International Journal of Social & Management Sciences, Madonna University (IJSMS)
Vol.1 No.1, March 2017; pg.118 – 130

EFFECTS OF GOVERNMENT HEALTH AND EDUCATION EXPENDITURES ON ECONOMIC GROWTH IN NIGERIA

SALAMI DADA KAREEM
Department of Economics
Lagos State University, Ojo

&

OLABODE OLUWAYINKA SAMUEL
Department of Economics,
Redeemer University, Ede,
Osun State

&

ATOYEBI KEHINDE OLUSEGUN
Department of Economics
Lagos State University, Ojo

&

LAWAL SAMAD AROGUNDADE.
Department of Economics,
Lagos State University, Ojo

&

DANMOLA RASAQ
Department of Economics,
Lagos State University, Ojo

ABSTRACT
This study empirically examines the relationship between health and education expenditure on economic growth in Nigeria between 1917 and 2013. The study adopted ordinary least square to determine the relationship between health and education expenditure on economic growth in Nigeria. Contrary to our expectation our result did not conform with our apriori expectation where all the variables are expected to be positively related to economic growth but rather capital expenditure and recurrent expenditure showed a negative sign which implies that as more of the variables increase, economic growth reduces. The study also observed that little attention was paid to health sector as the percentage of budgetary allocation to the sector ranged from the 1.07% 1980 to 5.24% in 2007 compared with education. However, Government commitment to education fluctuated within the period. It reaches the peak in 2013. Upon all this observations, the study therefore recommended that Government should devoted more resources to the sector. Thus, investment in education and health is a worthwhile venture that Government should take serious.

Keyword: *Health expenditure, Economic Growth, Education.*

Introduction

Arguably, economic growth is attained through the productive use of all resources, including labor, this results in greater per capita income and improvement in people's average standard of living (World Bank, 2004). It has also been argued that meaningful human development depends on policy choices including access to income and employment opportunities, educational and health care services as well as clean and safe physical environment.

Human capital theory suggests that the society and individuals derive economic benefits from investments in people (Oluwatobi, and Ogunrinola 2011). Education and health play a central role in economic

development (Dauda, 2004). They play a central role in development process. No country has successfully achieved continuous growth without significant investment in human capital (Adelowokan, 2012). The effect of government expenditure spending on human capital development is still an unsolved issue both empirically and theoretically. Quite recently the wealth of a nation is now being measured in terms of human capital and not the stock of physical capital only, as an independent factor of production required to accomplish high and sustainable labour productivity.

Economic development theorists, especially the neo-classicalist are of the opinion that development in human resources generally has a significant impact on economic growth and development. They opined that the quality and quantity of labour determine production (Okoro 2015). Welfare, being an important indicator for growth and development as given by the Human Development Index (HDI) has identified education and health as one of its measures. Education, good health and longevity are also fundamental inputs for productivity.

The growth of health and education sector in the development process of any economy cannot be over-emphasized because only well-educated and healthy people produce optimally and contribute to national output. The importance government places on education and health in Nigeria has led to the increase in public expenditure allocation to both health and education sector over the years with the aim that this would in turn generate returns that will further enhance the growth and development of the country (Olajide, Akinlabi, and Tijani 2013).

At this point, it must be stated that Health expenditure is too low in many developing countries for instance as at 2012, the health sector's share of the total expenditure of the government was an estimate of 5% (Njoku, Ugwu and Chigbu 2014) meanwhile, The United Nation (UN) recommended for a country, an average of 8 to 10 percent of the GDP as benchmark expenditure on health (Oni, 2014) and it is of uppermost importance to increase the means available for health assistance affordable for all the population of countries. Stagnation has been noticed in many developing countries both in health and education expenditure per capita and economic development, and this study is focused to point to the recommendation to increase the health and educational level of the population, in order to have a real positive impact on growth and development of the nation.

Despite the seemingly low percentage which the health and education sectors are allocated annually, large sums of money for spending are still made available for these sectors. Yet the results shown have been quite disappointing. Nigeria, acknowledged as the most populous country in Africa is blessed with vast human material resources. Yet, poverty as at 2010 was given to be approximately 69 %1 (Nasiru and Usman 2012) while the human poverty index stood at 46.0%). Similarly, approximately 64.4% of Nigerians live below income poverty line of U.S$1.25 a day. Similarly, Menizibeya (2011) labeled Nigeria as one of the most poverty entrapped economies in the world with poor human welfare status. These results thus show that the growth in social expenditure is yet to be reflected on citizen's welfare.

Menizibeya (2016) retraited in his work as read in (Menizibeya 2011) that in 2010, out of the approximately 163 million Nigerians, 53.8% constitute economic active group compared to an average annual increase from 52.2% in 1980-1995 to 53.7% in 1996-2010. This statistics indicates that the evidence of the deplorable state of Health and Education is made known with poor and degenerated educational facilities, low ranking, mass graduation with low prerequisite skill, incessant strikes, and brain drains, poor medical service and facility, high infant mortality, low life expectancy and the increased rate of travelling for better medical service. The situation now calls to question the government position in making these all important sectors the pivotal for economic growth and development in the country and this can be done by considering the government's contribution to input and not just the outputs measured in terms of life expectancy and literacy rates and their contribution to growth.

Hence, the possibility of meeting the laudable United Nation health Millennium Development Goals (MDGs) of a reduction by two-thirds in the under-5 mortality ratio and a reduction by three-quarters in maternal mortality, and halting and beginning to reverse the spread of HIV/AIDS, malaria and other major diseases by 2015 will be completely elusive for Sub-Sahara African countries like Nigeria if sufficient attention is not paid to health expenditures. Similarly, eradicating illiteracy as one of the objectives of the (MDGs) will be a mirage if sufficient attention is not given to educational expenditure by the federal government. This paper tends to evaluate how the government's expenditure on health and education in Nigeria has significantly affected the economic growth in Nigeria

This study therefore will examine the growth effect of health and education expenditure covering the periods of 1979 to 2013 in Nigeria.

2. Selected Existing Literature

Since growth theorists have tried to incorporate human capital into the growth framework, it becomes necessary to understand the concept of human capital. Capital may be said to be "assets that yield income and other useful outputs over long periods of time". But tangible forms of capital are not the only type of capital; expenditures on medical care, a computer training course, schooling and lectures on the virtues of punctuality and honesty are also capital. This is because they raise earnings, add to a person's good habits or improve health over much of his lifetime (Oni, Aninkan and Akinsanya, 2014). Hence, economists consider expenditures on training, education, medical care, research and development (R&D) and so on as investments in human capital. They are called so because people cannot be separated from their skills, knowledge, health, or values in the way they can be separated from their financial and physical assets.

Human capital theory originated about four (4) decades ago, under the strong and inspiring leadership of Theodore Schultz, Gary Becker and Jacob Mincer (Hartog & Brink, 2007). It has been flourishing ever since with many new theoretical and empirical developments.

Investment in human capital is usually dependent on the costs of acquiring the skills and the returns that are anticipated from the investment. Nations can influence these variables. Economies that are better-off, for example, can lower the costs of human-capital acquisition for their citizens by subsidizing their education and training costs. Furthermore, more affluent and better-educated economies can shape the tastes and preferences of their citizens by instilling in them a high regard for education and a desire to accomplish in school. This translates into a higher rate of return on knowledge and skills relative to that of citizens from less-advantaged economies. Thus, nations play an essential role in creating advantages for their citizens by encouraging them to acquire substantial stocks of human capital. Eventually, it is human capital which has value in labour markets (NPC 2006).

A further expectation is that a widespread investment in human capital will create in the labour-force the skill-base necessary for economic growth. The survival of the human-capital reservoir was said, for example, to explain the rapid economic growth and reconstruction achieved by the defeated world powers of the Second World War (Narayan, 2015).

The critics of human-capital theory in economics point to the limitation of measuring key concepts, which includes future income and the central idea of human capital itself Agenor and Moreno (2006). It is the general assertion that not all investments in education guarantee an increase in productivity as supposed by employers or the market due to theory. In particular, there is the problem of measuring both worker productivity and the future income attached to career openings, except by reference to actual earnings differences which the theory tries to explain. Thus, empirical studies have suggested that, although some of the observed variation in earnings is likely to be as a result of skills learned, the percentage of unexplained variance is still very high, and must be a feature of the imperfect structure and functioning of the labour-market, rather than of the productivities of the individuals (Edame, 2014).

There have been various efforts to empirically relate the two concepts of economic growth and human capital development (Edame, 2016). This study focuses on the two-way relationship between economic growth and human capital development (public expenditure on education and health). There are thus two distinct causal chains examined; one runs from economic growth to human capital development, as the resources from national income are allocated to activities contributing to human capital development. The other is from human capital development to economic growth indicating how in addition to being an end in itself; human capital development helps raise national income.

Health, Human Capital and Economic Growth:

The health condition in a country affects its economic growth through various channels. For instance, when health increases, the country can produce more output with any given mixture of physical capital, skills and technological knowledge. One way to think about this consequence is to treat health as another component of human capital combined in expressing the endogenous growth models (Bakare and Salami, 2011).

The effects of the variables of human capital (namely, health and education) imply that the investment rate tends to increase as levels of education and socioeconomic status of health rise. Longer life expectancy encourages greater investments in human capital, which in turn accelerates the growth of per capita income. The explanation of larger investments on human capital due to longer life expectancy is offered by Stark (1995) in terms of intergenerational transfer of assets.

The provision of public assets for improved health in a developing country can assist the poor to release resources for other investments, such as in education, as a means to avoid poverty. The long-term relationship between income and health is examined by Dauda (2004) when considering the developed countries in the world and he observed the hypotheses that health of the population has influenced economic growth and that it should be a primary component of the productivity of economies and

supporting the endogenous growth models. Arora's findings is found to be similar to those reported by Dauda (2011) who carried out a similar work on Western Economies from 1780 to 1979.

Several research works have employed the use of varying methods and methodology to ascertain the effect of human capital development on economic growth. In doing this, a number of contrasting results have been obtained. Hence this research work aims at identifying some of the loopholes and trying to fill the loopholes where possible in research work of similar nature.
Most empirical research so far rely on rather traditional models of growth and development, which ignore some of the crucial aspects of the new growth models taking into account the dynamic feedback of the growth affecting variables. The indirect effect of education on economic growth is measured through productivity improvement. The productivity of labour is influenced by the investment in human capital. This line of thought has not only caused reawakening of the field of endogenous growth but has also established the significance of human resource development through the spillover benefits of education in achieving fast economic growth in many countries including the countries in Asia and Africa.

Dauda (2010) made use of an adapted endogeneous growth model developed in 1992 by Mankiw, Romer, and Weil in his study of human capital and economic growth relationship in Nigeria. However, the study did not include government spending as one of the human capital variables used in the model. Babatunde and Adefabi (2005) discovered a long run relationship between human capital development (proxied by schools' enrolments in primary and tertiary institutions and average years of schooling) and economic growth measured by outper per worker. Their result showed that education has a statistically significant positive relationship with economic growth. However, they did not give consideration to government health expenditure as a human capital component in the model specified and estimated.

Furthermore several of the literatures reviewed on the effect of governments' expenditure on human capital development in Nigeria have omitted the health expenditure component of human capital development. It is against this limitation that this study hopes to critically examine how health and education expenditures (as components of human capital development) may lead to increased growth in Nigeria.

3. Model Specification
For the relevance of this study, we modified the model with the necessary variables. These include government's capital expenditure on education and health (CE) and government's recurrent expenditure on education and health (RE), which would enter the equation through K (i.e. physical capital). While, literacy rate (LIR) and life expectancy (LE) will represent efficient labour (hL) i.e. the combination of human capital and labour in the augmented Solow growth model i.e.

(1)

(2)

Where c in equations 3 and 4 represents any other constant factor/variable
These four variables are incorporated to capture government's investment in development of its health and education sectors and their outcome. Hence,

(3)

The new expanded model is thus stated as follows:

$$\text{Log } Y_t = \alpha_0 + \alpha_1 \log RE_t + \alpha_2 \log CE_t + \alpha_3 \log LIR_t + \alpha_4 \log LE_t + \mu_t \quad (4)$$

Where:
Y Output level is represented by real Gross Domestic Product (GDP);
RE government's recurrent expenditure on education and health (a proxy of education and heath expenditure)
CE government's capital expenditure on education and health (a proxy of education and heath expenditure)
LIR literacy rate (a proxy for the outcome of government expenditure on education)
LE life expectancy (a proxy for the outcome of government expenditure on health)
μ is the stochastic disturbance term
α_0 is the intercept of the model
$\alpha_{1\ldots}\ \alpha_4$ is the slope of the regression or the behavioural parameters
In order to precisely analyse economic growth implication of public expenditure on health and education in Nigeria between Pre-Structural Adjustment Programme (SAP) and Post- Structural

Adjustment Programme (SAP) eras, the empirical model that incorporates the major components of human capital investment spending is adopted.

Apriori Expected Signs and Results:

The independent variables against the dependent variables should have the expected signs and results as follows;

Mathematically;

Variables	Expected Signs	Expected results
Government capital expenditure on health and education	+	As the government capital expenditure on health and education increases, the GDP also increases. Hence a direct relationship
Government recurrent expenditure on health and education	+	As the government recurrent expenditure on health and education increases, the GDP also increases. Hence a direct relationship
literacy rate	+	As there is an increase in the literacy rate, the effect is positive on economic growth. Hence a direct relationship
life expectancy	+	As the expected life expectancy increases, economic growth is expected to increase also. Hence a positive direct relationship.

Sources of Data

A secondary data will be employed in this analysis as it suits the economic research nature of the work. The data to be used will be obtained from major sources which are; Central Bank of Nigeria statistical bulletin (2013), CBN annual report (various issues between 1979-2013), Economic journals, World Development Indicators (WDI), National Bureau of Statistics (NBS) and the Federal Office of Statistics (FOS).

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Table 3: Descriptive Statistics of the Dependent and the Independent Variables.

	GDP	CE	LE	LIR	RE
Mean	7331238.	30070.26	47.46096	0.371143	102959.1
Median	1329007.	4875.300	46.31827	0.340000	14842.30
Maximum	28836631	146000.0	52.49978	0.610000	570411.8
Minimum	32827.82	153.8000	45.17720	0.200000	341.1000
Std. Dev.	9343868.	43670.07	2.108308	0.098362	165211.1
Skewness	1.037091	1.466769	1.218219	0.629834	1.875930
Kurtosis	2.691425	3.969224	3.042993	2.678666	5.563219
Jarque-Bera	6.412944	13.91985	8.659695	2.464615	30.10955
Probability	0.040499	0.000949	0.013170	0.291619	0.000000
Sum	2.57E+08	1052459.	1661.133	12.99000	3603568.
Sum Sq. Dev.	2.97E+15	6.48E+10	151.1287	0.328954	9.28E+11
Observations	35	35	35	35	35

Source: *Computed by Author Using E-views*

The descriptive statistics shows the number of observations of all variables, their average values and their standard deviation. It also showed the minimum and maximum values as well which can be attained by these variables. It revealed that on average the GDP was reported to be ₦7,331,238 million. This indicates that there is an increase in the economy's real GDP. Also government's capital expenditure on education

and health gave an estimated average of ₦30,070.26 million, which also indicates an increase in the capital expenditure in the two sectors.

Furthermore, the other independent variables, on average, there is an increase of 47.46096 in the total LE, 0.371143% increase in the total LIR while 102959.1 increase in RE. The total observation for the time period is 35.

Pearson's correlation coefficient is employed to examine the extent of relationship between the variables according to the technique, the nearer the correlation coefficient to one (1) the stronger the strength. A correlation matrix shows the magnitude and direction of the relationship between each pair of variables being analysed. A negative correlation shows that there is an inverse relationship between the two variables.

Table 4: Correlation table

	GDP	CE	RE	LE	LIR
GDP	**1.00000 0**	0.935470	0.974412	0.765986	0.888794
CE	0.935470	**1.000000**	0.969534	0.798850	0.845735
RE	0.974412	0.969534	**1.000000**	0.828213	0.906834
LE	0.765986	0.798850	0.828213	**1.000000**	0.883207
LIR	0.888794	0.845735	0.906834	0.883207	**1.000000**

SOURCE*: Computed by Author Using E-views*

NOTE: All the computed values of the variables are logged
The correlation matrix is symmetric about the diagonal and the values of the diagonal are 1.000000, since there is a perfect correlation of the variables with itself. The table above revealed that there exist a strong positive relationship (0.935470) between GDP and CE. Similarly, RE (0.974412) is also correlated with GDP in a very strong way. In addition, the table explains that there exist a strong relationship between GDP and LE (0.765986). Meanwhile, LIR which was measured in term of a proxy for the outcome of government expenditure on education agreed and also showed a strong positive relationship with GDP (0.888794). In summary, it can be concluded that CE, LE, LIR and RE has a significant agreement with GDP because they all showed a strong positive relationship with the GDP.

Stationary Test
Panel unit root test was applied for all variables used in the analysis in order to determine the level of stationarity of the variables and to avoid spurious regression results. The result of the unit test conducted on the variables used for analysis in the study are presented in Table 5;

Table 5: Unit Root Test

Variables	**Level (ADF)**	**LEVEL (PP)**	**IST DIFFERENCE (ADF)**	**IST DFFERENCE (PP)**	**RESULT**
GDP	-0.860571	-0.860571	-5.060944 (-3.646342*) (-2.954021**) (-2.615817***)	-5.056286 (-3.646342*) (-2.954021**) (-2.615817***)	I(1)
CE	-0.666597 -7.017048	-0.612102	-7.017048 (-3.646342*) (-2.954021**) (-2.615817***)	-6.937987 (-3.646342*) (-2,954021**) (-2.615817***)	I(1)
RE	-0.031868	-0.217432	-6.258281 (-3.653730*) (-2.957110**) (-2.617434***)	-7.629000 (-3.646342*) (-2.954021**) (-2.615817***)	I(1)
LE	-0.325328	2.178610	-2.485300 (-3.689194*) (-2.971853**) (-2.625121***)	-1.294912 (-3.646342*) (-2.954021**) (-2.615817***)	I(2)

LIR	-1.399411	-1.261049	-6.920763 (-3.646342*) (-2.954021**) (-2.615817***)	-8.931975 (-3.646342*) (-2.954021**) (-2.615817***)	I(1)

*=1% LEVEL **= 5% LEVEL ***=10% LEVEL
SOURCE: *Author's Computations Using E-views*

Note: All variables have been logged and the figures without parenthesis indicate observed values which are the test-statistics for the ADF and the adjusted test-statistic for the PP. Figures within parenthesis indicate critical values i.e. Mackinnon (1991) critical value for rejection of hypothesis of unit root applied.

The study applied Fisher-type test because it has more advantages than other panel unit root tests. The Fisher type unit root test requires specification of Augmented Dickey-Fuller and Phillip Peron to test whether a variable has unit root.
Table 3 above showed the results of the Panel unit root test. These tests had been used to test the presence of a unit root in the panel form of data. The panel data were appropriately examined by using the ADF - Fisher Chi-square and PP - Fisher Chi-square tests. These techniques were applied to confirm if the series of variables used in this study contains a unit root.
The study therefore concluded that all the variables under consideration do not have unit root and were therefore used in their first difference (except for LE, which was stationary at second difference). This means that the results obtained were not spurious.

Co integration Test

Table 6: Cointegration Table

Sample (adjusted): 1981 2013

Included observations: 33 after adjustments

Trend assumption: Linear deterministic trend

Series: LOG(GDP) LOG(CE) LOG(RE) LOG(LIR) LOG(LE)

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Max-Eigen Statistic	0.05 (Trace) Critical Value	Prob.** (Trace)	Prob.** (Max-Eigen)
None*	0.939257	145.2132	92.43656	69.81889	0.0000	0.0000
At most 1*	0.530709	52.77659	24.96558	47.85613	0.0161	0.1044
At most 2	0.455081	27.81101	20.03487	29.79707	0.0833	0.0706
At most 3	0.209714	7.776140	7.766872	15.49471	0.4897	0.4029
At most 4	0.000281	0.009268	0.009268	3.841466	0.9229	0.9229

Trace test indicates 2 co integrating eqn(s) at the 0.05 level
Max-Eigen value test indicates 1 co integrating eqn at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: *Authours' Computation Using E-Views*

The test statistic indicates that the hypothesis of no co integration among the variables can be rejected for Nigeria. The result shows that there exist at least two (2) co integration equations at 5% critical value. Table 7 presents the regression result from modeling the variables using the Ordinary Least Square (OLS) method which is presented below;

Table 7: The Result from Modelling the Variables Using OLS

Dependent Variable LOG(GDP)

Method: Least Square

Sample: 1979 2013

Included observations: 35

Variable	Coefficient	Std. Error	t-statistic	Prob
C	49.55444	18.00805	2.751793	0.0100
LOG(CE)	-0.079629	0.168367	-0.472949	0.6397
LOG(RE)	1.035068	0.196721	5.261611	0.0000
LOG(LIR)	1.516549	1.051220	1.442657	0.1495
LOG(LE)	-11.16470	4.499435	-2.481355	0.0189
R-squared	0.959266	S.D dependent Var		2.411054
Adjusted R-squared	0.953835	F-statistic		176.6214
Durbin-Watson stat	1.009581	Prob(F-statistic)		0.000000

Source: *Authors'' Computation Using E-Views*

Estimation Command:
==========
LS LOG(GDP) C LOG(CE) LOG(LIR) LOG(RE) LOG(LE)

Estimation Equation:
==========
LOG(GDP) = C(1) + C(2)*LOG(CE) + C(3)*LOG(LIR) + C(4)*LOG(RE) + C(5)*LOG(LE)

Substituted Coefficients:
==========
LOG(GDP) = 49.554443071 - 0.0796289664036*LOG(CE) + 1.51654930336*LOG(LIR) + 1.03506753045*LOG(RE) - 11.1646953105*LOG(LE)

Interpretation of Results

In assessing the partial significance of the estimated parameters, the t-statistics results are presented in the table 4.

The result shows that recurrent expenditure (RE) and life expectancy (LE) are statistically significant independently and other estimated parameters (government's capital expenditure on education and health (CE) and Life expectancy (LE)) incorporated in the model were found to be statistically insignificant at 5% critical level.

With an R^2 of approximately 0.96, it is clear that the four independent variables explained 96% of the systematic variations in Nigeria's growth rate of gross domestic product during the period under study. This is acceptable because the R^2 should be at least 60% to fit the data reasonably well on the regression line.

The Durbin Watson test of serial correlation indicates presence of weak positive serial correlation because the D-W statistic of 1.01 is far from zero but closer to two (2).

The F-statistic of 176.62 is significant at the 5% level. Thus, the hypothesis of a significant linear causal effect between economic growth, measured by the growth rate of GDP, and the four independent variables is validated.

Also, we notice that all the variables, except, CE and LE have the correct signs but only CE is not significantly different from zero, using 10% level of significance.

The result obtained below based on our analysis which tried to evaluate the effect of government expenditure on education and health on GDP showed that as government's capital expenditure on education and health increases, the value of the GDP reduces such that a hundred per cent (100%) increase

in the CE will reduce GDP by approximately eight per cent (8%) and as government's recurrent expenditure on education and health increases the GDP increases as well. In more specific terms, a one per cent (1%) increase in RE increases GDP by approximately one per cent (1%).

In examining the relationship between each of the independent variables and economic growth, it could be observed that education, measured by literacy rate, had a positive relationship with economic growth. The coefficient of literacy rate was 1.516549. Thus, a ten per cent (10%) increase in literacy rate resulted in an increase in the growth rate of GDP by about fifteen per cent (15.2%). Thus, investment in education was a worthwhile venture during the period under study. The result shows the significance of education to growth in Nigeria. Despite low budgetary allocation to education, its impact on economic growth was still felt during this period of study.

The result also showed the importance of health in the process of economic growth. The coefficient of life expectancy was -11.16470. This indicated a negative relationship between the outcome of health, proxied by life expectancy, and economic growth. An increase of one per cent (1%) in life expectancy, other things being constant, decrease growth rate by about eleven percent (11.16470%).

4. Discussion of Findings (Causal Relationship between Governments Health and Education Expenditure on Economic Growth in Nigeria)

Contrary to our expectations, our result did not completely satisfy our apriori expectations where all the variables are expected to show a positively signed coefficient. Rather, CE and LE showed a negative sign implying that as more of the variables increase, the GDP which is a proxy for economic growth reduces.

Hence, it becomes necessary to adduce reason(s) for our findings. To start with, government's capital expenditure on education and health (CE) indicated a negative impact on the economy's progress just as (Adewolokan, 2016) found. The reason for this may be as a result of so many degenerating educational/health facilities in Nigeria which require maintenance rather than establishment of new ones. In more specific terms, we can say that the spending of government that will actually positively affect growth is of a recurrent nature i.e. RE. This may be as a result of the various capital education and health projects in Nigeria which later become a liability to the nation rather than a contribution to growth when they dilapidate and become abandoned.

Life expectancy (LE) which was a proxy for the outcome of health expenditure on economic growth showed a negative effect suggesting that as the LE increases the GDP which is a proxy for economic growth declines. This result obtained does not correspond to our expectation. Thus, it also becomes needful to suggest/ discuss reasons for this variation. In a nation like Nigeria, increase in life expectancy causes population to rise and since overpopulation is already a problem in Nigeria increase in life expectancy might only compound the problem of economic growth. Despite this fact, the demographic transition theory has provided a reasonable explanation for this outcome. It says that improvement in life expectancy actually reduces population growth and fosters human capital accumulation after the onset of demographic transition. This simply implies that the effect of life expectancy on population, human capital and economic growth is not the same before and after the demographic transition. Moreover, a sufficiently high life expectancy is ultimately the trigger of the transition to a sustained economic growth.

Conclusively, the study examined the commitment of the federal government of Nigeria to education and health. It was found that little attention was paid to the health sector as the percentage of budgetary allocation to the sector ranged from less than 1.07% in the 1980s to 5.24% in 2007 compared with education. However, government's commitment to education fluctuated within the period. It reached the peak in 2013. However, when the budgetary allocations to education were compared with the 25% of the total budget recommended by UNESCO for developing countries like Nigeria, it is clear that government has to devote more resources to the sector. In spite of the meagre resources allocated to both sectors, the result of the analysis showed that education's outcome measured by adult literacy rate, and health's outcome, measured by life expectancy, and recurrent expenditure have a significant impact on economic growth. Thus, investment in education and health is a worthwhile venture during the period under study. The commitment of government to these sectors is also examined by her expenditure allocations within the last few decades through a graphical representation of the marginal change in GDP, CE and RE. The graph is as shown below;

Graphical Representation of the Percentage Change in GDP, CE and RE

Source: *Generated by the author using data obtained from CBN annual reports and WDI*

The figure above is an attempt to explain the relationship between the growth in GDP and the growth in the CE and RE of health and education. Based on the result presented we may say that government's expenditure on education and health (RE and CE) in terms of percentage increase in relation to the GDP has actually been growing at nearly the same percentage.

From the graph, we can notice that the peak period of RE and CE (1988) GDP percentage growth was quite very low in relation to these variables. But we can also notice that in 1991, when RE and CE had a negative growth rate i.e. declined, the GDP for that period was also very low compared to the subsequent years which the study covered. Another peak period can be seen on the graph above, this peak is seen in 1999 where a 326% change in the value of GDP was recorded. During this period there was a negative change in CE by 16% and a 64% increase in RE. Meanwhile, from 2004 to 2007 we can see an almost constant GDP and RE.

Error Correction Model (ECM): short-run analysis
The OLS long-run analysis showed that there is log-run relationship among the variables but there may be disequilibrium in the short-run analysis. Table 8 shows the result of the ECM regression.

Table 8: ECM Regression Results
Dependent Variable: D(LOG(GDP))

Method: Least Square

Sample (adjusted): 1981 2013

Included Observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-statistic	Prob
C	0.248106	0.071293	3.480075	0.0017
D(LOG(CE))	-0.135205	0.112674	-1.199967	0.2406
D(LOG(RE))	0.014762	0.169961	0.086856	0.9314
D(LOG(LIR))	-0.897748	0.630706	-1.423401	0.1661
D(D(LOG(LE)))	46.49469	59.08635	0.786894	0.4382
ECM(-1)	0.045532	0.145361	0.313237	0.7565
R-squared	0.112010	S.D dependent Var		0.292886
Adjusted R-squared	-0.052433	F-statistic		0.681149
Durbin-Watson Stat	1.721542	Prob(F-statistic)		0.641582

Source: *Authours' Computation Using E-Views*

The specified model is:
$D(Log(Y))=b_0 + b_1 D(LOG(CE)) + b_2 D(LOG(RE)) + b_3 (LOG(LIR)) + b_4 D(D(LOG(LE))) + b_5 ECM_{t-1} + e$
Where:
B_{0-5} is the coefficient of the cointegrating term
ECM_{t-1} is one-period lag of the error correction mechanism.
And the variables remain the same, as defined earlier.
Considering the ECM result, LE was estimated in its second difference, while the other variables were considered in their first difference because the individual unit root test showed LE to be significant at second difference and the others at first difference.

It was discovered in the short run that a negative relationship exist between the dependent variable and independent variables- government's capital expenditure on education and health (CE) and literacy rate

(LIR) and a positive relationship exists between the dependent variable (GDP) and the independent variables; government's recurrent expenditure on education and health (RE) and life expectancy (LE).
In the short run it shows that the regression line does not have a good fit to the observed data since the line explains 11% (0. 112010) of the total variation of the dependent variable Y.
The t-values obtained indicate that all the variables are not significant in the short run at 5% critical level. The F-statistics of 0.68 also indicates that all the estimated variables are insignificant at 5% critical level. Finally, the Durbin-Watson stat shows that in the short run, there is a weak serial correlation between the variables because 1.72 can easily be rounded up to 2.

Granger Causality Test
The below table reveals the causality test using grangers. From the table 9, 2 variables (CE and RE) were merged together to obtain the total expenditure on education and health (TE) and it was made subject to causal effect of which it contain one dependent (GDP) and the total expenditure (TE) as the independent variable . It is subjected to 5% level of confidence. From the table, it can be concluded that TE does not granger cause GDP because the p-value of 0.3180 is greater than the critical value of 0.05. However, GDP on the other hand do granger cause TE, since the p-value of 0.00002 is less than 0.05

Table 9: Causality Test Using Grangers
Pairwise Granger Causality Tests
Date: 07/12/15 Time: 14:50
Sample: 1979 2013
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
TE does not Granger Cause GDP	33	1.19391	0.3180
GDP does not Granger Cause TE		16.6008	2.E-05

Source: *Authors' Computation Using E-Views*

The result implies that the past values of the Gross Domestic Product (GDP) should contain information that helps predict the total expenditure on education and health (TE) above and beyond the information contained in past values of the total expenditure alone. Also, the TE may not granger cause the GDP because their relationship between the two variables may not be exactly linear (which is a major assumption of the Granger Causality test).

5. Summary, Conclusion and Recommendation
The analysis of the effect of government's health and education expenditure on economic growth in Nigeria between 1979 and 2013 which covered 35 years in Nigeria's history revealed that recurrent expenditure (RE), life expectancy (LE) and literacy rate (LIR) are the only significant factors influencing economic growth (GDP). Also, a positive relationship was found to exist between economic growth and government recurrent expenditure on health and education. Therefore, this study rejects the null hypotheses and concludes that the increase in government expenditure in the health and education sectors has translated into growth. Based on our analysis, we can also say that relative to the rate of growth in GDP, there has been real increase in government expenditure in health and education for the period under study i.e. the Nigerian government has shown a level of commitment to the health and education sectors in terms of expenditure.

Finally, the outcomes of the health and education sectors proxy by life expectancy and literacy rates respectively on Nigerians also showed significant effect on economic growth. Where LIR showed a positive effect on economic growth (GDP) and LE showed a negative effect on GDP this negative effect can be explained as a result of the direct effect that increase in life expectancy has on population growth.

Meanwhile, the demographic transition theory has adduced reason for this. It explains that for the economy to move from one stage of development to another, the life expectancy needs to continuously rise, so that subsequent increase in life expectancy would not yield an increase in population (Solem, Klein, Muñiz-Solari, & Ray, 2011).

The overall health and education condition of nationals has important policy implications for the overall productivity of the Nigerian labour force and the performance of the overall economy. The Nigerian businesses and policy leaders are confronted with the challenge of improving the health of workers and improving productivity by reducing the amount of time lost to illness and also the training of appropriate manpower needed for the strategic requirement of Nigeria's labour force. Clearly, their strategies should involve better preventive care (primary health care) and better management of chronic conditions; evidence shows that well-run corporate disease management and health promotion programs can improve workers' health and productivity. And also improvement of the condition of educational facilities, the training and re-training of staff and the sponsorship of indignant students who have the prospect of restoring hope to the economy of Nigeria.

Considering the observed nature of the effect of government expenditure on health and education (and their outcomes) on economic growth in Nigeria, the following strategic policy options are proffered as follows:

i. The government should reduce the amount of funds it channels to the health and education sectors as capital expenditure annually because our result showed that increasing capital expenditure only has an inverse/ negative effect on economic growth in Nigeria. More so, Nigeria currently has a high level of degenerated medical and educational facility spread all through the country. Thus it is advisable to take a break from the development of more facilities.
ii. It is also logical for the government to increase its expenditure on existing health and education infrastructure as this will foster economic growth. This policy will lead to a reduction in the deplorable state and standard of the education and health sector. This may also lead to a reduction in the capital flight due to Nigerians seeking better health and education facilities abroad, as there would be availability improved of health and education services in Nigeria.
iii. Government's expenditure on education should also be increased so as to improve the level of literacy rate in Nigeria (this is because private investment in education cannot boost literacy rate as much as public investment would because of the profit motive). This is advisable due to the significant effect that literacy rate indicated on economic growth.
iv. The federal government should also increase their annual allocation to the health sector so as to improve the overall life expectancy of Nigerians. This policy recommendation is in contrast with the result obtained from our analysis but it is necessary that in order for Nigeria to move from one level of economic growth to another, until development is attained i.e. demographic transition, it becomes necessary to have a sustained increased life expectancy leading to an increase in public confidence thus the increase in life expectancy would not cause population to increase as expected.
v. Government financial allocations to various sectors of the economy should also be well monitored in order to prevent the transfer of public funds to private accounts of government officials i.e. corruption practices.

The inappropriate/misguided contract awarding process might be one of the major causes of insignificant effect of capital expenditure of health and education in promoting economic growth in Nigeria (both in the short and long-run). Thus, the federal government should carefully monitor the contract awarding process of capital projects especially in the areas of provision of infrastructural facilities like, modern hospitals, schools and sophisticated equipments, in order to prevent over estimation of execution cost which over the years has characterized the Nigerian economy. This may bring about significant impact of government's capital expenditure on health and education on economic growth.
Hence, if all these policies are put in place, the chances of achieving the Millennium Development Goal (MDG) would be increased although it may not be exactly possible in 2015.

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