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HUMAN CAPITAL INVESTMENT FOR INCLUSIVE AND SUSTAINABLE ECONOMIC DEVELOPMENT: THE NIGERIAN EXPERIENCE

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Abstract

Shift from MDGs to SDGs agenda serves as a spur to member countries to consolidate their gain in MDGs in further pursuit of SDGs. Predicated on inclusion and sustainable course, SDGs agenda have wider implications for achieving sustainable development through full mobilization of target population. From this perspective, the study focused on detailed analysis of impact of human capital investment on economic development. Data were analyzed using OLS technique. Two models employed, allowed for variation of gross domestic product per capita and infant mortality rate as proxies for economic development to control gross domestic product. Results indicate that: (1) Government recurrent expenditure on education, government capital expenditure on education and government capital expenditure on health impacted positively on gross domestic product per capita while government recurrent expenditure on health impacted it negatively. (2) All components of human capital investments, except government recurrent expenditure on health, had positive significant impact on infant mortality rate. (3) Infant mortality rate was more reliable than gross domestic product per capita as an index of economic development. It was recommended, inter alia, that a comprehensive health policy with attractive welfare package be evolved as incentive to halt continuing human capital flight from health sector.

Keywords: Human capital, impact analysis, inclusive and sustainable development, multiple regression analysis.
Jel Code: O10, O11, O15.

1. INTRODUCTION

United Nations, in its Sustainable Development Summit of September 25, 2015 had adopted 2030 Sustainable Development Goals (SDGs) Agenda in furtherance of Millennium Development Goals (MDGs) of 2000. SDGs were built on MDGs eight anti-poverty targets which include the following: (i) Eradicating extreme poverty and hunger (ii) achieving universal primary education (iii) promoting gender equality and women empowerment (iv) reducing child mortality (v) improving maternal health (vi) combating HIV/AIDS, malaria and other diseases (vii) ensuring environment sustainability (viii) developing a global partnership for development. While some member countries have made remarkable progress towards achieving MDGs, others including Nigeria are still grappling to cope with the challenges posed by MDGs. However, a shift from MDGs to SDGs which implies added responsibilities, will act as a spur to member countries to strive toward realizing both MDGs and SDGs. But the shift to SDGs is predicated on inclusive and sustainable course (Clark, 2015). The wider implication of inclusive course is that economic development could only be sustained with total involvement and participation of the target populations. Thus, it has become pertinent that any meaningful analysis of factors affecting economic development of a country, must begin with consideration of human capital investment.

There is increasing awareness the world over, that human capital is an agent of economic development. Provision of educational and health services to the people is one of the major

ways of improving the quality of human resources. Apart from raising social issues, both educational and health services provide an economy with healthy trained human resources required for economic growth and development. Economic development can be referred to as qualitative changes in the economy involving multiple areas including development of human capital, critical infrastructure, regional competitiveness, social inclusion, health, safety, literacy, and other activities. Certainly, human capital investment leads toincrease in human development, economic growth and development (poverty reduction, sustenance, freedom, equality, progress, self esteem). Along this line, Psacharopoulos (1973), Coombs (1985) and Aboribo (1999) had stated that increase in national income and per capita income is a function of education and that differences among nations can better be explained by differences in the endowments ofhuman, rather than physical capital.

Successive Nigerian governments have for the past two decades increased substantially their budgetary allocation to health and education. Federal government capital and recurrent expenditures on health and education for the period, 2005-2014 have been presented in Table 1 below.

Table 1. Federal Government Capital and Recurrent Expenditures on Health and Education (2005 – 2014)

Year	GRXH (billions)	GRXE (billions)	GCXE (millions)	GCXH (millions)
2005	34.2	76.5	98074.7	60607.1
2006	55.7	82.8	110235.9	77314.2
2007	62.3	119.0	123086.4	96726.0
2008	81.9	150.8	155822.9	123461.0
2009	98.2	164.0	212800	195400.0
2010	90.2	137.1	1800560.8	143702.6
2011	99.1	170.8	258695.0	134096.0
2012	231.8	335.8	371201.0	271300.0
2013	197.9	348.4	396004.0	242900.0
2014	180.0	390.4	398006.0	242900.0

Source: National Bureau of Statistics, Abuja .

Table 1 shows that recurrent expenditure on health rose between 2005 and 2012 before a fall in 2013 and 2014. For recurrent expenditure on education, the table shows a steady rise between 2005 and 2009 before decrease in 2010 accompanied by a sharp rise from 2011 to 2014. As can also be seen in Table 1, capital expenditure on education rose steadily between 2005 and 2010, dropped sharply in 2011 before rising again steadily between 2012 and 2014. For capital expenditure on health, the table shows a steady rise between 2005 and 2009, then a fall between 2010 and 2011, before a sharp rise in 2012 accompanied by a fall in 2013 and 2014. In general, by inspection, recurrent expenditure on health, recurrent expenditure on education, capital expenditure on education and capital expenditure on health depict upward sloping trends thereby indicating that federal government expenditures on health and education increased steadily over the years.

In spite of the huge investments in health and education, the Nigerian economy is still characterized by underdevelopment as is evidenced by rising physical quality of life indices (PQLI) presented below.

S/NO	PQLI	2005	2014
1	Total Fertility Rate(%)	5.40	6.78
2	General Fertility Rate(%)	40.10	4.22
3	Crude Birth Rate(%)	11.03	17.92
4	Poverty Rate(%)	55.5	61.1

Source: National Bureau of Statistics and Federal Ministry of Health .

This has aroused interest among scholars and researchers alike who are curious to know why rising human capital investment has failed to induce economic development in Nigeria. Therefore, there is an urgent need to embark on the present study which focused on detailed analysis of the magnitude and direction of contributions of different components of human capital investment to economic development. Only through a detailed analysis of the impact of human capital investment in its disaggregated form on economic development can it ever be possible to gain an insight into the magnitude and direction of impact of each distinct component to economic development indicators. Unless the magnitude and direction of impact of each distinct component are precisely determined, the human capital investment-economic development nexus in Nigeria would for long remain an unsettled issue that would continue to pose a conundrum to policy makers in Nigeria.

2. REVIEW OF RELATED LITERATURE

This section deals with review of related literature. The review has been presented under two subheadings:

--- Theoretical Literature Review
--- Empirical Literature Review
--- Summary of Review

2.1 Theoretical Literature Review

Several theories have been put forth by eminent scholars on human capital and economic development. However, only the theories considered relevant to the present study have been reviewed.

2.1.1 Human Capital Theory

This theory is an expression of several views by chief exponents among whom was Schultz (1962). Schultz had viewed human capital as a manifestation of human abilities or capacities not merely individual characteristics (traits), which are useful on their own in production processes. On his own part, Becker (1993) had stated that human capital is needed for direct application in production process, more explicitly human capital enhances productivity in all tasks, though possibly with different outcomes. It is obvious from this view that its complexity notwithstanding human capital represent a stock of knowledge required or skill needed to enhance productivity and output. This theory posits that education raises productivity and efficiency of workers by increasing the level of their cognitive skills. Thus, investment in education develop the cognitive abilities of individuals by combing innate abilities with investment in human beings. This theory has strong link with the present study which has considered investment in education at primary, secondary and tertiary levels as a dimension of human capital investment.

2.1.2 Neoclassical Counter-Revolution Models

This theory has combined three different approaches adopted by neoclassical counter-

revolution economists in the 1980s to operationalized economic development. The approaches include the following: The free market approach, the new political economy approach and the market-friendly approach. The chief exponents of this model were Johnson (1971), Little (1982), Lal (1983) and Bauer (1984). They focused on promoting free markets, eliminating government – imposed distortions associated with protectionism, subsides and public ownership. Meier (2000) on his part rather than view underdevelopment as trajectory activities of developed countries, attributed it solely to domestic issues arising from poor resource allocation, government – induced price distortions and corruption. Okafor and Uchendu (2000) had attested to Meier‟s view when they reported that management in Nigeria‟s public sector was fraught with inefficiency, capacity underutilization and low productivity rooted in lack of managerial capabilities and corruption. The major implication of this theory is that underdevelopment is systemic arising from misalignment within the internal structure of an economy. The theory has recognized the importance of managerial competence and the role of uncertainty in fostering high rate of productive investment. Okafor et al., (2004) had also highlighted the rising profile of uncertainty in labour productivity. This has been considered relevant to this study which has traced problems of economic development to its internal structure.

2.1.3 Theory of Coordination Failure

Issues of coordination were first raised by Rosenstein – Rodan in 1943. The exponents of coordination failure including Nurkse (1953) and Hirschman (1957) had also laid emphasis on the need for government intervention to solve the problem of coordination failure. This theory posits that market may fail to achieve coordination among contemporary activities. According to this theory contemporaries exist when return on one investment depends on presence or the size of other investments, when this occurs, two situation arise: On the one hand, optimally, all the investors are better off with all the investments to be achieved simultaneously; on the other hand, the other investors will not embark on a similar cause of action when he has reason to doubt that other investors would embark on same cause of action. In their contribution to the further development of this theory Hoff and Stiglitz (2000) had revealed that coordination failure could lead the market to an equilibrium outcome inferior that subsequently pushes the economy into underdevelopment equilibrium. This theory has the following implications:

1. Managerial competence is necessary to harness investment goods to economic development.
2. Net returns to total investment are summation of returns to disaggregated components of investment. Underdevelopment is a product of interaction among forces within the internal structure of the economy.

The theory has relevance to the present study which is aimed at determining how investment in human capital, in its disaggregated form, contributes to major economic development indicators of a nation in underdevelopment equilibrium.

2.1.4 The Lewis Theory of Development

This is one of the earliest known theories of economic development. It was put by the Nobel Laureate, W.Arthur Lewis. It was later modified and extended by John Fei and Gustav Ranis. Lewis two sector theory had become a general theory of development in surplus labour Third World countries during most of the 1960s and early 1970s. Lewis had identified two sectors-capitalist and subsistence. According to Lewis there is unlimited supply of labour in the subsistence sector. Transfer of surplus labour from the subsistence sector to the capitalist at a

wage rate of about 30 per cent higher than the average productivity of labour leads to capital accumulation which in turn enhances economic development. The major implication is that surplus labour could constitute human capital when properly harnessed. Lewis theory of unlimited supply of labour has its relevance in the present study where a detailed analysis of the impact of human capital on economic development is carried out. That Nigeria is characterized by unlimited supply of labour is evidenced by Okafor and Jegbefumwen"s (2016) assertion that over 40 million Nigeria youth are unemployed with no chances of securing job within the next 10years.

The theoretical base for the present study is human capital theory. The human capital theory which recognizes acquired knowledge and skill as sine qua non for increased productivity and output comes close to the theories of economic development which put emphasis on physical qualities of life. The preferred choice of human capital theory as a theoretical base of the study is reinforced further by the existence of proxies for human capital components in the constructs of human capital theory. For instance, mortality rate and life expectancy are both common indicator of health and economic development. Literacy rate is a common indicator of education and economic development.

2.2 Empirical Literature Review

Several studies have been carried out in this area. Only recent studies have been reviewed in this section. Awe and Ajayi (2010) studied human capital investment – economic growth nexus in Nigeria. Their study spanned across the period 1975–2005. They employed OLS involving co-integration and error correction mechanism. Their study revealed the existence of directional causality between human capital investment and economic growth in Nigeria. The weakness inherent in this study is the failure to indicate which of the variables caused the effect on the other. In spite of this shortcoming, the study has yielded suitable reference materials for the present and other future studies.

Adawo (2011) carried out a study to ascertain whether or not human capital investment has ever contributed to economic growth in Nigeria. The study spanned across the period 1970-2006. The study employed OLS technique involving DF, ADF, and co-integration for the analysis for the data. Results indicate that: (1) Physical capital formation and health expenditure in primary schools contributed significantly to economic growth in Nigeria (2) Physical capital formation and health expenditure in secondary and tertiary institutions "dampened" economic growth in Nigeria. The findings of this study were considered significant in its relevance to the conduct and advancement of the present study. Certainly, the findings would serve as suitable reference materials for comparison with findings of the present study. Notwithstanding, the study has a drawback which manifest clearly in the use of the word dampened which has no statistical implication.

Adelakun (2011) investigated the effect of human capital development on economic growth in Nigeria. The study covered the period 1985–2009. Data were analyzed using multiple regression technique. The study revealed that there was a positive significant relationship between human capital development and economic growth in Nigeria. However, result of this study could be misleading considering that analysis of data from small sample leads generally to misleading inferences. It is this weakness which has compromised the quality of this study.

Ejere (2011) carried out a study to establish the status of human capital formation as a catalyst for national development in Nigeria. The study spanned across the period 1999-2010. The study employed qualitative technique which was essentially situational for the analysis of data. Findings indicate that human capital is critical in the development process.

The treatment of national development, rather than economic development in this paper is what has cast a shadow on the relevance of this paper to the present study. The concept of national development has other dimensions such as social development, political development, etc. which cannot be considered conjointly in a study of this nature. Otherwise, the study has yielded suitable reference point for comparison with findings of the present study.

Ilegbinosa (2013) investigated the profile of human capital investment as a tool for economic development in Nigeria. He used primary data from a sample of 120 respondents. The data were analyzedusing the inferential statistics of Chi-square (χ^2**)**. He reported findings which indicate that: (1) Investmenton human capital had impact on economic development (2) Poor funding by federal government of Nigeria was a major problem hindering adequate human capital investment. The drawback of this study is the use of non parametric statistics of χ^2 which can only establish a functional relationship between dependent and independent variables without indicating the strength of such relationship. In other words, χ^2 cannot be used to determine the impact of the independent variables on the dependent variable. Notwithstanding, the findings of the study would serve as eye-opener in the present research pursuit.

Ogujiuba (2013) studied the impact of human capital formation on economic growth in Nigeria. The study covered the period 1970-2010. Data were analyzed using OLS technique including co-integration and ADF test. The study revealed that investment on human capital in the form of education and capacity building at primary and secondary levels contributed significantly to economic growth in Nigeria while capital expenditure on education did not. The results of this study constitute suitable reference materialfor comparison with findings of the present study.

Mba et al. (2013) carried out a study to determine the impact of human capital development on economic growth in Nigeria. The study covered the period 1977-2011. They employed OLS technique involving Augmented Dickey Fuller, and co-integration tests for the analysis of data. They reported a positive significant relationship between human capital development and economic growth in Nigeria. One would expect that the use of OLS would have been stretched a little further through use of Granger causality test to determine not only the nature of relationship between human capital development and economicgrowth but also the direction of relationship between the two.

Sofoluwe et al. (2013) studied entrepreneurship education as a strategy for boosting human capital development and employability in Nigeria. Primary data were used for the study. The sample for the study comprised of 111 respondents, descriptive statistics, as well as inferential statistics of χ^2 were used for the analysis of data. Results indicate that entrepreneurship education was a leeway to job creation, wealth creation, youth empowerment, peaceful society and economic development. The problem of this study is that the nature of statistical analysis does not warrant an inference on the nature of relationship among entrepreneurship education, human capital development and employment. However, the study has yielded reference materials for the present study and other further related studies.

Eigbiremolen and Anaduaka (2014) had embarked on a study to determine the impact of human capital development and economic growth in Nigeria. Their study spanned across the period 1999-2012. They employed OLS technique involving Augmented Dickey-Fuller test and Johansen co-integration for the analysis of data. Results indicate that: (1) Human capital

development impacted positively on output level
(2) There was inelastic relationship between human capital development and output level. Majorlimitations of this study are: (1) Application of OLS technique for the analysis of data from sample withsize as small as 14years (2) "inelastic" relationship is merely a product of extrapolation as the techniqueemployed is not equipped to establish elasticity or inelasticity in relationship, a concept that is vague. Shobande et al. (2014) carried out a study titled „Human capital investment and economic development: The Nigerian experience. The study covered the period 1970-2011. They employed OLS technique including ADF, Johansen co-integration and ECM for the analysis of data. The study revealed that therewas short run negative relationship between economic development and human capital investment inNigeria. The finding of this study was considered significant in its relevance for the advancement of thepresent study as the finding serve as a prior expectation for the present study.
Torruam and Abur (2014) studied the impact of human capital development on economic growth in Nigeria. The study covered the period 1997-2012. The study employed co-integration test for the analysis of data. The study revealed that: (1) There was a bidirectional causality running from economic growth to human capital development and from total expenditure on education to total expenditure on health in Nigeria. A major limitation of the study is lost of focus on the part of the researchers in their analysis of the nature of relationship between human capital and economic growth in Nigeria. One would have expected the study to create an insight into magnitude and direction of contribution of human resource development to economic growth in Nigeria. Despite this weakness, the study has yielded a suitable reference point for the present study.
Jaiyeoba (2015) carried out a study titled „Human capital investment and economic growth in Nigeria". The study covered the period 1982-2011. Data were analyzed using OLS technique. Results indicate that:
(1) There was a long-run relationship among government expenditure on education, health and economic growth (2) Health and education expenditures, secondary and tertiary enrolment rate and gross fixed capital formation had positive signs as expected; government expenditure on education and primary enrolment rate were negatively signed. Two obvious weaknesses of the study are: (1) The use of data from small sample with size equals 29 (2) Ambiguity in the result of the study which tend to undermine its generalization. On the one hand, education expenditure appeared with expected positive sign, and on the other hand, government expenditure on education became an exception. Despite this limitation, it hasa strong link with the present study which has adopted most of its variables for inclusion in the present analysis.
Pelinescu (2015) carried out a study to determine the impact of human capital on economic growth. The study which covered the period 2000-2012 employed panel data from Eurostat database. Descriptive statistics and pooled least square techniques were used for the analysis of data. The study revealed that:
(1) There was positive significant relationship between GDP per capita and innovative capacity of human capital and qualification of employees (2) There was negative relationship between education expenditurein GDP and GDP per capita. The weakness of this study is the extremely small sample employed which tended to undermine the strength in the use of panel data. Analysis of data of a small sample with multiple regression leads generally to misleading results. In spite of this shortcoming, the study provided evidences for comparison

with the findings of the present study.
Sulaiman et al. (2015) had embarked on a study titled „Human capital, technology and economic growth: Evidence from Nigeria". Their study covered the period 1975-2010. They adopted autoregressive distributed lag approach to co-integration for the analysis of data. They reported findings which indicate that: (1) Human capital in form of secondary and tertiary school enrolment had positive significant impacton economic growth (2) Technology shows positive significant impact on economic growth. Regrettably, though, the study failed to create an insight into the direction of the relationship between human capital and economic growth in Nigeria. All the same, it had yielded suitable reference materials for the present and other studies.

2.3 Summary of Review

Review of theoretical literature has revealed that human capital components are dimensions of economic development. Therefore, there is a prior expectation that investment in human capital would lead to economic development. Thus, this has provided theoretical justification for the present study.
On review of empirical literature, one glaring fact which has emerged is that human capital investment- growth nexus has aroused deep interest among researchers. From the nineties till the present, the intensity of research in the area of human capital investment-growth/economic development relationships has continued to grow unabated. The rapidity with which research was undertaken between 2011 and 2015 is an indication that research in this area has posed more problem than they provided solutions. Obviously, the reason for this is not far fetched. This is so because, the commonly reported findings of positive significant relationship between human capital investment and growth/economic development does not conform to reality. The 2010 Human Development Index (HDI) for Nigeria was 0.423, for Ghana it was
0.467 and for South Africa 0.597. In the three broad categories of high-, medium– and low human development, Nigeria was grouped among countries with low human development (UNDP, 2010). Since HDI provides measures of income it becomes unreasonable to argue on positive significant relationship between human capital investment and growth in Nigeria.
Moreover, several studies in this area had focused on determining the impact of human capital investmenton economic growth in Nigeria. Only a few studies had delved into area of human capital investment- economic development nexus in Nigeria. While most of the studies had reported positive significant contribution of human capital investment to economic growth in Nigeria, studies in the area of human capital investment – economic development nexus had reported negative significant contributions of human capital investment to economic development. This has evoked the curiosity of the present researchers who are interested in exploring further the relationship between human capital investment and economic development in Nigeria. It is not easy to understand why human capital investment which contributed positively to economic growth in Nigeria should fail to contribute positively to economic development. It was the conviction of the researchers that a replacement of school enrolment with mortality rate would yield a desired outcome that would be confirmatory.

3. METHOD AND PROCEDURE

The method and procedure adopted for the conduct and advancement of this work have been discussed in this section.

3.1 Nature of Data

Secondary data were used for this study. The data were sourced from Central Bank of Nigeria (CBN), World Development Indicators, United Nations Development Program and Human Development Report. Data were obtained for the period 1982-2014.

In order to determine the nature of the data, the unit root test was employed to establish the stationarity of the time series data. The results of the unit root test have been presented in Table 2 below.

Table 2. Unit Root Test for Stationarity of Time Series Data Variables ADF Test statistics Critical t Value (p≤0.05) Decision

GDPPA	-6.374560	-2.9665	Stationary
IMR	-2.992814	-2.9665	Stationary
GRXH	-5.237685	-2.9627	Stationary
GRXE	-3.498179	-2.9627	Stationary
GCXE	-6.388595	-2.9627	Stationary
GCXH	-6.438890	-2.9627	Stationary

Source: Results of data analysis

Table 2 shows that ADF values for GDPPA, IMR, GRXH, GRXE, GCXE and GCXH were – 6.374560, - 2.992814, -5.237685, -3.498179, -6.388595, and -6.43880 respectively. Also, the table shows that criticalt statistics for GDPPA, IMR, GRXH, GRXE, GCXE and GCXH were – 2.9665, -2.9665, -2.9627, -
2.9627, -2.9627 and -2.9627 respectively. Now since ADF values are greater than critical t statistics at p≤0.05 for all the variables, then the time series data for all the variables included in the analysis were considered to be stationary, and therefore, are not likely to yield spurious results.

3.2 Model Specification

As stated earlier, the primary objective of the study is to determine the impact of human capital investment on economic development in Nigeria. The study employed augmented Solow human capital growth model. Solow model augmented by Mankiw et al. (1992) is presented below:

$Y_t = AK^{\alpha} H_t^{\beta}$ $_t$ _____(1)

This is presented in the linear form:

$\ln Y_t = \ln A + \alpha \ln K_t + \beta \ln H_t + \mu$_____(2)

Where Y is real GDP; K is physical capital; H is human capital; α and β are parameter coefficients; A isefficiency parameter.

Adelakun (2011) had adapted this model in the form:

GDP = F(TGVTEE, TGVTEH, TSE, SCSE, PRYSE, U)_____(3)

where GDP is gross domestic product (dependent variable),

TGVTEE is total government expenditure on education; TGVTEH is total government expenditure on health;

TSE is tertiary school enrolment; SCSE is secondary school enrolment; PRYSE is primary schoolenrolment.

The present study has modified Adelakun‟s (2011) model by replacing TSE, SCSE and PRYSE with GDPPA and IMR in order to capture economic development. Thus, this study has adopted the model presented in the form:

$GDPPA_t = \beta_0 + \beta_1 GRXH_t + \beta_2 GRXE_t + \beta_3 GCXE_t + \beta_4 GCXH_t + \mu t$ ___(4) $IMR_t = \beta_0 + \beta_1$

$GRXH_t + \beta_2\ GRXE_t + \beta_3\ GCXE_t + \beta_4\ GCXH_t + \mu t$ _____(5)

Where GDPPA is GDP per capita; IMR is infant mortality rate; GRXH is government recurrent expenditure on health;
GRXE is government recurrent expenditure on education; GCXE is government capital expenditure on education; GCXH is government capital expenditure on health.

3.3 Evaluation Technique

Further to the verification of the stationarty of time series data, data were analyzed using multiple regression technique. Beta coefficients for all predictor variables were used to determine the contributions of the variables to the criterion variables. Multiple correlation coefficient (R^2) was used to determine the percentage of total variance in criterion variables explained by all the predictor variables. Standard error of regression (S.E.) was applied for determining the reliability of the models for the purpose of predicting economic development. t statistics were employed for verifying the significance of contributions of the predictors variables to the criterion variables. Finally, Durbin-Watson (DW) was used to verify the existence of autocorrelation in the model.

4. RESULTS

The results of data analysis have been presented in two model – Model 1 and Model 2; to facilitate interpretation of the results.

4.1 Model 1

$GDPPA_t = \beta_0 + \beta_1\ GRXH_t + \beta_2\ GRXE_t + \beta_3\ GCXEt + \beta_4\ GCXH_t$ GDPPA = 1734.204 – 16.9371 + 9.846098 + 0.000815 + 0.014000
SE =(80.90440) (7.459587) (3.695074) (0.000276) (0.004898)
t statistic = 21.43523 – 2.270462 2.664655 2.959187 2.858440
Prob. = 0.0000 0.0317 0.01310.0065 0.0083
R^2 = 0.945164 Adj. R^2 = 0.934619 S.E. of regression = 360.9576
F statistic = 89.62838 Prob.(F-statistic) 0.00000
Durbin–Watson stat = 2.274613 Mean dependent var =2693.707

4.1.1 Interpretation

Interpretation of Model 1 leads to the following deductions:

- One unit increase in GRXH leads to reduction in GDPPA by 16.9367
- One unit increase in GRXE leads to increase in GDPPA by 9.8461
- One unit increase in GCXE leads to increase in GDPPA by 0.0008
- One unit increase in GCXH leads to increase in GDPPA by 0.0140

Model 1shows that mean GDPPA =2693.707 while its S.E. = 80.90440. Now since mean GDPPA is greater than S.E.(GDPPA) then the contributions of the predictor variables to GDPPA were considered to be significant. These results were further corroborated by the results of t test presented below.
The t statistics for GRXH, GRXE, GCXE and GCXH were -2.2705 ($p \leq 0.0317$), 2.6647 ($p \leq 0.0131$). 2.9592 ($p \leq 0.0065$) and 2.8584 ($p \leq 0.0083$) respectively. Now, since $p \leq 0.05$ is greater than the probabilities for all the predictor variables, the t statistics for GRXH, GRXE, GCXE and GCXH were considered to be significant warranting an inference that GRXH, GRXE, GCXE and GCXH contributed significantly to GDP per capita. However, GRXH had impacted negatively on GDP per capita. Model 1 also shows that $R^2 = 0.9452$. This indicates that GDP per capita was highly correlated with the predictor variables and that this model

explained the variance in GDP per capita up to 94.52 per cent leaving out only 5.48 per cent of unexplained variance. Moreover, it can be seen in Model 1 that S.E. of regression = 360.9576 which is quite high, thereby raising serious doubt about the reliability of Model 1 for purpose ofpredicting economic development. The implication is that GDP per capita was not a reliable index of economic development in Nigeria. Furthermore, Model 1 shows that D.W. = 2.2746. With K (no. of explanatory variables including constant term)=5 at 0.05 confidence interval and n = 32. The calculated d
= 1.11 (lower limit) and 1.82 (upper limit). Now since D.W. = 2.27 is greater than calculated d = 1.82,
D.W. = 2.27 was considered to be significant. This suggests that there was no first order serial correlation (autocorrelation) in the model.

4.2 Model 2.

$IMR_t = \beta_0 + \beta_1 GRXH_t + \beta_2 GRXE_t + \beta_3 GCXE_t + \beta_4 GCXH_t$ 205.5313 + 0.457894 -0.269063 – 2.58E-05 – 0.000288
S.E = (1.821420) (0.163394) (0.080218) (6.33E-06) (0.000114)
t stat = 112.8412 2.802381 -3.354148 -4.082722 -2.521192
Prob. = 0.0000 0.0095 0.0025 0.0004 0.0182
R^2 = 0.949700 Adj R^2 = 0.940027 S.E. of regression = 8.115599
F statistic = 98.18029 Prob.(F-statistic) = 0.000000
Durbin-Watson stat = 2.665889. Mean dependent var =183.7781

4.2.1 Interpretation

Interpretation of Model 2. leads to the following deductions:

- One unit increase in GRXH leads to increase in IMR by 0.4579
- One unit increase in GRXE leads to reduction in IMR by 0.2691
- One unit increase in GCXE leads to reduction in IMR by 0.0000258
- One unit increase in GCXH leads to reduction in IMR by 0.00028

Model 2 shows that mean IMR = 183.7781 while its S.E. = 1.821420. Now since mean IMR is greater than S.E.(IMR) then the contributions of the predictor variables to IMR were considered to be significant. These results were further corroborated by the results of t test presented below.
The t statistics for GRXH, GRXE, GCXE and GCXH were 2.8024 ($P \leq 0.0095$), -3.3541 ($P \leq 0.0025$), - 4.0827 ($P \leq 0.0004$) and – 2.5212 ($P \leq 0.0182$) respectively. Now, since $P \leq 0.05$ is greater than the probabilities for all the predictor variables, the t statistics for GRXH, GRXE, GCXE and GCXH were considered to be significant. This indicates that GRXH, GRXE, GCXE and GCXH had contributed significantly to infant mortality rates in Nigeria. While increases in GRXE, GCXE and GCXH had led to reduction in mortality rate, increase in GRXH was accompanied by a rise in infant mortality rate. Model 2 also shows $R^2 = 0.9497$. This indicates that infant mortality rate was highly correlated with the predictor variables and that the model explained variance in infant mortality rate by 94.97 per cent leaving out only 5.03 per cent of unexplained variance. Moreover, S.E. of regression for Model 2 was 8.1156(compared to
S.E. regression = 360.9576). Now, since S.E. of regression for Model 1 is greater than S.E. of regression of Model 2, Model 2 was considered to be better than Model 1 for predicting economic development. This implies that infant mortality rate was more reliable than gross domestic product per capita as anindex of economic development in Nigeria.
This result is further corroborated by the differences between mean GDPPA and standard

error estimates (S.E. est.) of GDPPA for Model 1 and mean IMR and S.E. estimate of IMR for Model 2 as presented below.
Model 1: d_1= Mean GDPPA-S.E. est. GDPPA = 2693.707-80.90440= 2612.8026 Model 2: d_2= Mean IMR –S.E. est. IMR = 183.7781-1.821420= 181.95668
Now, since d_1 is greater than d_2, then Model 2 was considered to be better than Model 1 for predicting economic development in Nigeria. This has confirmed the earlier result that infant mortality rate was more reliable than gross domestic product per capita for predicting economic development in the country. Furthermore, Model shows the D.W. = 2.67. With K (no. of explanatory variables including constant term) = 5 at 0.05 confidence level and n = 32. The calculated d = 1.11 (lower limit) and 1.82 (upperlimit). Now since D.W. = 2.67 is greater than calculated d = 1.82. D.W. = 2.67 was considered significant. This suggest that there was no first order serial correlation (autocorrelation) in the model.

5. EMPIRICAL RESULT AND DISCUSSION

In this section, the empirical result and an accompany discussion have been presented.

5.1 Empirical Result

The major findings which have crystallized from this study include the followings:

1. The components of human capital investment including government recurrent expenditure on education, government capital expenditure on education and government capital expenditure on health had contributed positively and significantly to GDP per capita, a proxy for economic development while government recurrent expenditure on health had impacted negatively, though significantly, to economic development.
2. The components of human capital investment including government recurrent expenditure on education, government capital expenditure on education and government capital expenditure on health had made positive significant impact on infant mortality rate, a proxy for economic development while government recurrent expenditure on health had negatively and significantly impacted on economic development.
3. Infant mortality rate was more reliable than GDP per capita as an index of economic development in Nigeria.

5.2 Discussion of Findings

To integrate this study into existing economic literature, the major findings of this study have been discussed hereunder.
One major finding of this study is that government recurrent expenditure on education, government capital expenditure on education and government capital expenditure on health had contributed positively and significantly to GDP per capita, a proxy for economic development while government recurrent expenditure on health had impacted negatively, though significantly to economic development. This finding has come much in expectation. Education imparts knowledge to the citizens required for gainful employment in public and private sectors of the economy. It is not surprising then, that government recurrent expenditure on education (salaries, emoluments to school personnel, etc.), government capital expenditure on education (provision of school equipment, instructional materials, etc) and government capital expenditure on health (provision of hospital equipment, drugs, etc) impacted positively on gross domestic product per capita. A possible explanation of a positive significant contribution of these components of human capital investment to gross domestic product per capita is that personnel income in Nigeria constitute a sizeable

proportion of the country‟s gross domestic product, which incidentally is reflected in gross domestic product per capita. This finding is in consonance with the findings reported by Ejere (2011) and Ilegbinosa (2013). Perhaps, what appears to be an interesting part of this finding is the negative significant contribution of government recurrent expenditure on health to gross domestic product per capita. Ostensibly, this finding contradicts the positive significant contribution of human capital investment to gross domestic product per capita. However, a thoughtful reflection on the problems of health administration in Nigeria has soon lay bare the facts of leakages in the outcome of government recurrent health expenditure in the form of human capital flight of medical professionals and products of medical institutions who seek greener pastures overseas. This is a confirmation of Shobande et al.‟s (2014) result that there was a short-run negative relationship between economic development and certain component of human capital investment. Another major finding of this study is that government recurrent expenditure on education, government capital expenditure on education and government capital expenditure on health had made positive significant impact on infant mortality rate, a proxy of economic development while government recurrent expenditure on health had negatively and significantly impacted on economic development. Again, this finding has come as expected. This is so because government recurrent expenditure on education facilitates the training of health workers, dissemination of information on healthy living and provision of health guide to the citizenry. Doubtless, health education leads to healthy living which in turn results to reduction in infant mortality rates. Also government capital expenditure on education enhances the provision of school infrastructure, equipment, instructional materials, etc. which in turn facilitates impartation of knowledge/skills for gainful employment and improved quality of life that would lead to a reduction in infant mortality rate. On its part, government capital expenditure on health facilities, the building of new hospitals, maintenance of the existing hospitals, provision of hospital equipment and drugs and medical research had direct bearing on public health in general and infant mortality in particular. This finding lends credence to the profile of infant mortality rates on the physical quality of life index (PQLI) of economic development. Earlier, Becker (1993) had asserted that education enhances productivity and efficiency of workers by increasing the level of their cognitive skills. However it is insightful that government recurrent expenditure on health did not lead to reduction in infant mortality rate. As stated previously public health administration in Nigeria is fraught with mismanagement which results to the total neglect of the public health system. It is only reasonable to expect under the prevailing circumstances that government recurrent expenditure on health (payment of salaries, emolument, etc.) were unproductive with medical personnel working in unconducive organizational climate, engaged in frequent industrial disputes, strikes and lock out. Not surprising then, that the concomitant effect of payment of salaries and wages to disguisedly unemployed medical personnel is leakage that erodes the quality of public health system and impacts negatively on the health of infants, children and adults alike. This finding tends to contradict the findings reported by Jaiyeoba (2015), that health expenditure impacted positively to economic growth in Nigeria. Moreover, there is the finding that infant mortality rate was more reliable than gross domestic product per capita as index of economic development. This finding is both interesting and revealing as it dug deep into the structure of the Nigerian economy. As a monolithic economy, Nigeria depends solely on crude oil export earnings with fragile production and revenue bases. Nigeria‟s economic growth has remained unsustainable for the greater part of its history being susceptible to the vagaries in international oil price.

The Nigerian economy is characterized by macroeconomic instability and growthmanship, a concept first used by development specialists (Bronfrenbrenner et al., 1982) to depict a situation where economy grows without a corresponding improvement in the quality of life of the people. Once this term is accepted in economic dictionary, all doubts about the suitability of gross domestic product per capita as an index for economic development grows dim. The only reasonable assertion therefore would be that gross domestic product per capita is not and cannot be a reliable index of economic development. And this has paved the way for the acceptance of the thesis that infant mortality rate rightly occupies its position on PQLI as index of economic development. This finding has confirmed Gustav‟s (2004) finding that output/income is an imperfect proxy for more general welfare. Continuing, Gustav (2004) had averred that economic growth that is divorce from human development may prove to be ultimately unsustainable.

6. CONCLUSION AND POLICY IMPLICATION

In this section, conclusion and policy implication were presented.

6.1 Conclusion

The major inference warranted by this study is that human capital investment impacted positively on economic development and that infant mortality rate was more reliable than gross domestic product per capita as index of economic development in Nigeria. The negative contribution of government recurrent expenditure on health to economic development is a true reflection of the state of the country‟s public health system characterized by human capital flight and its accompanying leakages. Perhaps, what is required to enhance the contribution of human capital investment to economic development is aligning the government capital expenditure on health to match government recurrent expenditure on health which would in turn enhance the productivity of the health personnel and their contribution to economic development. Moreover, there is a need to apply the low reliability index of gross domestic product per capita thesis to the Nigerian situation whenever issues of economic development are discussed. There is no gainsaying that this study has been successful in dissecting human capital investment into its component parts and determining the merits and demerits of each for achieving economic development of Nigeria. And an in-depth understanding of the policy implications is all that is required to harness human capital toward achieving fast pace of economic development in Nigeria.

6.2 Policy Implication

The findings of this study have implications for developing countries. First, given the positive significant impact of government recurrent expenditure on education, government capital expenditure on education and government capital expenditure on health, a viable option for policy makers is to increase budgetary allocation to education and health. Through improved conditions of service for school personnel and improved quality of school infrastructure, human capital potentials would be enhanced and harnessed toward achieving a faster pace of economic development. Second, granted the negative impact of government recurrent expenditure on health and the positive impact of government capital expenditure on health, the next priority would be the formulation of a comprehensive health policy that would provide for adequate funding of health sector and so avert further human capital flight from this sector and even encourage Nigerian medical experts abroad to return.

Third, as a highly reliable index of economic development, infant mortality rate rather than

gross domestic product per capita should be given due consideration while discussing all issues relating to economic development in Nigeria or any other developing economy. In this way, the error of judgment arising from economic growth–economic development paradox would be completely avoided.

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