Human Capital Investment and Economic Development: The Nigerian Experience

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Abstract: Orthodox theories, especially endogenous growth theories, have revealed that countries and regions which invest heavily in human capital achieve higher growth rates than countries with lower investment. Thus, investment in human capital is a major determinant of economic growth and development. It is in recognition of this glaring fact that Nigeria now places growing emphasis on human capital investment in its economic recovery and growth plan. Study focused on determining the extent to which human capital investment impacts on growth and development. It covered the period, 1981-2018. Data were sourced from National Bureau of Statistics and CBN, and include household human capital investment which has been neglected in previous studies. Data were analyzed using Augmented Dickey-Fuller, Phillips-Perron, Johansen cointegration and Vector Error Correction Mechanism. Results indicate that: (1) Public investment in education had significant positive impact on economic development in the short run but not in the long run (2) Public investment in health did not impact significantly on economic development (3) Household investment in education impacted negatively on economic development (4) Household investment in health had significant positive impact on economic development. It was concluded that public investment in education and health failed to stimulate growth and development and also that while household expenditure on health enhanced growth and development, household expenditure on education did not. Study recommended, inter alia, that government at all levels should investment massively in human capital in order to achieve desired rate of growth and development.

Keywords: Human capital investment; economic development; public expenditure on education; household expenditure on education.

I. INTRODUCTION

1.1 Background to the Study

In recent time, high human capital investment has become a common feature of MDCs. LDCs are therefore investing in people in order to produce high level manpower required to augment their labour force. Human capital development is thus associated with investment in man and his development as a creative and productive resource (Jhingan, 2010; Kanayo, 2013).

A country’s economic development refers to the process of creating and utilizing physical, human, financial, and social assets to generate improved and broadly shared economic well-being and quality of life for the citizens (Seidman, 2005). According to Todaro and Smith (2006), this desired state can better be realised through investment in education and health which are the two most important sources of human capital, yielding knowledge capital and health capital respectively. In the past, the term development brought to mind pictures such as well constructed roads, dams, bridges etc., but today, the world is focusing on investing in people to achieve a long-term development. Before now also, wealth is only measured based on physical and natural capital such as land, water and institutions and how financial structures contribute to wealth. But now, if countries want to be wealthy tomorrow, they have to invest in their people today (K. Georgieva, personal communication, April 10, 2019).

Human capital investment is therefore critical for all countries at all income levels, while the poorest or most fragile countries face big hurdles in improving their education and health outcomes. Even the countries which posses the world’s strongest human capital must stay focused on investing in their people if they want to remain successful and competitive in the global economy (World Bank, 2018). The Asian Tigers and Singapore are examples of nations whose economies experienced sharp improvement via substantial investment in human capital.

No doubt, Nigeria has joined the rest of the world in pursuing growth and development through investment in human capital. Despite the growing awareness of the importance of human capital for achieving sustainable growth and development, budgetary allocations to education and health have continued to fall short of UN’s prescribed 26 per cent to education and WHO’s recommendation of 5 per cent of GDP to health. For example, between 1995 and 2018, total government expenditures on education, as a percentage of the total

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expenditures, were higher in 1995(13%), 2005(13.9%) and 2009(13.8%) than in 2002(7.1%), 2017(8.4%) and 2018(8.3%) (CBN, 2018; WDI, 2018). Similarly, total government expenditures on health, as percentages of nominal GDP between 1995 and 2018, fall within 0.80 per cent - 0.29 per cent.

On the contrary, decreasing government expenditures on education and health were accompanied by increasing household expenditures on education and health. Total household expenditure on education increased from ₦17.32b in 1983 to ₦3618.2b in 2018, representing an increase of 99.5 per cent (UNESCO, 2018). Similarly, total household expenditure on health increased from ₦16.65b in 1985 to ₦3041.9b in 2018, representing an increase of 99.5 per cent (CIA World Factbook, 2018).

Increasing investment in human capital and low indices of economic development has raised a serious issue of paradox. This paradox clearly manifest in the stunted growth of malnourished under-five children in Nigeria which negates the achievement of the target of SDG. In 1990, the country recorded about 50.5 per cent stunted under-five children, 43.8 per cent in 1993, 32.9 in 2015, and its lowest of 32.0 per cent in 2018 (WDI, 2018). Nigeria has the second highest burden of stunted children in the world (NBS, 2018). Stunted children fall sick more often, miss opportunities to learn, perform less at school and grow up more likely to suffer from chronic diseases and are economically disadvantaged. Children who are not stunted are 33 per cent more likely to escape poverty than their stunted peers (Sub-Saharan Africa Report on Human Capital, 2018).

Another indicator of economic development is under-five mortality. This indicator which is also one of the targets of SDG is un impressively low in Nigeria. In 2018, the mortality rate of under-five children in Nigeria stood at 119.90 (WDI, 2018). This has placed Nigeria as the second largest out of 188 countries in the world (UN Inter-agency Group for child mortality estimation, 2018). Also, GDP per capita, a measure of economic welfare, is quite low. The foregoing evinces clearly that the degree and nature of relationship among government investment in human capital, household investment in human capital, economic growth and economic development in Nigeria are not easily discernible. Thus, it has become imperative that the present study be embarked upon in order to determine the extent to which public and private investment in human capital have contributed to economic development.

Studies in this area are not entirely new. While there is a great deal of studies on human capital and economic growth in Nigeria, few studies on human capital investment and economic development have tried to establish a relationship between them. Ilegbinosa (2013), Shobande, et. al (2014), Halidu, (2016), Omodero and Azubiuke (2016), Adetula, et al (2017), Njoku and Onyebula (2017), Andabai and Eze (2017), Amadi and Alolote (2019), among others, had presented conflicting results on the degree and nature of relationship between human investment and economic development. Besides, these studies were beset with shortcomings which justify the present study. Primary data collected by Ilegbinosa from 120 respondents were grossly inadequate for a study of this scale. Also, the use of GDP by Andabai and Eze, Omodero and Azubike, and Amadi and Alolote could not have yielded safe inferences since GDP is not a good proxy for economic development. In another study, Omodero and Azubike, and Adetula et al focused on education which is just one aspect of human capital and measured economic development using GDP. In their own study, Halidu, and Njoku and Onyebula focused on education system using content and descriptive analysis. Certainly, the current efforts in this paper would obviate the shortcoming of the earlier studies.

Thus, the present study focused on a detailed analysis of the relationships among public human capital investment, private human capital investment and economic development. No study which does not take into cognizance the role of public sector, private sector and Non-Governmental Organisations in human capital development can ever be expected to solve the problems of inadequate public human capital. Public investment in human capital is only a component of a country’s aggregate financial investment in human capital. It is in this context, therefore, that the present study derives its strength considering the global approach employed by including household expenditures on education and health which hitherto had been neglected.

1.2 Statement of Problem

The building of any nation is based on the development of people. Several factors account for economic development of a nation; these include human capital, physical capital, natural resources and technology. Human capital is the most important tool for achieving a sustainable economic development as the other factors partly rely heavily on it to function properly. A healthy educated workforce can earn money and invest more in an economy’s physical capital (World Bank, 2018). The frontier for skills is moving rapidly, bringing both opportunities and risks. There is overwhelming evidence that unless countries strengthen their human capital, they cannot achieve sustained inclusive economic growth and development. They will not have a workforce prepared for the more highly skilled jobs of the future and will not compete effectively in the global economy (World Development Report, 2019).

Health and education are both vital components of growth and development-as input to the aggregate production function. The dual role as both inputs and output gives health and education their central importance in economic development (Todaro & Smith, 2006). Despite the global awareness of the importance of investment in human capital for achieving a sustaining economic development, human capital remain abysmally low in the country. Nigeria has been ranked as one of the least nations in human capital investment and is characterised with
underdevelopment over the years. This is supported by the World Bank’s (2018) ranking of Nigeria as 152nd out of 157 countries on the basis of human capital index. Nigeria shared the bottom of the index with countries like Chad, South Sudan, Niger, Mali and Liberia. This indicates that Nigeria is the sixth worst nation in the world based on human capital development. This performance is lower than average statistics obtained for countries within Nigeria’s region and income group (World Bank Report, 2018). Again, World Economic Forum ranked Nigeria 114th out of 130 countries in its HCI in 2017. Nigeria shared the bottom line with countries like Tunisia, Sierra Leone, Liberia, Chad, and Ethiopia. The WEF evaluates countries based on outcomes rather than inputs. The aim is to provide a snapshot of a country’s current human capital, current investment in building future human capital and current outcome in the labour market (WEF Report, 2017).

Similarly, United Nations Development Programme (UNDP) report on HDI in 2018 ranked the country 158th out of 189 countries and territories with HDI value of 0.543 (UNDP Report, 2018). Nigeria has remained under low human development category since the inception of the report in 1990. Although Nigeria has a long lasting commitment to universal basic education, yet the number of out-of-school children in the country was among the highest in the world (World Bank, 2018). About 10.5 million children are not in school (UNICEF, 2018). In 2017, the official estimate of number of children in Nigeria stood at 93.9 million, which is 50 per cent of the population. Out of the 93.9 million children, 31.8 million were under five years of age; one in every eight children does not survive to the fifth birthday; 10.3 million children are stunted; 2.5 million children suffer from severe acute malnutrition while 380,000 children are living with HIV (UNICEF Report, 2018). In spite of the deplorable state of education and health sectors, the Federal allocation to health fell from 4.23 per cent of the total budget in 2017 to 3.9 per cent in 2018. Allocations to education also declined from 8.4 per cent in 2016 to 7.04 per cent in 2018 (UNICEF Report, 2018).

Perhaps, what has aroused the curiosity of the present researchers are the level of inconsistencies in economic policies and the degree of incompatibility among various indicators of growth and development. It is these paradoxical relationships which pose the problem that has been aptly expressed in the question form: To what extent do public and private investment in education and health generate sufficient human capital for achieving sustainable growth and development in Nigeria.

1.3 Objective of the Study

The study was undertaken with the following objectives in view:

1) To determine the extent to which public expenditure on education had contributed to economic development in Nigeria.
2) To determine the extent to which public expenditure on health had contributed to economic development in Nigeria.
3) To determine the extent to which household expenditure on education had contributed to economic development in Nigeria.
4) To determine the extent to which household expenditure on health had contributed to economic development in Nigeria.

1.4 Hypotheses

The study revolved around the testing of the following null hypotheses:

1) There is no significant contribution of public expenditure on education to economic development.
2) There is no significant contribution of household expenditure on education to economic development.
3) There is no significant contribution of public expenditure on health to economic development.
4) There is no significant contribution of household expenditure on health to economic development.

II. LITERATURE REVIEW

2.1 Conceptual Issues

A definition of human capital in the work of Ogijiuba and Adeniyi (2004) implies that anything contributing to the improvement of human productivity, stimulating resourcefulness and enhancing human dignity and overall quality of human life while refining attitudes is an essential part of the human capital of any nation. Akingbade (2008) asserted that for any nation to have economic development within and outside its borders, it has to cater for its citizens via human capital development. According to World Bank Group HCP (2018) human capital consists of knowledge, skills, and health that people accumulate throughout their lives, enabling them to realise their potential as productive members of society. Notably, the concept of human capital does not pose any definitional problem. World poverty can be eliminated and more inclusive societies created by developing human capital. This requires investing in people through nutrition, health care, quality education, jobs and skills. Health and education are the basic objectives of economic development; they are important ends in themselves. Health is central to well-being, and education is essential for a sustaining and rewarding life; both are fundamental to the broader notion of expanded human capabilities that lie at the heart of meaning of development (Todaro & Smith, 2006)
2.2 Theoretical Framework

Human-Capital Augmented Solow Model

Starting from the Solow model, the simplest way to introduce human capital is the one chosen by Mankiw, Romer and Weil (1992). In their contribution, they presented a simple extension to the Solow model by letting human capital enter as a distinct input into an otherwise standard Cobb-Douglas production function with Harrod-neutral (i.e., labour-augmenting) technological progress. The production technology in this model, which has come to be known as the human-capital augmented Solow model, thus takes the form:

\[ Y_t = K_t^\alpha H_t^\beta (A_t L_t)^{1-\alpha-\beta} \]

Where

- \( Y \) is output, \( K \) is capital, \( H \) is the stock of human capital, \( A \) is the level of technology and \( L \) is “raw” labour. The exponents \( \alpha, \beta \) and \( 1-\alpha-\beta \) are the coefficients of elasticity of output to the inputs. Mankiw, Romer and Weil assumed \( \alpha + \beta < 1 \), so that the function exhibits constant returns to scale but diminishing returns to reproducible factors. Like in the Solow model, the population and the level of technology grow at the exogenous rates \( n \) and \( g \), respectively, while capital depreciates at the rate \( \delta \).

In essence, the human-capital augmented Solow model treats human capital basically as an additional, ordinary input in production. Human capital is modelled in exactly the same way as physical capital. It is accumulated by investing a fraction of income in its production, depreciates at the same rate as physical capital, and is produced with the same technology as both physical capital and consumption. Meanwhile, like in the original Solow model, long-run growth is exogenous, its rate equalling the pace of technological progress.

2.3 Empirical Literature

Several studies have been carried out to establish relationship between human capital investment and economic growth and also between human capital investment and economic development. Recent studies in this area have been reviewed.

Ilegbinosa (2013) examined the profile of human capital investment as a tool for economic development in Nigeria using primary data from a sample of 120 respondents. Data were analysed using inferential statistics of chi-square. Results indicate that investment in human capital had positive impact on economic development and that poor funding by Federal Government of Nigeria was a major problem impeding the development of human capital. The weakness of this study is its sample size which is not considered to be adequate for a study of this scale. Notwithstanding, it was found to be relevant to the needs of the present study.

Shobande, et al (2014) carried out a study on human capital investment and economic development in Nigerian. The study covered the period, 1970-2011. Data were analysed using OLS technique. The study revealed that there was short run negative relationship between economic development and human capital investment in Nigeria. The study failed to adopt a global approach as important components of human capital investment were excluded from the analysis. However, it contributed important variables which were used in the present study.

Olarinde and Bello (2014) embarked on a study to appraise the performance of public healthcare expenditure and health sector performance in Nigeria. The study employed ARDL and VECM to analyse the data. They reported findings which indicate that long run and short run relationship exist among variables. Policy implication of findings to the government is the need to increase public spending on health to improve access to primary healthcare.

Halidu (2016) analysed human capital development in the Nigerian University as a panacea for sustainable development. The study used content analysis. It revealed that no country can attain economic growth and development without having a well talented, competent and skillful workforce that can exploit, utilize and accelerate the available resources of the nation optimally. Study had its weakness in its use of content analysis with low power of prediction. Howbeit, it was considered relevant to the needs of the present study.

Omodero and Azubuike (2016) carried out an empirical review of government expenditure on education and economic development in Nigeria. Study spanned across 2000 - 2015. Data were analysed using OLS technique. Results indicate that expenditure on education had a significant impact on the economy while social community services and school enrolment had nonsignificant contribution to economic development. Findings have policy implication to government at all levels to strive toward developing human capital through increased government expenditure on education and social services.

Adetula et al (2017) studied the impact of investment in education on economic development in Nigeria. Data were analysed using OLS technique. Results indicate that investment in education contributed significantly to economic development. Study had its weakness in the use of GDP as proxy for economic development. Nevertheless, it was found useful as a suitable guide for the conduct and advancement of the present study.

Njoku and Onyegbula (2017) appraised human capital development as a strategy for sustainable development in the Nigerian education system. Study revealed that education is a vibrant tool for human capital development which contributes significantly to economic growth, productivity and sustainable economic development. Study has yielded relevant data which were included in the present study.

Amadi and Alolote (2019) investigated human capital investment as a catalyst for sustainable economic development in Nigeria. Study covered the period, 1986 – 2017. Data were analysed using OLS technique. Study
revealed that there was a positive relationship between real GDP and the explanatory variables. Study yielded findings which were found useful for confirming the results of the present study.

### 2.4 Summary of Review

Literature review has revealed that the concept of human capital has not posed serious definitional problems. Thus, Ogujiuba and Adeniyi’s views on human capital have been adopted as the operational definition of the concept of human capital for the purpose of this study. With respect to theoretical framework, literature review has revealed that Solow model provided an elaborate treatment of human capital in such a dynamic form that simplifies the process of data analysis and allows for accurate prediction. Moreover, review of empirical literature has revealed that household expenditures on education and health (important component of aggregate human capital investment) were excluded in earlier studies. Therefore, the worth of the present study derives from its global approach which allowed the incorporation of human development index, household expenditures on education and health in the analysis of the impact of human capital investment on economic development.

### III. RESEARCH METHODS

The basis for the model specification stems from the augmented Solow human-capital-growth model, which is an improvement over the Solow growth model. Solow’s original model did not explicitly incorporate human capital. To achieve that, Mankiw, Romer, and Weil (1992) came up with the augmented Solow model. The a priori justification for the inclusion of human capital in the model is that labour does not exhibit homogeneity in the production process, either within a nation or across different economies due to their possession of different levels of education and skills. The augmented Solow model by Mankiw, Romer and Weil is represented thus:

$$Y_t = AK_t^\alpha H_t^\beta + \mu$$

Thus, linearizing equation (3.1), yielded:

$$\ln Y_t = \ln A + \alpha \ln K_t + \beta \ln H_t + \mu$$

Where $Y$ is real GDP and $K$ is physical capital while $H$ is human capital, $\alpha$ and $\beta$ are parameter coefficients, and $A$ is efficiency parameter or constant.

#### Model Specification

The model adopted for this study is predicated on the theoretical exposition of Mankiw, Romer, and Weil and a modified model of Osoba and Tella (2017). The preferred model is represented as follows,

$$\ln \text{GDPPC} = \alpha_0 + \alpha_1 \ln \text{PEE} + \alpha_2 \ln \text{PEH} + \alpha_3 \ln \text{HEE} + \alpha_4 \ln \text{HDI} + \alpha_5 \ln \text{GFCF} + \mu$$

Where,

- GDP per capita = GDP proxy for economic development
- Public (government) expenditure on education
- Public (government) expenditure on health
- Household (private) expenditure on education
- Household (private) expenditure on health
- Human development index
- Gross fixed capital formation
- Error term (or stochastic term).
- Natural logarithm
- Intercept or autonomous parameter estimate
- Parameter estimates associated with the explanatory variables of the model

The a priori expectations are determined by the principles of economic theory and refer to the expected relationship between the explained variable and the explanatory variable(s). It is expected that $\alpha_1 > 0$, in other words, the economic development should be positively related to human capital investment. To satisfy the requirement for uniformity of scales of measurement and consistency in the interpretation of results, all variables were transformed into natural logarithms. The log transformation of the variables allowed us to interpret the coefficients as elasticities or percentages. The model was estimated using vector error correction mechanism (VECM) for short and long run effects.

### IV. RESULTS AND DISCUSSION

Table 4.1 presents the results of unit root test. As can be seen in the table, $P$-values for all variables at both ADF and PP were less than 0.01. At $p \leq 0.01$, the statistics were significant at 0.01 confidence level. This suggests that the logged times series data are stationary at first difference. The information contained in the middle column of the table means that the time series data are each integrated of order one, that is, $I(1)$, according to the ADF method. This is confirmed by the PP method as indicated in the last column. These stationary data were then used for the linear regression analysis.
null hypothesis, where the weight is the precision of the estimates based on the weighted distance between human capital investment. According to contributions significantly contributed to economic development. This involved estimating a system form of the short-run relationship based on the ordinary least square (OLS) method. Summary of the System Least Squares is presented in Table 4.2.

### Table 4.2: Summary of Short-run estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECT</td>
<td>-0.384759</td>
<td>-6.046819</td>
<td>0.0000*</td>
</tr>
<tr>
<td>LGDPPC</td>
<td>0.180357</td>
<td>1.621915</td>
<td>0.1185</td>
</tr>
<tr>
<td>LPEE</td>
<td>0.034317</td>
<td>1.983392</td>
<td>0.0594**</td>
</tr>
<tr>
<td>LPEH</td>
<td>-0.019290</td>
<td>-1.155079</td>
<td>0.2599</td>
</tr>
<tr>
<td>LHEE</td>
<td>-0.305456</td>
<td>-5.680730</td>
<td>0.0000*</td>
</tr>
<tr>
<td>LHEH</td>
<td>0.221474</td>
<td>4.551009</td>
<td>0.0001*</td>
</tr>
<tr>
<td>LHDH</td>
<td>0.924306</td>
<td>3.224174</td>
<td>0.0038*</td>
</tr>
<tr>
<td>LGFCCF</td>
<td>0.012547</td>
<td>0.430995</td>
<td>0.6705</td>
</tr>
</tbody>
</table>

* = significant at 1% level; ** = significant at 10% level

F-statistic = 9.42 (p≤ 0.01). Since p≤ 0.01, then the independent variables jointly contributed significantly to economic development. This indicates that human capital investment contributed significantly to economic development.

In addition, the study conducted the Wald Test with coefficients restricted to the four components of human capital investment. According to Fahrmeir et al. (2013), the Wald test assesses constraints on statistical parameters based on the weighted distance between the unrestricted estimate and its hypothesised value under the null hypothesis, where the weight is the precision of the estimate. The results have been summarised in Table 4.3.

### Table 4.3: Summary of Wald Test Result

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>10.57213</td>
<td>(4, 23)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Chi-square</td>
<td>42.28852</td>
<td>4</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Null Hypothesis: C(3)=C(4)=C(5)=C(6)=0

Source: Researchers’ computations from EViews result (2020)

The null hypothesis: $C(3) = C(4) = C(5) = C(6) = 0$ means that the parameter estimates of these variables are not statistically different from zero. In other words, the parameter estimates are essentially the same. Given...
the F-statistic of 10.57 (p ≤ 0.01), the null hypothesis stands rejected. This implies that the parameter estimates are statistically different from zero. In other words, the human capital investment components of the explanatory variables did not have the same effect on the dependent variable.

**Autocorrelation Test**

The results were further subjected to Breusch-Godfrey serial correlation Lagrange multiplier (LM) test to check for autocorrelation. The results of LM test have been presented in Table 4.4.

### Table 4.4. Results of Test for Autocorrelation

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial Correlation LM Test:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
</tr>
<tr>
<td>Prob. F(2,21)</td>
</tr>
<tr>
<td>Obs*R-squared</td>
</tr>
<tr>
<td>Prob. Chi-Square(2)</td>
</tr>
</tbody>
</table>

Source: Researchers’ computation from EViews result (2020)

Table 4.4 shows that F-statistic = 0.503 (p ≤ 0.61). Since p > 0.05, autocorrelation does not exist in the estimated model. This suggests that the regression results are reliable.

**Heteroscedasticity Test**

Again, the results were subjected to test for heteroscedasticity. The results of heteroscedasticity test have been presented in Table 4.5.

### Table 4.5: Result of Heteroscedasticity Test

<table>
<thead>
<tr>
<th>Heteroscedasticity Test: Breusch-Pagan-Godfrey</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
</tr>
<tr>
<td>Prob. F(14,17)</td>
</tr>
<tr>
<td>Obs*R-squared</td>
</tr>
<tr>
<td>Prob. Chi-Square(14)</td>
</tr>
<tr>
<td>Scaled explained SS</td>
</tr>
<tr>
<td>Prob. Chi-Square(14)</td>
</tr>
</tbody>
</table>

Source: Researchers’ computation from EViews result (2020)

The table shows that F-value = 1.13 (p ≤ 0.4). Since p ≤ 0.4 > p ≤ 0.05, F-value = 1.13 was considered to be non-significant whereby warranting the acceptance of the null hypothesis. Thus, the results do not exhibit heteroscedasticity.

**Test for Normality of Distribution**

The results have been depicted in Fig. 1.

![Histogram normality test](image)

Source: Researchers’ computation from EViews result (2020)

As can be seen in Fig. 1, normality test statistics had p ≤ 0.03. P ≤ 0.03 < p ≤ 0.05. This implies that the normality test statistics were significant at 0.05 confidence level. Thus, the data were not normally distributed and so conformed to time series.

**Stability Test**

The estimated model was tested for stability using the cumulative sum (CUSUM) test. The results have been presented in Fig. 2.
The regression equation shows that LPEE had regression coefficient = -0.05 with calculated t value = 1.48 (critical t value = 1.96). Since the calculated t value = 1.48 is less than the critical t value = 1.96, the regression coefficient = -0.05 was considered to be nonsignificant. This has warranted the acceptance of the null hypothesis which states that there is no significant contribution of public expenditure on education to economic development. On the contrary, however, the short-run estimate shows that LPEE had regression coefficient = 0.03 with calculated t value = 1.98 (critical t value = 1.96). Now, the calculated t value = 1.98 is greater than the critical t value = 1.96, thereby indicating that public expenditure on education contributed significantly to economic development in the short-run. Thus, public expenditure on education contributed significantly to economic development in the short-run but not in the long-run.

**Hypothesis Two**

**H0:** There is no significant contribution of household expenditure on education to economic development.

The regression equation shows that LHEE had regression coefficient = -0.79 with calculated t value = 7.87 (critical t value = 1.96). Since the calculated t value = 7.87 is greater than the critical t value = 1.96, the regression coefficient = -0.79 was considered to be significant. This has warranted the rejection of the null hypothesis. Thus, there was a significant negative contribution of household expenditure on education to economic development.

In the case of short-run estimate, LHEE had regression coefficient = 0.31 with calculated t value = 5.68 (critical t value = 1.96). Since the calculated t value = 5.68 is greater than the critical t value = 1.96, the regression coefficient = 0.31 was considered to be significant thereby warranting the rejection of the null hypothesis. Thus, household expenditure on education contributed significantly to economic development in long and short-run.

**Hypothesis Three**

**H0:** There is no significant contribution of public expenditure on health to economic development.

The regression equation shows that LPEH had regression coefficient = 0.02 with calculated t value = 0.62 (critical t value = 1.96). Since the calculated t value = 0.62 is less than the critical t value = 1.96, the regression coefficient = 0.02 was considered to be nonsignificant. This has warranted the acceptance of the null hypothesis which states that there is no significant contribution of public expenditure on health to economic development.

With respect to short-run estimate, LPEH had regression coefficient = -0.02 with calculated t value = 1.16 (critical t value = 1.96). Now, the calculated t value = 1.16 is less than the critical t value = 1.96, thereby implying
that regression coefficient=-0.02 was nonsignificant. Thus, the null hypothesis was accepted. There was no significant contribution of public expenditure on health to economic development.

**Hypothesis Four**

**H:** There is no significant contribution of household expenditure on health to economic development.

The regression equation shows that LHEH had regression coefficient= 0.41 with calculated t value = 4.02 (critical t value=1.96). Since the calculated t value = 4.02 is greater than the critical t value = 1.96, the regression coefficient = 0.41 was considered to be significant. This has warranted the rejection of the null hypothesis which states that there is no significant contribution of household expenditure on health to economic development.

Also, the short-run estimate shows that LHEH had regression coefficient = 0.22 with calculated t value= 4.55 (critical t value =1.96). The calculated t value = 4.55 is greater than the critical t value=1.96, thereby implying that regression coefficient=0.22 was significant. Thus, there was a significant contribution of household expenditure on health to economic development in the long and short-run.

**Discussion of Findings**

One important finding of the study is that public expenditure on education did not contribute significantly to economic development in the long-run but in the short-run. This has not come as a surprise considering the underfunding of education which falls below the UNESCO’s prescription of 26 per cent of any country’s annual budget. What is rather surprising is that public expenditure on education contributed significantly in the short-run. Perhaps, a plausible explanation for this development is that the federal government has failed to align public expenditure on education to the future manpower requirement of the nation. This finding is in agreement with the findings reported by Chijioke and Amadi (2019).

Another finding of the study is that household expenditure on education had significant negative contribution to economic development in Nigeria. Again, this has come much in expectation. The poor funding of the education sector by government at all levels has left the country’s education sector in a deplorable state. Households spend large proportions of their income to provide quality education to their children who on graduation do not find gainful employment. Rising household spending on education and growing unemployment are factors which aggravate the already complicated economic situation in country to erode further the standard of living of Nigerians, with its attendant consequence on the country’s economic development. There is dearth of research on household expenditure on education and economic development. So, this finding could constitute a new addition to knowledge.

Moreover, there is the finding that public expenditure on health did not contribute significantly to economic development. Again, this has come as expected. Nigeria is yet to implement the WHO’s recommendation of allocation of a country’s 5 per cent of GDP to health. Government funding of the health is grossly inadequate and the state of the health sector is deplorable. Rising maternal mortality rate, infant mortality rate, and high morbidity are factors which impede economic development in any country. This finding is in agreement with Edeme and Olisakwe’s (2019) finding, while contradicting Amadi and Alolote’s (2019) finding which indicates that government expenditure on health had positive and significant impact on economic development.

Furthermore, there is the finding that household expenditure on health contributed significantly to economic development. This is not surprising as majority of Nigerians depend on private hospitals for their wellbeing. Only healthy citizens can constitute a vibrant labour force that would contribute to economic development of a country. The deplorable state of government-financed hospitals has resulted to the rapid expansion of facilities in private hospitals which today provide healthcare services to a large segment of the society. With the dearth of research in this area, it cannot be gainsaid that this is yet another new addition to knowledge.

**V. CONCLUSION**

The generalisations that have been drawn from this study include: (1) Government expenditure on education fostered economic development in the short-run only while household expenditure on education impeded economic development (2) Government expenditure on health failed to stimulate economic development while household expenditure on health induced economic development. What is implied in first generalisation is that public investment in human capital is adapted only to the current needs of the citizens and not to the needs of future generations. It is a logical deduction that household expenditure on education impeded economic development due to the drain from their personal income which was further aggravated by rising unemployment rate in the country. To invest for the future is to invest in the youth. With the Nigerian youth constituting 70 per cent of the population, only a massive investment in human capital by both public and private sectors is a sure path to economic development. The implication of the second generalisation is that it is private initiative which drives human capital to contribute to economic development. Therefore, it would not be unreasonable to suggest that it is the private policy on health around which the public policy on health is framed. Perhaps, this explains the rising incidence of medical tourism which continuously drains the nation’s treasury. Needless to say that the
Inferences and implications warranted by this study and their accompanying implications would pave the way to a more rigorous intellectual discourse. Involvement of household in economic policy formulation and implementation is pivotal around which the study revolves. Undeniably, the outcomes of the implementation of this study have further validated the assumptions of human capital augmented Solow model.

Policy Prescriptions

Based on the findings of the study and the accompanying discussion, the researchers have prescribed the following:

1. With public investment in education to be adapted to the future needs, government at all levels should place greater emphasis on human capital development as a means of empowering the youth and steering the economy to the path of economic development.

2. Since household investment in education impeded economic development, the viable option to government at all levels is to provide loans and bursary awards to deserving students in order to provide relief to the households and harness the increase purchasing power resulting from such relief toward enhancing economic development.

3. A nonsignificant contribution of public investment in health to economic development and a significant contribution of household investment in health to economic development require that a radical public health policy in the form of national health insurance policy be put in place to make healthcare services accessible to all Nigerians in both public and private hospitals.

4. The study finds that household expenditure on education has significant negative impact on economic development. This may be due to the increasing rate of unemployment among graduates in the country. Government should therefore introduce programmes and policies that will curb graduate unemployment in order for household (private) expenditure on education to contribute to economic development.

REFERENCE