Effect of Expenditures on Education, Human Capital Development and Economic Growth in Nigeria

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Earlier studies on economic growth asserts that economic prosperity and functioning of a nation depends on its physical and human capital stock in form of knowledge acquired and an agent of national development in all countries of the world. Therefore, the need to examine the effect of expenditures on education, human capital development on economic growth in Nigeria. This study focuses on public expenditures on the education with a view to ascertain the relative commitments of the governments to this sector.

This study covers the period of 1970-2015, employing an ex-post facto research design using time series data. The data used for this study are obtained mainly from secondary data which is quantitative in nature. The study employs descriptive statistics to assess the contributions of government expenditure on education, government expenditure on health, tertiary school enrolment, secondary school enrollment, primary school enrolment on gross domestic product. Also, Unit Root Test is conducted on the series to ascertain if they are stationary while co-integration test follows suit, to also ascertain the long run relationship between expenditure on education and human capital development on economic growth. The Johansen Cointegration test and Error Correction Mechanism estimated model found that that there is no significant effect of expenditure on education and human capital development on economic growth in Nigeria.

Key words: Human Capital, Economic growth, Education, Health, Nigeria

INTRODUCTION

The economic prosperity and functioning of a nation depends on its physical and human capital stock in form of knowledge acquired (Adediran, 2014). Whereas physical capital has traditionally been the focus of most economic research, factors affecting the enhancement of human skills and talent are increasingly figuring in the research of social and behavioural sciences. Olaniyan and Okemakinde (2008) opined that human capital represents the investment to improve the skill and
capability, which depends on education or improving health condition to enhance their economic productivity.

According to Adediran, (2014) human capital is being recognised as an agent of national development in all countries of the world. Goode (1959), Schultz (1961), and Khilji (2005) asserts that improving education and health services is one of the major ways of improving the quality of human resources available and provide an economy with healthy and well trained human resources which enhances productivity and economic growth and development. Adediran, (2014) posits that there are many elements of human capital but the most important components are education and health. Ogbuabor and Ikpegbu (2013) posits that to achieve positive economic growth in Nigeria, there is a need to consider human capital development as an integral and important factor for economic growth. Sanyaolu (2008) describes human capital as the bedrock upon which productivity in Nigeria rests. Mba et al., (2013) defined a poor country as one which do not sufficiently invest in its human capital development and that citizens who are supposed to be at the centre of the economic growth would be poverty stricken.

Economic development, social development and environmental protection which are the three pillars of sustainable development may not be achieved if human capital development doesn’t come to play as an integral part. A study of the annual federal government budget to educational sector (in percentages) in Nigeria is seen to be below what is prescribed, available data shows that the percentages allocated to education over the years are not in line with the United Nations Educational Scientific and Cultural Organization’s (UNESCO) recommendation of 26.0%. It was revealed that between 2005-2007, the percentage was around 6.3%, 7.8%, 8.7% respectively (Mba et al., 2013).

Adediran (2014) in his study in Nigeria asserted that the federal government expenditure on health and education as a percentage of nominal GDP was less than 2% from 1961 to 1973; less than 5% between 1974-2012; and was less than 3% for all the periods during the civilian rule of 1999-2012. However, there were exceptions in 1975 and 1980 with 5.09% and 5.49% respectively. Also noteworthy is the fact that the federal government has never achieved up to 6% expenditure on human capital as a ratio of GDP. Therefore, it is imperative to examine the trend of government spending on education and health which are the major elements of human capital development over the years and find out whether expenditures on education and health (human capital development) have effect on economic growth in Nigeria. Among other objectives, the paper focuses on school enrolment, public expenditures on the education and health during the period under review with a view to ascertaining the relative commitments of the governments to these sectors.

**LITERATURE REVIEW**

The study of the determinants of economic growth has been one of the most important fields of study in economics since the mid-1980s. It was spurred by the endogenous growth literature pioneered by the analysis of Romer and Lucas in 1986 and 1988 respectively. An important contribution came from the growth-empirics approach that began with the testing of the neoclassical convergence hypothesis (Baumol, 1986; Barro, 1991; Barro and Salt, 1992; Mankiw, Romer, and Weil, 1992). It is necessary also to emphasize the important contribution relating to the development of comparable cross-country data on GDP, productivity and human capital indicators (Summers and Heston, 1988; Barro and Lee, 1993, 1996, 2001).
Literatures accepts education as one of the primary components of human capital since education, other than improving productivity of labour, it also has spill-over benefits, meaning that in addition to benefitting the individuals who receive it, others also will benefit from it (Yousra, Aziz and Monir, 2014). Human capital has been observed to be a key determinant of economic growth. The role of human capital accumulation and utilization in economic growth is a main topic currently in economic theory and empirical research. It has become apparent that it is not enough to be only concerned with capital accumulation in the neoclassical growth theory in order to explain why economies grow differently over space (Zhang, 2013), education also benefits society (Kreisha and Hawarin, 2011); however, there are multiple dimensions of the relationship between education and economic growth in existing literature.

According to Levine and Zervos (1993) countries that have more students enrolled in secondary schools grow faster than countries with lower secondary school enrolment rates. However, (Gallup, 1998) used the average total years of education of the adult population as their main measure of education, they study was unable to find a statistically significant relationship between initial levels of education and subsequent economic growth in their sample of countries.

Human capital can be measured in terms of level of education and health. Barro (1991) examined the relationship between economic growth and various possible explanatory input factors in 98 countries for the period 1960–1985. The regression analysis reveals that the real per capita GDP is inversely related to initial real GDP per capita only if the initial level of human capital is accounted for.

Li & Liang (2010) carried out a similar study in East Asia using panel data from 1961-2007. They studied human capital in the form of health and education and its effect on economic growth. On the basis of results, it was revealed that human capital and health have significantly positive effect on economic growth, while the effect of an investment in education on economic growth has a weakening effect. In addition, results show that in East Asia, the effects of health on economic growth are stronger than the effects of education. The study suggested that it is more believable for policy makers of East Asia to make more investments in health than education.

Khattak and Khan (2012) in Pakistan studied the contribution of education to economic growth of from 1971-2008. The study found that secondary education contributes significantly to the Real GDP Per Capita. Also, elementary education positively affects economic growth but the result is statistically insignificant. The co-integration test results confirmed that a long run relationship exist between education and Real GDP Per Capita. The study suggested that there is need for government to keep education as top priority and make serious efforts for Universalization of Primary Education and discourage the drop-out rate at all levels of education to achieve sustained economic growth.

Mincer (1974) and Temple (1999) separately reported that, the quality and structure of education matter on its impact on growth. It has the tendency to stunt growth if the quality is low and resources allocated to it are not well–targeted. Similarly, Garba (2002) showed that cross-country regressions have shown a positive correlation between educational attainment and economic growth and development. Odekunle (2001) affirms that investment in human capital has positive effects on the supply of entrepreneurial activity and technological innovation. Ayeni (2003) asserts that education as an investment has future benefits of creation of status, job security and other benefits in cash and in kind. However, Ayara (2002) reports that education has not had the expected positive growth impact on economic growth in Nigeria.
Foster and Rosenzweig (1995) revealed that increased education is associated with faster technology adoption in Green Revolution India. Similarly, in Sri Lanka, higher education levels have been shown to increase innovation in businesses and that the skill and education levels of workers and entrepreneurs were positively related to the rate of technical change of the firm (Deraniyagala, 1995). The study concluded that education alone cannot transform an economy. 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 output 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.

Maku (2009) examined the connection between total government spending and economic growth in Nigeria from 1977-2006. The study shows that human capital investment as a share of real output has positive but statistically insignificant effect on the growth rate of real GDP. The study concluded that government expenditure had no significant influence on economic growth in Nigeria based on his analysis, which reveals that the variables have not maintained a uniform pattern in the period of study owing to persistent random shock effect on the time series. The study also reported that the rate of government expenditure to real GDP has been rising since the Structural Adjustment Programme (SAP) without significant contribution to economic growth in Nigeria which is attributed to lack of government monitoring of the contract awarding process of capital projects, ineffective deployment of government funds to productive activities, and lack of transparency and accountability by the government on government spending.

Ogujiuba and Adeniyi (2004) also examined the impact of government education expenditure on economic growth in Nigeria. The result showed a positive, significant relationship between economic growth and recurrent expenditure on education, while capital expenditure was negative and not significant to economic growth. Lawanson (2009) further studied both the health and education expenditures. The study examined the role of human capital investment (proxied by total government expenditure on education and health) on economic growth in Nigeria. The result shows that a clear relationship exists between human capital development and economic growth. However, unlike the study by Ogujiuba and Adeniyi (2004), the study did not disaggregate expenditure figures on health and education into the recurrent and capital components.

In summary, despite the diversity of methods and measures of human capital variables, the role of human capital or education in the convergence process is still not consistently positive. It is unclear that the countries that invested more in education universally experienced a higher growth rate. In this sense, the government is directly responsible for the majority of the investments in basic education in most countries.

**METHODOLOGY**

The research work employs an ex-post facto research design and a time series data. The data for this study were obtained mainly from secondary data which are both qualitative and quantitative in nature. The data were sourced from Central Bank of Nigeria (CBN) statistical Bulletins, Nigerian Bureau of Statistics (NBS), and relevant journals and article, internet, publication, text book.

The secondary data obtained were scrutinized to determine their suitability, reliability, adequacy and accuracy. Tables and statistical diagrams also aided in the data presentation. E-views was
used to analyze the data gathered. Descriptive statistics will also be employed in this study, unit root test is conducted on the series to ascertain if they are stationary and co-integration test follow suit, to also ascertain the long run relationship between expenditure on education and human capital development on economic growth. These models now form the basis for our analysis.

**Model specification**

Generally, specification of economic model is based on economic theory and on the available data relating to the human capital being studied. The study has employed and modified the model formulated in the works of Lucas (1988), Mankiw et al (1992), Gemmell (1996) and Ncube (1999). The model of economic analysis in this study will follow the conventional method, thus the econometric model below therefore shows the effect of the independent variable on the dependent variable in a linear form as thus:

$$ GDP = f (TGVTEE, TGVTEH, TSE, SCSE, PRYSE, U) \ldots \ldots \ldots (1) $$

This equation is broken down to:

$$ GDP_t = \alpha_0 + \beta_1 TGVTEE_t + \beta_2 TGVTEH_t + \beta_3 TSE_t + \beta_4 SCSE_t + \beta_5 PRYSE_t + U \ldots \ldots \ldots (2) $$

Where, GDP = gross domestic product (i.e. dependent variable)  
TGVTEE = Total government expenditure on education (i.e. independent variable)  
TGVTEH = Total government expenditure on health (i.e. independent variable)  
TSE = Tertiary school enrolment (i.e. independent variable)  
SCSE = Secondary school enrolment (i.e. independent variable)  
PRYSE = Primary school enrolment (i.e. independent variable)  
U = Disturbance Term  
$\alpha_0$ = Intercept  
$\beta_1$ - $\beta_5$ = Coefficient of the Independent Variables.

**RESULTS**

This section presents the properties of the data used for this study in order to understand the variables as well as the suitability for this study. It will assist in drawing inference under the test of hypothesis.

**Descriptive Statistics of research variables**

The table below present the summary statistics for the variables under the study. RGDP, PRYSE, SCSE, TSE, TGVTEE and TGVTEH

| Table 1: The Descriptive Statistics and Diagnostic Test of variables |
|-----------------|---------|-------|-------|-------|-------|-------|
| Descriptor      | RGDP    | PRYSE | SCSE  | TSE   | TGVTEE| TGVTEH|
| Mean            | 11.44703| 16.84708| 15.74322| 14.15092| 11.48531| 10.68282|
| Std. Dev.       | 1.119203| 0.143516| 0.399660| 0.486417| 1.149708| 1.704039|
| Jarque-Bera     | 1.535193| 5.707140| 1.955208| 2.241965| 1.248013| 2.315486|
| Pr. Value       | 0.464127| 0.057638| 0.376211| 0.325959| 0.535794| 0.314194|

**Source:** Authors Compilation, (2016)
The descriptive statistics in table 1 reveals the mean, median, maximum, minimum, standard deviation and Jarque Bera statistics of RGDP, PRYSE, SCSE, TSE, TGVTEE and TGVTEH at level so as to compare these variables. The mean value of all the variables are positive and that PRYSE has the largest average value while SCSE, TSE and TGVTEE ranked second, third and fourth respectively. The minimum and maximum change ranges from positive to positive in all the case of RGDP, PRYSE, SCSE, TSE, TGVTEE and TGVTEH. It implies that the above variable have been on the increase over time. The table also revealed that TGVTEH, TGVTEE and RGDP have the highest standard deviations (170%, 114% and 112% respectively). This implies that total government expenditure on health, total government expenditure on education and real gross domestic product are the most volatile factors among these variables and that PRYSE, SCSE and TSE are relatively less volatile. As shown by the Jarque Bera statistics, only PRYSE is significant at 1% (5.7071). This implies that the null hypothesis that the variables are normally distributed can be rejected while the other variables RGDP, SCSE, TSE, TGVTEE and TGVTEH are not significant and as such the variables are normally distributed.

The unit root test was carried out to determine the order of integration of each of the variables and whether the Variable contains unit root and hence is non-stationary using the Augmented Dickey-Fuller (ADF) Test. The result is presented in table 2 below.

### Table 2: Unit root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Statistics</th>
<th>Prob. Value</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGDP</td>
<td>-5.1631</td>
<td>0.0007</td>
<td>I(1)</td>
</tr>
<tr>
<td>PRYSE</td>
<td>-5.5253</td>
<td>0.0003</td>
<td>I(1)</td>
</tr>
<tr>
<td>SCSE</td>
<td>-5.8325</td>
<td>0.0004</td>
<td>I(1)</td>
</tr>
<tr>
<td>TSE</td>
<td>-3.8576</td>
<td>0.0106</td>
<td>I(1)</td>
</tr>
<tr>
<td>TGVTEE</td>
<td>-5.3145</td>
<td>0.0002</td>
<td>I(1)</td>
</tr>
<tr>
<td>TGVTEH</td>
<td>-3.9294</td>
<td>0.0114</td>
<td>I(2)</td>
</tr>
</tbody>
</table>

**Source:** Authors Compilation, (2016)

The unit root result presented in table 2 above shows that real gross domestic product (RGDP), primary school enrolment, secondary school enrolment, tertiary school enrolment, public expenditure on education are of the same order of integration I(1). This implies that these variables are integrated of order one, thus a long-run linear combination is suspected amongst them. Therefore a co-integration test is conducted to ascertain if there exist long-run relationships. However, total government expenditure on health is of I(2), as such, the variables is considered not appropriate for further analysis as its presence can lead to spurious regression result.

**Cointegration Test**

This is carried out to determine the existence of long run relationship (cointegration) among the variables and conducted as a pre-test to avoid ‘spurious regression’ situations. The results are presented in table 3 below.
Table 3: Cointegration Test

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Trace Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
<th>Max-Eigen Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>0.978456</td>
<td>126.1414</td>
<td>69.81889</td>
<td>0.0000*</td>
<td>69.07799</td>
<td>33.87687</td>
<td>0.0000*</td>
</tr>
<tr>
<td>At most 1 *</td>
<td>0.861235</td>
<td>57.06338</td>
<td>47.85613</td>
<td>0.0054*</td>
<td>35.54950</td>
<td>27.58434</td>
<td>0.0039*</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.567013</td>
<td>21.51389</td>
<td>29.79707</td>
<td>0.3264</td>
<td>15.06686</td>
<td>21.13162</td>
<td>0.2843</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.257564</td>
<td>6.447030</td>
<td>15.49471</td>
<td>0.6427</td>
<td>5.360732</td>
<td>14.26460</td>
<td>0.6958</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.058565</td>
<td>1.086298</td>
<td>3.841466</td>
<td>0.2973</td>
<td>1.086298</td>
<td>3.841466</td>
<td>0.2973</td>
</tr>
</tbody>
</table>

Source: Authors Compilation, (2016)

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level while Max-eigenvalue test also indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

From the above, both the Trace statistics and Max-Eigen test results are given. The Trace statistics shows that the null hypothesis of at most one cointegrating equation is rejected in favour of the alternative hypothesis at 0.05 level. Their values, as indicated in the table are greater than the critical values at 0.05 level. This means that there exists long-run relationship among the variables. The Trace test indicates two cointegrating equations while the Max-Eigen test indicates also two cointegrating equation. The results of the Johansen cointegration test strongly rejects the null hypothesis of no cointegration among the five variables and provides us with evidence in favour of two cointegrating vectors at 5% per cent significance level. Since the result of the Johansen Cointegration indicated that the variables are integrated, the Vector Error Correction model is then employed.

Vector Error Correction Model

The vector error correction model is contained in table 4. The coefficient of the ECM is correctly signed and however it is not statistically significant. The value shows that the speed of adjustment of long-run equilibrium is approximately 9% but not significant. It therefore suggests that no long run causality exist between RGDP, PRYSE, SCSE, TSE and TGVTEE and that the independent variables (PRYSE, SCSE, TSE and TGVTEE) do not have any influence on the dependent variable (RGDP) in the long run.
Table 4: Error Correction Model

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM(-1)</td>
<td>-0.098713</td>
<td>0.115158</td>
<td>-0.857192</td>
<td>0.4096</td>
</tr>
<tr>
<td>D(RGDP(-1))</td>
<td>-0.152572</td>
<td>0.273962</td>
<td>-0.556910</td>
<td>0.5887</td>
</tr>
<tr>
<td>D(PRYSE(-1))</td>
<td>0.043958</td>
<td>0.611656</td>
<td>0.071868</td>
<td>0.9440</td>
</tr>
<tr>
<td>D(SCSE(-1))</td>
<td>-0.341829</td>
<td>0.558829</td>
<td>-0.611687</td>
<td>0.5532</td>
</tr>
<tr>
<td>D(TSE(-1))</td>
<td>0.108836</td>
<td>0.198593</td>
<td>0.548038</td>
<td>0.5946</td>
</tr>
<tr>
<td>D(TGVTEE(-1))</td>
<td>-0.350364</td>
<td>0.201165</td>
<td>-1.741673</td>
<td>0.1094</td>
</tr>
<tr>
<td>C</td>
<td>0.272723</td>
<td>0.072763</td>
<td>3.748110</td>
<td>0.0032</td>
</tr>
</tbody>
</table>

R-squared         | 0.306549     | Mean dependent var | 0.166902 |
S.E. of regression| 0.191295     | S.D. dependent var | 0.184785 |
Sum squared resid | 0.402531     | Akaike info criterion | -0.184701 |
Log likelihood    | 8.662311     | Schwarz criterion  | 0.161554 |
F-statistic       | 0.810448     | Durbin-Watson stat | 1.934766 |
Prob(F-statistic) | 0.582973     |                    |          |

Source: Authors Compilation, (2016)

The above table also shows that in the short run, PRYSE, SCSE, TSE and TGVTEE are not statistically significant at 5% level of significant. The coefficient of SCSE and TGVTEE revealed a negative relationship in the short run, however, both variables were not significant. Also, the coefficient of PRYSE and TSE depicted a positive association which was not also significant at 5% level of significance.

The result of the R-squared revealed that the explanatory variables explains 30.7% of changes in the dependent variable. Which implies that about 70% variation in the independent variable is caused by other factors not considered in this study. It reduced drastically after adjusting for the degrees of freedom to -7% (Adjusted R-Squared). The F-statistics shows that the result is not statistically significant as the probability value of F-Statistics is higher than 5%. There this study accepts the null hypothesis that states that there is no significant effect of expenditure on education and human capital development on economic growth.

CONCLUSION / RECOMMENDATIONS

This study examines examine the effect of Expenditures on Education and human capital development on Nigeria economic Growth using Johansen Cointegration test and Error Correction Mechanism, the estimated model found that that there is no significant effect of expenditure on education and human capital development on economic growth in Nigeria. This implies that even with the increase in government allocation to education and health, they have not started yielding positive effect on economic growth. Total government expenditure on health has a negative insignificant effect on economic growth which implies that as more funds are allocated to the health sector, economic growth isn’t improving, there is need to monitor funds allocated so that it will be used judiciously.

Alvina and Mohammed (2013) asserts that investment in education is a key to economic progress. It helps in the acceptance and implementation of new technologies by lowering the cost of adaptation. Economic development policies has to focus on educational institutions and increase investment in the sector. Countries should strive to achieve high quality education along with ensuring education for all. This could be done through increased public expenditures in the education sector and monitoring of funds allocated to the sector to ensure that they are properly
used. Also, the quality of education should be improved by building up an effective and modern education system that could meet the challenges of modern society and the high demand for innovative products. Education should be made affordable especially at the primary and secondary level which will lower the cost incurred by citizen to obtain education, hence, the demand for education will rise and this in turn would increase the stock of human capital which bring about productivity and economic growth. Teacher quality also need to be improved through better conditions for both entry and exit. Teacher recruitment and training could be improved by recruiting personnel from the best universities and schools. Also a more flexible reward system should be introduced for remuneration and promotion while extra rewards should be given to teachers of core subjects in tough schools. There is also need for improved professional development of teachers and underperforming teachers should be fished off the system. Therefore based on the findings of this study, the study concludes that the level of human capital of Nigeria can be develop if the standard of education and health are not just maintained but improved on to meet the modern economy of the world.

In conclusion, the Breusch-Godfrey Serial Correlation Test was conducted to examined whether the variables are serially correlated, the result in table 5 shows that the probability value of chi-square is not significant at 5% (0.76) as such we reject the null hypothesis that there is presence of serial correlation among the variables. Also, the normality test (table 3) was carried out to check if the residuals are normally distributed. The result of the Jarque-Bera Statistics suggest that the residuals are normally distributed given the probability value of 7%.

**Table 5: Serial Correlation Test**

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial Correlation LM Test:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
</tr>
<tr>
<td>Obs*R-squared</td>
</tr>
</tbody>
</table>

**Table 6: Normality Test**

![Graph of Normality Test](image)

<table>
<thead>
<tr>
<th>Series: Residuals</th>
<th>Sample 1997 2014</th>
<th>Observations 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>-5.55e-16</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>0.022912</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>0.438307</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>-0.252641</td>
<td></td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.153877</td>
<td></td>
</tr>
<tr>
<td>Skewness</td>
<td>0.932927</td>
<td></td>
</tr>
<tr>
<td>Kurtosis</td>
<td>4.868177</td>
<td></td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>5.228619</td>
<td></td>
</tr>
<tr>
<td>Probability</td>
<td>0.073218</td>
<td></td>
</tr>
</tbody>
</table>

**REFERENCES**