government expenditure in the health sector is a far cry from international recommendation. This is why the United Nations in 2006 and 2007 rated Nigeria in the group of countries with lowest health expenditure with health expenditure-GDP ratio of 1.3% and 1.4% in 2006 and 2007 respectively (UN, 2006, 2007).

From the analysis so far it was discovered that the human capital expenditures witnessed high fluctuations from 1970 to 2013. This reveals federal government policy inconsistency in the education and health sectors. Example, while education expenditures witnessed 12 years of zero and negative growths, health expenditures witnessed 7 years of negative growth. Also human capital expenditures as percentages of budgetary expenditures reveal that federal government through different regimes and administrations has not placed priority in human capital development as crucial element in Nigeria's growth process.

2.1.5   Economic Growth in Nigeria

Economic growth means the expansion of a country's capacity to produce goods and services its people want within a given period. Gross Domestic Product (GDP) refers to the total market value of all final goods and services produced in an economy within a given period (Gbosi and Omoke, 2004). Nigerian economy witnessed fair robust economy in the early 1970s with an average growth rate of 11.88 percent between 1970 and 1974. The satisfactory performance of the economy in the early 1970s was not sustained from mid 1970s. Specifically GDP recorded the first negative growth rate of -5.22% 1975. In that same year, health expenditure as a percentage of total government expenditure was only 1% while that of education was 10%. GDP improved in 1976 and 1977 recording impressive growth rates of 9% and 6% respectively. At the end of the oil boom in the early 1980s the economy witnessed contraction. Accordingly, the economy recorded negative GDP growth rates (World Bank, 2007). Aggregate output as measured by GDP recorded negative growth rates of -13.13% in 1981, -0.23% in 1982, -5.229% in 1983 and -4.82% in 1984. Thereafter the economy recovered and recorded improved performance with positive growth rates of 9.7% and 2.5% in 1985 and 1986 respectively. One year after the introduction of SAP the economy witnessed a negative growth rate of -0.7% from a weak rate of 2.5% recorded in 1986. This is understandable because the SAP period was a period of tightening government policy. Though GDP recorded positive growth rates from 1990 to 1999, the rates were weak with an average of 3%. Between 2000 and 2013, the economy of Nigeria performed satisfactorily well with an average growth of 5%.

From the above analysis it can be seen that economic growth in Nigeria has been influenced by policy changes. On the average, GDP in Nigeria has not performed well from 1970 to 2013. It was while human capital expenditures underwent changes, gross domestic product also fluctuated almost in the same pattern. More fundamentally, the analysis reveals three years of concurrent negative growth rates pattern among education, health expenditures and GDP growth rates. The years include 1982, 1984 and 1987. This revelation suggests that fluctuations in the human capital development expenditures may have accounted for the poor performance of the

Nigerian economy from 1970 to 2013. Finally federal government's expenditures in human capital as percentages of annual budgetary expenditures show government neglect of this social sector in Nigeria over the years.

2.2   Empirical Review

There is a large body of theoretical and empirical research on the impact of human capital on economic growth. Much of the early work highlighted growth in labour and the stock of physical capital as the key determinants of economic growth. However, early empirical work was unable to explain a significant portion of the growth in GDP and GDP per capita, by the growth in labour force and capital alone, and so attention turned to other factors - most notably technological change embodied in capital goods, and on the quality and quantity of labour, referred to as human capital, in promoting economic growth.

Inuwa (2012) studied government expenditure and economic growth in Nigeria using co-integration and causality test. The result reveals that government expenditure **granger** cause economic growth. No causal relationship was observed between government recurrent expenditure and economic growth. Michael and Oderinde (2012) used vector auto regression model to study public education expenditure and defence spending in Nigeria. The study observed that military spending and public education expenditure in Nigeria between 1970 and 2003 is positive and statistically significant and there is significant relationship between public education expenditure and defence spending in Nigeria.

Bakare (2012) in a study of assessing the role of public spending for sustainable growth using ordinary least square multiple regression model for the data, observed that the allocation of public expenditures does not fulfil the pareto-optimal criterion. The study suggest the need for the government to review its fiscal policy and adopt the big push strategy in public spending which is capable of helping the poor countries to break out of their poverty level or trap and meet the MGDs challenge.

Ogbulu and Torbira (2012) assess the relationship between budgetary operations and economic growth in Nigeria using multivariate model of linear formation. The study reveals that five budgetary items: Non-oil revenue, economic, administrative, social and transfer expenditures exerted significant effects on the output level of the Gross Domestic Product (GDP). Similarly, Muhammad, Bilal and Muhammad (2012) used regression analysis to investigate impact of human capital on economic growth with emphasis on intermediary role of technology in Pakistan. The study establishes a long run relationship between human capital and economic growth and short run relationship by using error correction model.

Also, Ditimi and Nwosa (2011) in determining the relationship between investment in human capital and economic growth in Nigeria, using causality and vector auto regression approach. The study reveals that there is no causality relationship between investment in human capital and economic growth in Nigeria.

Saad and Kalakech (2009) studies the growth effects of government expenditure in Lebanon over a period of 1962-2007 with particular focus on four sectoral expenditures, defense, education, health and agriculture. Employing a co-integration methodology the study revealed that education expenditure had positive effect on growth in the long-run and negative effect in the short run. Also health expenditure was found to be positively correlated with and insignificantly related to growth in the short run. The study recommended increase in budgetary allocation to education sector in order to enhance growth.

Dauda (2010) carried out an empirical investigation on the relationship between investment in education and economic growth in Nigeria, using annual time series data from 1977 to 2007. He employed Johansen co-integration technique and error correction methodology. Empirical results indicate that there is, indeed a long-run relationship between investment in education and economic growth. All the variables including, labour force, gross fixed capital formation and educational capital appear with the expected positive signs and are statistically significant in the Nigerian economy. The study suggested that a concerted effort should be made by policy makers to enhance educational investment in order to accelerate growth, which would engender economic development in Nigeria.

Babatunde and Adefade (2006) investigated the long run relationship between education and economic growth in Nigeria between 1970 and 2003 through the application of Johansen Co-integration technique and Vector Error Correction Methodology. The result revealed that a well educated labour force possessed a positive and significant impact on economic growth through factor accumulation and the evolution of total factor productivity.

Simoes (2006) carried out empirical investigation in a panel data framework of the effects of education and its sub-categories on economic growth emphasizing its complementarities with the other major determinants of technological change and growth. The study focused on a sample of 23 OECD countries from 1960- 2000 and used an extended and augmented version of the Benhabib and Spiegel (1994) growth specification that considers the role of education in final goods production and in innovation and imitation activities and that interacts education with the other major determinants of technological change. Using GMM estimator the results showed the importance of education, and especially tertiary schooling, for growth through technology diffusion

and domestic innovation activities. These results are robust to the introduction of the additional technological change determinants. The study recommends that in order to fully exploit the benefits from research & development expenses in terms of growth, the average OECD country needs a sufficient level of overall education and to benefit from the technology incorporated in imports of machinery, countries need a sufficient level of secondary education.

Nurdeen and Usman (2010) investigated the effect of government expenditure on economic growth in Nigeria between 1979 and 2007. Using co-integration and error correction methodologies the study found among other things that government total capital expenditure, total recurrent expenditure and government expenditure on education have negative effect on economic growth. On the other hand the study found that rising government expenditure on transportation and communication and health had incremental effect to economic growth within the period under review. The study recommends among others, increased investment in the development of transportation and communication, and the health sector.

Andres and Guerra (2005) studied the impact of health on economic growth in 52 countries drawn from Europe (13), Africa (12), America (16), and Asia (11) from 1970 to 1990. Utilizing Ordinary Least Square and Generalized Least Square methods, the study found health capital as having significant positive impact on economic growth. The study therefore recommended the inclusion of health investment as a tool of macroeconomic policy.

Tompa (2002) studied the relationship between health and productivity in Canada from 1950 to 2000. He employed descriptive and trend analysis methods. Drawing inferences from earlier empirical studies and the trend results he concluded that health is an important driver of productivity. This study fails to use econometric tools in analysis.

Bakare and Sanmi (2011) investigated the relationship between health care expenditures and economic growth in Nigeria, using the ordinary least square multiple regression analytical method. Their data analysis shows a significant and positive relationship between health care expenditures and economic growth. They noted that the key to good results lies not in ordinarily increasing particular budgetary allocation but rather in implementing a public finance system that, to the extent possible, links specific expenditure and revenue decisions and ensure the usage of the allocated funds as transparently as possible. They therefore recommended that Nigerian policy makers should pay closer attention to the health sector by increasing its yearly budgetary allocation to the sector. Risikat (2010) examined investment in education and economic growth in Nigeria, using co integration and error correction model. The result indicates that there is a long-run relationship between investment in education and economic growth in Nigeria.

3.0 METHODOLOGY
3.1   Research Design
The Ex-*post facto* research design is used for this study. Onwumere (2009) states that ex-post facto design is the type of research involving events that have already taken place.   Ex-post facto research design is systematic and empirical inquiry in which the researcher does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulated (Akuezuilo, 1990). This design is used because the study intends to use what already exist and look backwards to explain why. This kind of study is based on analytical examination of dependent and independent variables. More so, independent variables are studied in retrospect for seeking possible and plausible relations and the likely effects, the changes in independent variables produce on a dependent variable. The variables used in this study is gross domestic product (GDP), specified to depend on human capital development proxies (education and health expenditures). In broad terms, co-integration test is employed and E view analytical tool used.

3.2   Model Specification
The theoretical framework of this study is hinged on the Human Capital theory as postulated by Paul Romer (1986). The model works on the property of absence of diminishing returns to capital. The simplest form of production function with non-diminishing return is:

$$Y = AK \quad \ldots\ldots\ldots\ldots(1)$$

Where

A is a positive constant that reflects the level of the technology.

K is capital (broad sense to include human capital), which is adopted in this study as stated below

$$GDP = f(TEDU, THEA) \quad - - - \quad (2)$$

Where: GDP = Gross Domestic Product, TEDU = Total Government Expenditure on Education, and THEA = Total Government Expenditure on Health. THEA & TEDU are proxies for human capital development,

Expressing in structural form equation 2 becomes:

$$GDP = \alpha_0 + \alpha_1 TEDU + \alpha_2 THEA + U_t \quad - - - \quad (3)$$

Where, $U_t =$ the white noise random element and $\alpha_0,$ α_1 and α_2 are parameters.

The study employs annual data on selected variables from 1970 to 2013. The study adopts economic growth as its dependent variable which is measured by gross domestic product (GDP). Government expenditure on health and education is used as the independent variables being proxies for human capital development. This study shall follow a systematic time series economic approach of testing whether nature of time series data will be stationary or non-stationary in order not to obtain spurious result before using any econometric technique.

4.0 RESULTS

This section is centered on the result for data analysis. Data analysis involves working to uncover patterns and trends in data sets while interpretation involves explaining those patterns and trends. Data analysis is considered an important step and it is the heart of the research in any academic work. When data has been collected with the assistance of relevant tools and methods, the next logical step, is to analyze and interpret the data with a view to arriving at empirical solution to the problem. Hence, the results for the analysis are presented below.

4.1 Unit Root Test

The Augmented Dickey-Fuller (ADF) and Philip Perron (PP) formulae were employed to test for the existence of unit roots in the data using trend and intercept. The results are presented in table one below.

Table 1: Augmented Dickey Fuller Unit Root Test

Trend and Intercept @ Level

Series	ADF Test Statistic	5% critical values	10% critical values	Order	Remarks
GDP	2.737139	-3.518090	-3.189732	1(0)	Not Stationary
TEDU	2.011080	-3.518090	-3.189732	1(0)	Not Stationary
THEA	1.394136	-3.518090	-3.189732	1(0)	Not Stationary

Sources: Researcher's compilation from E-view (version 7.0)

Table 2: Phillips-Perron Unit Root Test

Trend and Intercept @ Level

Series	ADF Test Statistic	5% critical values	10% critical values	Order	Remarks
GDP	4.875078	-3.518090	-3.189732	1(1)	Not Stationary
TEDU	9.865793	-3.518090	-3.189732	1(1)	Not Stationary
THEA	2.190323	-3.518090	-3.189732	1(1)	Not Stationary

Sources: Researcher's compilation from E-view (version 7.0)

Table 3: Augmented Dickey Fuller Unit Root Test

Trend and Intercept @ 1st Difference

Series	ADF Test Statistic	5% critical values	10% critical values	Order	Remarks
GDP	-6.236500	-3.520787	-3.191277	1(1)	Stationary
TEDU	-5.365785	-3.520787	-3.191277	1(1)	Stationary
THEA	-5.954375	-3.520787	-3.191277	1(1)	Stationary

Sources: Researcher's compilation from E-view (version 7.0)

Table 4: Phillips-Perron Unit Root Test

Trend and Intercept @ 1st Difference

Series	ADF Test Statistic	5% critical values	10% critical values	Order	Remarks
GDP	-6.300686	-3.520787	-3.191277	1(1)	Stationary
TEDU	-5.294614	-3.520787	-3.191277	1(1)	Stationary
THEA	-5.955016	-3.520787	-3.191277	1(1)	Stationary

Sources: Researcher's compilation from E-view (version 7.0)

4.2 Co-integration Test

This technique is employed to test for the presence of co integration between the series of the same order of integration through forming a co-integration equation. The basic idea behind co-integration is that if, in the long-run, two or more series move closely together, it is possible to regard these series as defining a long-run equilibrium relationship, as the difference between them is stationary. Lack of co-integration implies

that such variables have no long-run relationship.

Table 5: Johansen co-integration test for the series; GDP, TEDU and THEA
Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.706929	65.32361	29.79707	0.0000
At most 1	0.247709	13.77529	15.49471	0.0893
At most 2	0.042424	1.820727	3.841466	0.1772

 Trace test indicates 1 co-integrating eqn(s) at the 0.05 level
Under the Johansen Co-integration Test, there is one co-integrating equations. In Johansen's Method, the trace statistic determines whether co-integrated variables exist.

4.3 Vector Error Correction Mechanism (VECM)

The presence of long run equilibrium relationship among the variables as found from the Johansen co-integration led to the application of VECM. With this approach, both the long run equilibrium and short run dynamic relationships associated with variables under study is established.

Table 6: VECM

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.850869	0.115272	9.116397	0.0000
C(2)	-1.298979	0.208276	-6.236814	0.0000
C(3)	23.80615	8.322165	2.860572	0.0069
C(4)	-37.63652	18.23077	-2.064450	0.0460
C(5)	2265946.	248983.8	9.100774	0.0000
R-squared	0.773974	Mean dependent var		1039802.
Adjusted R-squared	0.749538	S.D. dependent var		1782386.
S.E. of regression	892015.7	Akaike info criterion		30.35170
Sum squared resid	2.94E+13	Schwarz criterion		30.55856
Log likelihood	-632.3857	Hannan-Quinn criter.		30.42752
F-statistic	31.67442	Durbin-Watson stat		1.788450
Prob(F-statistic)	0.000000			

The existence of co-integration among the variables as indicated above presents evidence of long-run economic relationship among the variables. This implies that, vector error correction model is the best option for further analysis. It captures both the long run equilibrium and short run dynamic relationships associated with the above results.

4.4 Findings

The statistical test for this hypothesis is trace statistics. This is found in the Johansen co-integration test. The trace statistics [65.324 > 29.79707]. Therefore, we conclude that there is significant long-run relationship between human capital development and economic growth in Nigeria within the period under study.

In the VECM Equation Result presented in table 6 above, the t-statistics for TEDU is 2.861 while its P-value is [0.0069]. Since the level of significance [0.05] is greater than the P-value [0.0069], the null hypothesis is rejected and it is concluded that education expenditure has significant effect on economic growth in Nigeria within the period under study.

In the VECM Equation Result, the t-statistics for THEA is -2.065 while its P-value is [0.0460]. Since the level of significance [0.05] is greater than the P-value [0.0460], the null hypothesis is rejected and it is concluded that health expenditure has significant effect on economic growth in Nigeria.

5.0 DISCUSSIONS
5.1 Discussion of Findings

This section deals with the discussion of the findings. In the discussion, effort was made to discuss result of the data, making connections between the results of the analysis, existing theory and research.

The above empirical test on unit root test shows that GDP, TEDU and THEA are not stationary at levels. However, all the variables are stationary at first difference in both ADF test and PP test. Considering the time series using Augmented-Dickey Fuller and Phillip Perron at Trend & Intercept, all their calculated statistics are greater than the critical values at 5% level of significance. The results show that the time series are integrated of the same order; I (1), with the application of both ADF and PP test respectively. Thus, a linear combination of series integrated of the same order are said to be co-integrated. The level of their integrations indicates the number of time series have to be differenced before their stationarity is induced. On the basis of the above unit root tests, the work employed the Johansen (1988 & 1999) and Johansen and Juselius (1990, 1992, and 1994) co-integration test.

The summary of the Johansen Co-integration Test is shown in the table 5 above. The model with lag 1 was chosen with the linear deterministic test assumption. In order to find out if there is long run equilibrium relationship that exists between the GDP and the explanatory variables (TEDU and THEA), Johansen Co-integration Test was used. There is one co-integrating equation. In Johansen's Method, the Eigen value statistics is used to determine whether co-integrated variables exist. As can be seen from the trace statistics, here the absolute values of the variables are [65.324 > 29.79707], [13.775 < 15.49471] and [1.821 < 3.841466]. In other words, the null hypothesis of no co-integration among the variables is rejected since at least one variable in the equations at 5% are statistically significant. The test result shows the existence of a long-run equilibrium relationship among the variables.

The nature of the long run equilibrium relationship is found from the normalized co-integrating coefficients. Thus, the equation is stated as follows:

GDP = -1918434 – 55.631 TEDU – 34.394 THEA

Where GDP is the dependent variable, -1918434 is the constant term, -55.631 is the coefficient of TEDU and -34.394 is the coefficient of THEA. The signs borne by the coefficient estimate of the variables: TEDU and THEA have negative relationship with GDP.

With the identification of co-integrating equations among the variables employed for estimation, vector error correction model VECM estimation presents the only option for predicting the dynamic behaviour of GDP in response to TEDU and THEA.

The Error correction term did not meet the required conditions. However, the ECM term is statistically significant. The coefficient of ECM(-1) is 0.851 and the fact that its P-value [0.0000] is less than 5% [0.05] level of significance satisfied the second condition of statistical significance. The computed coefficient of multiple determination (R^2) value of 0.773974 indicated that the model satisfies the requirements for goodness of fit. The value showed that 77.4% of the total variation in gross domestic product (GDP) is accounted for, by the explanatory variables [government expenditure on education (TEDU) and government expenditure on health (THEA)] which are equally the indices for human capital development while 22.6% of the changes in GDP is attributable to the influence of other factors not included in the regression equation.

5.2 Conclusion

The study examined the effect of human capital development on economic growth of Nigeria. Specifically it determined the extent to which long-run relationship exist among the variables, examined if expenditure on education has significant effect on economic growth in Nigeria and investigated if expenditure on health has significant effect on economic growth in Nigeria. The study employed ex-post facto research design using Nigeria's data obtained from CBN (1970-2013). The empirical results were on Augmented Dickey Fuller test and Philip Peron. In the second step, Johansen co integration test was conducted. The presence of long run equilibrium found led to the use of Vector Error Correction Mechanism (VECM).

It was estimated from the VECM, that 1% increase in the government expenditure on education (TEDU), on the average will lead to 23.8% increase in GDP while, 1% increase in the government expenditure on health (THEA) will cause 37.6% decrease in GDP. Government expenditure on education has positive relationship with GDP. This implies any increase in expenditure on education will contribute positively to the growth of the economy. However, any increase in government expenditure on health, contribute negatively to the growth of the economy. In the case of the adverse effect which government expenditure on health has on GDP, reasons could be attributed to the funding. Though government expenditure on health may increase, the incessant increase in strike action by the staff workers will impede on the human capital development thereby causing negative influence on the economy. In the light of this, the above recommendations were made.

5.3 Recommendations

Based on the findings, the policy implications are in three directions.

i To retain the continuous long run relationship with GDP and human capital development, effort should be made to harmonize the activities in the health and education sector with much attention on

funding. The harmonization of the activities in these two sectors will have long run effect on the economy.

ii As one of the factors of human capital development, government expenditure on education was found to have positive effect on the economy. In the light of this, government should try as well to meet up with world standard benchmark on education expenditure in the annual budget. In so doing, this will improve on the economy.

iii Government expenditure on health was found to have negative effect on the economy. Therefore, effort should be made by government to address the agitations by the health workers which always make them to resort to frequent strike actions. If these worrying issues are addressed, the instability experienced in the health sector would be solved. This will go the long way in promoting the economy. More so, efforts should be made to equip our health sector so that capital flight in the name of foreign medical treatment is reduced.

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