

Education Sector and Economic Growth in Nigeria: an Impact Analysis

¹Aigbedion Isibor Marvelous, ²Iyakwari Anna Dyaji Baba, &
³Gyang Joshua Emily
^{1, 2, & 3}*Department of Economics, Bingham University, Karu*

Abstract

This paper focuses on the empirical examination of the impact of education sector on economic growth in Nigeria. Time series data were used and the study employed ordinary least squares (OLS) tools of analysis in the investigation of the impact and relationships among the economic variables, multiple regression model was also used and the data was estimated using e-views 9.0 software. The results revealed that the education sector has a positive impact on economic growth in Nigeria. This implies that economic growth can be improved by increasing education investment in Nigeria. But Government Expenditure on Education is negatively related to Real Gross Domestic Product in Nigeria and statistically significant at 5 percent level of significance in explaining variation in the Real Gross Domestic Product in Nigeria, this may be due to the fact that education funds are not fully or properly utilized in Nigeria. Therefore, the study recommends that the government through budget planning, implementation and monitoring should ensure that education funds are properly and fully utilized in Nigeria to improve the impact of education sector on economic growth in Nigeria.

Keywords: *Education sector, Economic growth, Government*

Corresponding Author: Aigbedion Isibor Marvelous

Background to the Study

Beside the contribution of education on national economic growth, it also plays significant role in reducing income inequality, research done by Phillipe, Peter and Fabrice, (2011) and Kakar, Khilji and Khan (2011) concluded that educational achievement as well as human capital development would positively reduce income inequality. In general, there is a consensus among the researchers that education influenced economic growth by reducing poverty incidence, social imbalances as well as income equality. Moreover, it gives a positive impact to the poor and needy to improve their live.

The World Development Report (2007), examined how knowledge influences development. The report reinforces some well-known lessons, such as the value of knowledge gained through trade and foreign investment. It also highlights others that have sometimes been overlooked, such as how imperfect information leads to failure in all markets and the importance of institution to facilitate the flow of information. Moreover, the report looks at the role of knowledge in development, examining difference in knowledge across and within the countries, the impact of knowledge gaps and information failures on development, and the way in which governments in developing countries and international institutions can foster development by addressing these issues.

Similarly, the report observes that the acquisition of knowledge and information is becoming increasingly critical to economic growth as science and engineering findings proliferate and take on ever-greater importance in production of goods and services. As information grows exponentially and as its incorporation in the production processes becomes increasingly complex, the ability to acquire, adopt, and adapt a new knowledge will be an important determinant of economic growth. This perhaps must have heightened the need to investigate the link between education and economic growth (Isola, 2012).

To Obaji (2006), the responsibility of producing highly quality manpower and specialist is that of the nation's tertiary educational institutions. According to her, in the time past, thousands of well-trained manpower turned out in the tertiary institutions across the country was highly sought after both at home and abroad. The exploit of Nigerian experts abroad is a clear affirmation of the quality of training impacted on them by the institutions. However, that is not the same situation now as most Nigerian graduates are no longer employable. The quality of teachers constitutes a major determinant of the quality of education, because no educational system can rise above the quality of its teaching staff. The quality of teaching staff in the nation's educational institutions, whether primary, secondary or tertiary is a cause for concern. Their ability to deliver would be impaired by the ineffective training received.

In Nigeria the most important macroeconomic objective remains how to achieve accelerated economic growth and reduce poverty. In order to achieve this laudable objective, certain variables which have the ability to accelerate growth have to be identified. Of all the contributory factors to economic growth and increased productivity, human capital stands out as a major catalyst (Adamu, 2003). To this end, effective investment in human capital through the provision of quality education is a key component of economic growth and improved productivity in developing countries like Nigeria.

However, the human capital development indices in Nigeria do not reflect a substantial expenditure on education. For instance, the national budget revealed the small percent of fund budgeted for education in Nigeria, this is while Sanusi (2003) opined that the effect of low

investment in education on the competitiveness of Nigerian labour force in the production of goods and services, bearing in mind the fact that low level of skills and knowledge will certainly reduce the quantity and quality of individual output. Therefore, the main objective of this paper is to empirically examine the impact of education sector on economic growth in Nigeria.

Literature Review

Conceptual Review on Education and Economic Growth

There is no acceptable definition of education and this is because it connotes different things to different people, culture and society (Todaro and Stephen, 1982). Ukeje (2002), sees education as a process, a product and a discipline. As a process, education is a set of activities which entails handing down the ideas, values and norms of the society across generation. As a product, education is measured by the qualities and traits displayed by the educated person. Here, the educated person is traditionally conceived of as a “knowledgeable “and “cultured” person. While as a discipline, education is defined in terms of the benefits of organized knowledge to which students are exposed to. The aims of Education in Nigeria as stated in the Nigerian National Policy on Education (2004), include “the desire that Nigeria should be a free, just and democratic society; a land full of opportunities for all citizens; able to generate a great and dynamic economy; and growing into a united strong and self-reliant nation”. Furthermore, there is a consensus of opinion too that if Nigeria educational system is made functional, positive changes which can accelerate National development in the country will emerge. Thus, ensuring and maintaining a high educational standard is paramount in achieving the above educational objectives.

Olaofe (2005), pointed out that the major reason for the declining standard of education in Nigeria is the learning environment. He describes the situation thus: educational community demands, adequate educational facilities and conducive education environment- education with a ratio of one textbook to twelve students, dilapidated school classrooms and lecture halls, education without the basic teaching, learning facilities, and teachers who themselves are not better than the children they teach, is a complete mockery of sound education system. Thus, to solve the problem of declining standard of education, the major problems associated with the learning environment has to be resolved.

According to Haller (2012), economic growth is the process of increasing the sizes of national economies, the macro-economic indications, especially the GDP per capita, in an ascendant but not necessarily linear direction, with positive effects on the economic-social sector, while development shows us how growth impacts on the society by increasing the standard of life. To him economic growth can be positive, zero or negative. Positive economic growth is recorded when the annual average rhythms of the macro-indicators are higher than the average rhythms of growth of the population. When the annual average rhythms of growth of the macro-economic indicators, particularly GDP, are equal to those of the population growth, we can speak of zero economic growth. Negative economic growth appears when the rhythms of population growth are higher than those of the macro-economic indicators.

Empirical Review

Authors have examined how spending on education and activities of the education sector affects short and long-term growth generally, most authors findings agreed that there is a positive, significant, relationship between education and economic growth among them were the works of Blis and Klenow (2000); Easterly and Levine (2001); Ndiyo (2002); Jung and

Thorbecke (2003); Baldacci, Clements, Gupta, and Cui. (2004), Adebisi and Oladele (2005), Babatunde and Adefabi (2005), Yogish (2006), Trostel and Wodey (2007), Permani (2009), analysed the determinants of the education sector and their impact on economic growth in various economies. The study revealed that education and its components have impact on economic growth of those economies.

Afzal and Abbas (2010), acknowledged that education has positive long-run and short-run relationships on economic growth in Pakistan and Dauda (2010), examined the effect of investment spending in education on economic growth in Nigeria using thirty-one (31) years' time series data from 1977 to 2007. The study employs co-integration and error correction techniques. The result revealed a positive and significant effect of educational expenditure on economic growth.

Nevertheless, finding by Kakar and Khan (2011), on their study in Pakistan concluded that there is no significant relationship between education and short-term economic growth but the educational development has impact in the country's long run economic growth. These findings demonstrated that government expenditure on education sectors does not only have a positive impact on a country's economic growth in a short run but in long run as well.

Bakare (2012), used Spearman Rank correlation coefficient approach to examine the demand for education and economic growth in Nigeria. His findings reveal that there is positive correlation between demand for education and economic growth. This implies that higher school enrolments will leads to economic growth. The study concluded that the effective ways to combat illiteracy, poverty, hunger and stimulate economic growth that is truly sustainable is through education.

Finally, Aigbedion and Anyanwu (2015), on the impact of public education expenditure on inclusive growth in Nigeria. The study used time series data and the study used econometrics tools (unit root test, causality test, co-integration analysis and error correction model analysis) to estimate the data. From the findings, government education expenditure has a strong and positive impact and relationship with inclusive growth in Nigeria. The study also revealed that government education expenditure for inclusive growth in Nigeria.

Theoretical Framework

In an endogenous model of economic growth theory appears to be the most suitable for the study. The pioneer of “endogenous growth theory” is Paul Romer presented in his 1986 paper in the Journal of Political Economy as a seminal work in the modern revitalization of growth theory. The model suggests that endogenous factors such as government policies, political stability, market distortions, education etc., can significantly affect economic growth. It is a widely used growth model to provide a systemic investigation of the education-economic growth nexus. In this regard, several studies have attempted to integrate exogenous forces with endogenous factors in explaining economic growth across countries by using augmented Solow neoclassical function. These studies include, but not limited to, the following; Chete and Adeoye (2003) and Aigbedion and Anyanwu (2015). Generally, the impact of education as a component of human capital development on economic growth is incorporated according to the Mankiw, Romer and Weil (1992), framework and is given below as:

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

Where; Y is output; K = Physical capital and H = the Human Capital Stock (education and health); L=Labour force; A is level of technology and, $\beta < 1$, implying decreasing returns to capital. By implication, there is a strong and positive relationship between investment in human capital and output growth.

From equation 1 linearizing the equation the Y (the output) is function of; K = Physical capital and H = the Human Capital Stock (education and health); L=Labour force; A is level of technology, which will give us equation 2 as:

$$Y = f(K, H, A, L) \text{ ----- } 2$$

If equation 2 is written as an econometrics model we the following equation

$$Y_t = \alpha + \beta_1 K + \beta_2 H + \beta_3 A + \beta_4 L + U_t \text{ ----- } 3$$

From equation 3 it clearly shown that Y (output) is function of K = Physical capital and H = the Human Capital Stock (education and health); L= Labour force; A is level of technology. From equation 3 above the equation can be simplified by taking the Y (the output) as a function of human capital stock. Therefore, Y (the output) will be a function of education indicators in Nigeria which is stated below as:

$$Y_t = f(GEE, PSER, SSER, TIER, TPS, TSS, TTI) \text{ ----- } 4$$

The equation 4 above shows the impact and functional relationship between the dependent variable and the independent variables that is Government Expenditure Education (GEE), Primary School Enrolment (PSER), Secondary School Enrolment (SSER), Tertiary Institutions Enrolment (TIER), Total Number of Primary Schools (TPS), Total Number of Secondary Schools (TSS) and Total Number of Tertiary Institutions (TTI) and the equation formed the framework in which the models of the study stand which is stated in chapter three of this research work.

Methodology

Sources of Data and Method of Analysis

The study intends to utilize annual time series data spanning from 1980 to 2014. The data were obtained mainly from the Central Bank of Nigeria (CBN) Statistical Bulletin, National Bureau of Statistics (NBS) Publications, United Nations Development Programme (UNDP) Reports, The International Monetary Fund (IMF), Federal Ministry of Education, Nigeria Ministry of Health, Nigeria Ministry of Finance, and Nigeria Budget Office. Since the study is to examine the impact and relationship among the economic variables, the equations are formulated in such a way that its coefficients can be efficiently and consistently estimated by estimating each of the components using the ordinary least squares (OLS) method. The analytical software for model estimation is econometric views (E-Views 9.0) software.

Model Specification

$$RGDP = f(GEE, PSER, SSER, TIER, TPS, TSS, TTI) \text{ ----- } 5$$

This model is the central model of study that take into account all exogenous variables and the endogenous variable. The model is multiple regression equation with one dependent variable and ten independent variables, with a constant, parameters and error term.

Equation 5 shows the impact and functional relationship between the dependent variable Real Gross Domestic Product (RGDP) and the independent variables that is Government Expenditure Education (GEE), Primary School Enrolment (PSER), Secondary School Enrolment (SSER), Tertiary Institutions Enrolment (TIER), Total Number of Primary Schools (TPS), Total Number of Secondary Schools (TSS) and Total Number of Tertiary Institutions (TTI). The model shows the mathematical functions of the economic variables.

To express the equation as an econometric equation there is the need for a constant (α), Parameters ($\beta_1, \beta_2, \beta_3, \beta_4, \dots \dots \beta_n$) and the error term (ε_i) in the equation. Therefore, the equation 5 can be expressed as an econometric model as follows:

$$RGDP = \alpha + \beta_1 GEE + \beta_2 PSER + \beta_3 SSER + \beta_4 TIER + \beta_5 TPS + \beta_6 TSS + \beta_7 TTI + \varepsilon_i \text{-----} 6$$

This equation 6 above expressed the multiple regression models with different economic variables and with different economic units or values. In regression analysis the logs of variables are routinely taken, not necessarily for achieving a normal distribution of the predictors and/or the dependent variable but for interpretability. The standard interpretation of coefficients in a regression analysis is that a one unit change in the independent variable results in the respective regression coefficient change in the expected value of the dependent variable while all the predictors are held constant.

Interpreting a log transformed variable can be done in such a manner; however, such coefficients are routinely interpreted in terms of percent change. Therefore, the model can be expressed by taking the natural log of the economic variables (independent and dependent variables) and adding the log to each variables as given below.

$$\log RGDP = \alpha + \beta_1 \log GEE + \beta_2 \log PSER + \beta_3 \log SSER + \beta_4 \log TIER + \beta_5 \log TPS + \beta_6 \log TSS + \beta_7 \log TTI + \varepsilon_i \text{=====} 7$$

The equation 7 above is the econometric model for aggregate regression analysis for this study and this is estimated using econometric tool (Ordinary Least Squares) and Statistical package (E-views).

Presentation and Discussion of Results
Descriptive Analysis of Variables
Table 1: Summary Descriptive Statistics

	RGDP	GEE	PSER	SSER	TIER	TPS	TSS	TTI
Mean	413508.5	73562.04	18952925	5368523.	734876.4	54017.56	11806.91	150.0000
Median	302022.5	13589.49	18725820	5578255.	748964.0	42805.50	7311.000	138.0000
Maximum	988564.0	390420.0	29575790	10884476	1745186.	102101.0	43246.00	298.0000
Minimum	31546.80	155.8100	11540178	1877057.	57742.00	33796.00	3218.000	13.00000
Std. Dev.	251542.3	111019.7	5281363.	2427540.	536370.9	23461.81	9806.906	90.70541
Skewness	0.899470	1.731766	0.401008	0.720054	0.224481	0.999335	1.897469	-0.007916
Kurtosis	2.655174	4.849762	2.027412	2.863765	1.663842	2.371548	5.693943	1.917978
JarqueBera	4.892845	22.48411	2.317517	3.051522	2.897538	6.218646	31.58587	1.707741
Probability	0.086603	0.000013	0.313876	0.217455	0.234859	0.044631	0.000000	0.425764
Sum	14472798	2574671.	6.63E+08	1.88E+08	25720673	1836597.	413242.0	5250.000
Sum Sq. Dev.	2.15E+12	4.19E+11	9.48E+14	2.00E+14	9.78E+12	1.82E+10	3.27E+09	279734.0
Observations	35	35	35	35	35	34	35	35

Source: Generated by E-view 9.0 (2017).

The summary of descriptive statistics of relevant variables of study is as reported in Table 1 as may be observed from the table, the mean, median, standard deviation as well as the skewness and kurtosis measures of our variables of interest are given. The mean values of RGDP, GEE, PSER, SSER, TIER, TPS, TSS and TTI are 413508.5, 73562.04, 8952925, 5368523, 734876.4, 11806.91, and 150.0000 respectively. Their respective standard deviations are 251542.3, 111019.7, 5281363.0, 2427540.0, 536370.9, 23461.81, 9806.906 and 90.70541. The Jarque-Bera test of normality shows that the error term in our specified equation is normally distributed. This is evidenced by the respective insignificant Jarque-Bera statistics of the relevant variables.

Stationarity Test of Variables

Table 2: Augmented Dickey-Fuller Test Results

Variables	ADF Statistic	1% Critical Value	5% Critical Value	Difference
RGDP	-6.821653	-3.6576	-2.9591	1(1)
GEE	-5.460092	-3.6576	-2.9591	1(1)
PSER	-8.103736	-3.6576	-2.9591	1(1)
SSER	-5.585691	-3.6576	-2.9591	1(1)
TIER	-5.956067	-3.6496	-2.9558	1(1)
TPS	-6.243282	-3.6496	-2.9558	1(1)
TSS	-6.551946	-3.6576	-2.9558	1(1)
TTI	-4.000791	-3.6496	-2.9558	1(1)

Source: Generated by E-view 9.0 (2017).

Table 2 shows the Augmented Dickey-Fuller stationarity test results of the eleven economic variables used in this study. From the results, all the economic variables were stationary at 1(1) which are Gross Domestic Product (RGDP) and the independent variables that is Government Expenditure Education (GEE), Primary School Enrolment (PSER), Secondary School Enrolment (SSER), Tertiary Institutions Enrolment (TIER), Total Number of Primary Schools (TPS), Total Number of Secondary Schools (TSS) and Total Number of Tertiary Institutions (TTI). This implies that the economic variables are fit and suitable to be used for the analysis.

Discussion of Regression Results

Table 3: Regression Results

Variables	Coefficient	Std. Error	T- statistic	Prob.
C	-20.83356	27.96517	-0.744982	0.4635
LOG(GEE)	-0.345036	0.154484	-2.233478	0.0351
LOG(PSER)	0.070621	0.560357	0.126028	0.9008
LOG(SSER)	0.915110	0.405555	2.256437	0.0334
LOG(TIER)	0.028769	0.170752	0.168486	0.8676
LOG(TPS)	0.012378	0.039092	0.316629	0.7543
LOG(TSS)	0.363578	0.233723	1.555595	0.1329
LOG(TTI)	0.201282	0.166712	1.207367	0.2391
R-Squared	0.918			
Adjusted R ²	0.884			
F-statistic	27.02181			
DW	1.865			

Source: Generated by E-view 9.0, (2017).

Table 3 shows the regression results of the multiple model of the study. The model shows the impact of Government Expenditure on Education (GEE), Primary School Enrolment (PSER), Secondary School Enrolment (SSER), Tertiary Institutions Enrolment (TIER), Total Number of Primary Schools (TPS), Total Number of Secondary Schools (TSS) and Total Number of Tertiary Institutions (TTI) on Real Gross Domestic Product (RGDP) in Nigeria. From the result, the R-square of 92 percent and the adjusted R-square of 88 percent suggest that there is strong and positive relationship between Real Gross Domestic Product (RGDP) and Education indicators in Nigeria.

Given the F-statistic value of 27.02, it shows that the model employed is statistically significant in explaining the variation in Real Gross Domestic Product. This implies that economic growth can be improved by increasing Education indicators in Nigeria if everything being equal. Durbin Watson statistic of 1.9 suggests that the model is free from serial auto correlation.

From the result Secondary School Enrolment (SSER) in Nigeria is positively related to Real Gross Domestic Product and statistically significant at 5 percent level of significance in explaining variation in the Real Gross Domestic Product in Nigeria while Government Expenditure on Education (GEE) is negatively related to Real Gross Domestic Product in Nigeria and statistically significant at 5 percent level of significance in explaining variation in the Real Gross Domestic Product in Nigeria. Primary School Enrolment (PSER), Tertiary Institutions Enrolment (TIER), Total Number of Primary Schools (TPS), Total Number of Secondary Schools (TSS) and Total Number of Tertiary Institutions (TTI) in Nigeria are positively related to Real Gross Domestic Product but they are statistically insignificant at 5 percent level of significance in explaining variation in the Real Gross Domestic Product in Nigeria.

Conclusion and Recommendations

The result from his study revealed that a better-educated labour force appears to have a positive and significant impact on economic growth both via factor accumulation as well as on the evolution of total factor productivity .In support of this position also, Akinlo (2004), used

school enrolments as proxy for human capital formation in their studies. However, said that despite the government investment in education, the educational sector in Nigeria is beclouded by uncertainties. Most schools in Nigeria are characterized by overcrowding, poor sanitation, poor management, low students-teachers' ratio, poor teachers' remunerations and welfare packages.

Other features are to include abandoned capital projects, inadequate funding, poor condition of service and others, (FRN, 2000). The resultant effects of these myriads of anomalies are production of half-baked graduates, unsatisfied yearnings and aspirations, corruption of different kinds, bribery of varying nature and so on. The obvious poor performance in Nigerian education sector in spite of, the government spending on education has resulted in low capacity to develop human capital and this has retarded economic growth and development over the years.

Therefore, the following are policy recommendations of the study which are:

- i. Education should be given the necessary attention through consistency and increase government education expenditure especially in the areas of capital expenditure for capital educational investment in Nigeria. Because from the study, one of the challenges of education is poor funding. Also, since government education expenditure has great impact on economic growth, government through budget planning, implementation and monitoring should ensure that education funds are properly and fully utilized in Nigeria.
- ii. Government through educational policy should redesign the primary school education in order to develop the capabilities of sub- sector in the productive process in Nigeria through entrepreneurial education at the grassroots.
- iii. The secondary school education should be empowered through provision of high education facilities and engage students in more practical education services and skills acquisition to enable the students engage in entrepreneurial activities during and after schools and thereby increasing the participation of the sub-sector in productivity process in Nigeria.
- iv. Government should increase the capital expenditure in education to increase the number of schools at all levels to increase the accessibility of education toward human capital development in Nigeria.
- v. In conclusion, Government should increase the rate of infrastructural development and funding of these sectors. Also government should design effective policy implementation in order to increase the quality of services produced by these sectors. Most specifically, to reduce the unnecessary delay in our education system thereby enabling the system to produce the required manpower for sustainable economic growth in Nigeria.

References

- Adamu, P. A. (2003). *The impact of human capital formation on economic development in Nigeria: An error correction approach*. Human Resource Development in Africa: Selected Papers for the Year 2002 Annual Conference, The Nigerian Economic Society (NES), Part Two.
- Adebisi, M. A., & Oladele, O. (2005). *Public education expenditure and defense spending in Nigeria: An empirical investigation*. Cornell University conference on education in Africa <http://www.saga.cornell.edu/saga/educconf/adebiyi.pdf> (accessed February 10, 2015).
- Aigbedion I. M. & Sarah, O. A. (2016). *Government education expenditure for inclusive growth in Nigeria: An error correction model*. Selected Papers of the Nigerian Economic Society 56th Annual Conference October 12-15, 2015 Sheraton, Abuja-Nigeria.
- Akinlo, A. E. (2004). Foreign direct investment and growth in Nigeria: An empirical investigation. *Journal of Policy Modelling*, 26.
- Afzal, M., & Abbas, Q. (2010). Wagner's law in Pakistan: Another look, *Journal of Economics and International Finance*, 2(1).
- Chete, L.N., & Adeoye, B.W., (2002). Human capital and economic growth: The Nigerian Experience, In: *Human Resource Development in Africa*. Selected Papers for 2002 Annual Conference, Nigerian Economic Society, Ibadan.
- Babatunde, M. A., & Adefabi, R. A. (2005). Long Run Relationship between Education and Economic Growth in Nigeria: Evidence from the Johansen's Co-integration Approach. *Education in West Africa: Constraints and Opportunities*. Dakar: Cornell University.
- Baldacci, E., Clements, B., Gupta, S., & Cui, Q. (2004). *Social spending, human capital, and growth in developing countries: Implications for Achieving the MDGs*. IMF Working Paper. WP/04/217.
- Bakare, A. S., (2012). The growth implication of human capital investment in Nigeria: An Empirical Study, *Journal of Economics and Social Studies*, 5(2).
- Bils, M., & Klenow, P. J., (2000). Does schooling cause growth? *American Economic Review*, 90 (5).
- Dauda, R.O., (2009). *Investment in education and economic growth in Nigeria: A Cointegration Approach*. Paper Presented at the 9th Global Conference on *Business and Economics* held at University of Cambridge, UK.
- Easterly, W., & Levine, R., (2001). Its not factor accumulation: Stylized facts and growth model. *World Bank Economic Review*, 15.
- Federal Republic of Nigeria (2004). *National policy on education*, 4th Edition. Federal Office of Statistics, Annual Abstract of Statistics, Lagos: Nigeria.

- Haller, A. P., (2012), Concepts of Economic Growth and Development. Challenges of Crisis and of Knowledge, *Economy Transdisciplinary Cognition*, 15(4).
- Isola, W.A., & Alani, R. A., (2012). Human capital development and economic growth: Empirical Evidence from Nigeria. *Asian Economic and Financial Review*, 2(7).
- Jung, H. S. & Thorbecke, E. (2003). The impact of public education expenditure on human capital, growth, and poverty in Tanzania and Zambia: A general equilibrium approach. *Journal of Policy Modeling*, 25(8).
- Kakar, Z. K., Khilji, B. A., & Khan, M. J., (2011). Relationship between education and economic growth in Pakistan: A Time Series Analysis. *Journal of International Academic Research*, 11(1).
- Musila, J.W., & Balassi, W., (2004). The impact of educational expenditure on economic Growth in Uganda: Evidence from time series data. *The Journal of Developing Areas*, 38(1).
- Ndiyo, I. (2002). Paradox of education and Economic Growth in Nigeria modelled for Contribution of education growth. *Human Resource Development in Africa*. Selected Papers for 2002 Annual Conference, Nigerian Economic Society, Ibadan.
- Obaji, C.W. (2016). *Reforming the Nigeria educational system*. Address at the 15th Convocation Lecture, Olabisi Onabanjo University.
- Olaofe, L. A., (2005). *Nigerian educational emancipation: Roadmap from Crisis to Resurgence*. Faculty Seminar Series, 11(4).
- Permani, R., (2009). The role of education in economic growth in East Asia: A Survey. *Asian-Pacific Economic Literature*, 23(1).
- Philippe, A., Peter, H., & Fabrice, M., (2011). The relationship between health and growth: When Lucas meets Nelson-Phelps. *Review of Economics and Institutions*, 2(1), 1-24.
- Romer, P. M., (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), S71-S102.
- Sanusi, J.O. (2003). *A keynote address by chief (Dr.) J.O. Sanusi, Former Governor, Central Bank of Nigeria*. Presented at the PGDPA and CPA Graduation Ceremony of ASCON.
- Todaro, M.P. & Stephen, C.S., (1982). *Economic for developing countries*. Longman publishers. London.
- Trostel, P., Walker, I., & Woolley, P., (2002). Estimates of the economic return to schooling for 28 Countries. *Labour Economics*, 9(1).
- Ukeje, E. U., (2002). Towards accelerated industrial crop production: problems and prospects. *CBN Bullion*, 26(3)
- Yogish, S. N., (2006). Education and economic development. *Indian Journal of Social Development*, 6(2).

APPENDIX I
Data for Regression

Year	RGDP	GEE	PSER	SSER	TIER	TPS	TSS	TTI
1980	31546.8	155.81	12,206,291.0	1,877,057.0	57,742.0	35,875.0	3,218.0	13.0
1981	205222.1	165.43	14,026,819.0	2,473,673.0	74,607.0	36,683.0	4,969.0	16.0
1982	199685.3	187.93	14,964,143.0	2,880,280.0	87,066.0	37,611.0	5,603.0	19.0
1983	185598.1	162.15	15,308,384.0	3,334,644.0	104,683.0	37,888.0	5,894.0	24.0
1984	183563.0	198.90	14,383,487.0	3,402,665.0	116,822.0	38,211.0	6,190.0	27.0
1985	201036.3	258.60	13,025,287.0	2,995,578.0	126,285.0	35,281.0	5,876.0	24.0
1986	205971.4	262.71	12,914,870.0	3,094,349.0	135,783.0	35,433.0	5,730.0	24.0
1987	204806.5	225.01	11,540,178.0	2,934,349.0	150,613.0	34,266.0	6,092.0	28.0
1988	219875.6	1458.80	12,690,798.0	2,997,464.0	219,199.0	33,796.0	6,044.0	104.0
1989	236729.6	3011.80	12,721,087.0	2,723,791.0	307,702.0	34,904.0	5,868.0	118.0
1990	267550.0	2482.80	13,607,249.0	2,901,993.0	326,557.0	35,433.0	6,001.0	122.0
1991	265379.1	1256.30	13,776,854.0	3,123,277.0	368,897.0	35,446.0	5,860.0	124.0
1992	271365.5	291.30	14,805,937.0	3,600,620.0	376,122.0	36,610.0	6,009.0	130.0
1993	274833.3	8882.38	15,911,888.0	4,150,917.0	383,488.0	37,812.0	6,162.0	133.0
1994	275450.6	7382.74	16,683,560.0	4,500,000.0	202,534.7	38,000.0	6,300.0	133.0
1995	281407.4	9746.40	17,994,082.0	5,084,546.0	391,035.0	39,677.0	6,452.0	138.0
1996	293745.4	11496.15	19,794,082.0	5,389,619.0	689,619.0	41,660.0	6,646.0	138.0
1997	302022.5	14853.54	21,161,852.0	5,578,255.0	862,023.0	43,951.0	7,311.0	138.0
1998	310890.1	13589.49	22,473,886.0	5,795,807.0	941,329.0	45,621.0	7,801.0	138.0
1999	312183.5	43610.65	23,709,949.0	6,056,618.0	983,689.0	47,902.0	8,113.0	144.0
2000	329178.7	57956.64	24,895,446.0	6,359,449.0	1,032,873.0	48,860.0	8,275.0	144.0
2001	356994.3	39882.60	27,384,991.0	6,995,394.0	1,136,160.0	49,343.0	8,275.0	142.0
2002	433203.5	80530.88	29,575,790.0	7,485,072.0	1,249,776.0	47,694.0	8,351.0	178.0
2003	477533.0	64782.15	26,292,370.0	7,091,376.0	1,274,772.0	52,815.0	11,918.0	202.0
2004	527576.0	76524.65	28,144,967.0	7,091,376.0	1,745,186.0	65,627.0	13,333.0	215.0
2005	561931.4	82795.06	28,234,865.0	6,084,654.0	1,432,357.0	68,673.0	15,432.0	224.0
2006	595821.6	87294.56	22,861,884.0	5,637,783.0	1,378,653.0	77,668.0	18,530.0	234.0
2007	634251.1	107529.39	21,632,070.0	6,009,869.0	1,677,554.0	92,007.0	30,648.0	242.0
2008	672202.6	164000.0	21,294,517.0	6,272,601.0	1,224,654.0	98,631.0	33,654.0	251.0
2009	716949.7	137156.6	20,080,976.0	6,362,243.0	1,162,629.0	98,631.0	36,624.0	264.0
2010	776330.0	170800.0	23,663,805.0	6,102,629.0	1,194,175.0	102,101.0	43,246.0	267.0
2011	834400.0	335800.0	19,262,033.0	9,540,294.0	1,530,959.0	89,661.0	17,590.0	282.0
2012	888890.0	348400.0	18,667,308.0	10,208,631.0	850,640.0	89,643.0	16,049.0	285.0
2013	950110.0	390420.0	18,725,820.0	10,876,967.0	748,964.0	90,626.0	14,508.0	287.0
2014	988564.0	311120.0	18,934,842.0	10,884,476.0	1,175,525.0	94,564.0	14,670.0	298.0

Sources:1 NBS. Educational reports 2010-2015

2. CBN, Annual Report and Statement of Account Online version (2015).

3. World Bank Databank Online version (2015).