e-ISSN 3027-0537
p-ISSN 3027-0375

10.5281/zenodo.10871077 Vol. 07 Issue 03 March - 2024 Manuscript ID: #1294

HUMAN CAPITAL INVESTMENT AND ECONOMIC DEVELOPMENT IN NIGERIA

By

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ABSTRACT:

This study examined Human Capital Investment and Economic Development in Nigeria. Human Capital Investment was proxied by public education capital expenditure, public education recurrent expenditure, public health capital expenditure, public health recurrent expenditure and tertiary education enrolment, while economic development was measured with real gross domestic product, human development index and national poverty index. Hypotheses that guided the study were formulated in line with the study objectives and relevant literature were reviewed and evaluated. Relevant data were extracted from the annual Statistical Bulletin of the Central Bank of Nigeria and the National Bureau of Statistics. Unit root test was conducted using Augmented Dickey Fuller method which revealed that the variables were integrated at level and first difference necessitating the use of autoregressive distributive lag/bond test to explore the long run relationship existing among the variables in each model and the result showed that the variables in each model were co-integrated thus we proceeded in evaluating the long run as well as the co-integrating form in each model. From the result of the various tests, it was revealed that while some of the outcomes conformed to apriori expectations, others did not conform to apriori expectations. Based on the findings from the analysis, the study recommended amongst others, the government of Nigeria should intensify her investments in the areas of education and health so as to improve on the quality of education and health care facilities and as such, the quality of the human resources that could be instrumental to an improvement on the real gross domestic product of Nigeria and the achievement of desired economic growth and development. Proper accounting and blocking of leakages will go a long way in improving the economy and also, it is important that the government pay more attention to the development and standardization of tertiary institutions in Nigeria, especially those within the public domain as the quality of output that comes out of there institutions have the potentials to improve on the human development index of the nation and consequently, bring about economic development in Nigeria.

KEYWORDS:

Human Capital Investment; Economic Development; Capital Expenditure; Recurrent Expenditure; Gross Domestic Product.

1.0 Introduction

The foremost macroeconomic objective of governments in virtually all countries is the achievement of rapid and sustainable economic development. Consequently, the ultimate aim of macroeconomic policy is to increase the material welfare of the community (Elmi & Sadeghi, 2021; Amaghionyeodiwe, 2019). The achievement of economic development leads to greater economic prosperity. Increasing overall prosperity improves the lives of those able to partake in the system. People are better able to provide for their needs and fulfil their wants, without the use of force. This rising prosperity is empirically linked to higher overall levels of human happiness and betterment. Conversely, without economic development, economies stagnate and nations are unable to provide for the well-being of their citizens.

The gaps in human capital investment rates between countries are very large. These gaps are most easily visible in the standard metrics used to assess human capital, such as school attendance rates and the highest grade completed among the working age population (Chinasa, et al, 2018). In recent times, economists have broadened the measures used to assess human capital investment to include test scores, as a measure of school quality, and health inputs and outcomes, as measures of the physical abilities of workers. Not surprisingly, examination of these extended measures of human capital investments shows that differences between countries tend to be even larger that had previously been thought: on average, children in poor countries not only receive fewer years of schooling, but the schooling that they do receive is of lower quality, and they enter the labour force less healthy than their contemporaries in rich countries (Christopher & Utpal, 2020).

From the perspective of an individual country, the most interesting question is how much higher income would result from a given increase in human capital investment. As shown in Kraay (2018), the answer to this question in steady state is very simple: because the HCI measures worker productivity relative to the maximum, the increase in income per capita is proportional to the rise in the HCI. Thus, for example, a country that raised its Human Capital Investment from 0.5 to 0.75 would see a 50% increase in income per capita relative to what it would have been if human capital investment had remained constant (Iganiga& Obafemi, 2014). While the increases in steady state income resulting from increased human capital investment are large, they also come with a significant time delay, which has to be taken into account in any evaluation of their desirability (Kanayo, 2013).

Human capital is the most important asset to every human organization whether state, or institutions and it is usually a product of functional educational system (Chinwe, 2020). The capacity of human capital of a particular institution or state determines to a great extent the success of such outfit. Sustainable growth and development cannot be achieved in a fluke. It takes the continued empowerment of the human tools of the organization, to be able to initiate, implement and evaluate policies and programmes aimed at achieving developmental goals (Makwe, et al, 2020).

Scholars in the field of economics (Michael, 2017; Makwe et, al 2020;Okezie, 2020, etc) have argued that human capital constitute the ultimate means of production and thus the wealth of a nation, in Nigeria, the government is well informed about this arguments and thus has made several efforts to build on the human capital of the nation, thus government has continued to invest in education and health sectors as well as in the tertiary institutions by ways of increasing allocation of resources to these sectors, all of which are geared towards improved human capital formation. However, despite all the resources and efforts which have been expended on the development of Nigerian human capital

by the government, it is sad to note that the country has not yet attained her desirable level of economic development. The question that often comes to mind is where are we not getting it right? Therefore, this study intends to examine the effect of human capital investment on Nigeria's economic development. The specific objectives included, to:

i) examine the effect of human capital investment on real gross domestic product in Nigeria;
ii) determine the effect of human capital investment on human development index in Nigeria;
iii) enumerate the effect of human capital investment on national poverty index in Nigeria.

2.0 Synopsis of Literature Review

2.1 Conceptual Framework

2.1.1 Human Capital Investment

The concept of human capital refers to the abilities and skills of human resources of a country, while human capital development refers to the process of acquiring and increasing the number of persons who have the skills, education and experience that are critical for economic growth and development an economy (Oluwatoyin,2020). Human capital consists of knowledge, skills or competencies and abilities of the workforce. Human beings are the only factor of production among others, that is capable of learning, adapting or changing, innovative and creative (Torruam& Abur, 2014). Human capital formation or development, according to Harbison (1973), is the deliberate and continuous process of acquiring requisite knowledge, skills and experiences that are applied to produce economic value for driving sustainable national development. The significance and relevance of human capital development in the achievement of meaningful and sustainable economic growth and development have been widely acknowledged some literatures such as Iganiga and Obafemi (2014). They stated that in the absence of substantial investment in the development of human capital in any country, sustained economic growth and development would only beamer wish, never a reality.

Human capital investment in education and health enhanced human capital development in developing countries like Nigeria. The critical elements of human capital development are predicated on investment in education and health sectors. Investment in education is the hung that create new skill, knowledge, and inducement which drive economic expansion through making individual more proficient and generate productive economy. Expenditure on education creates new technology, invention and innovation leading to wealth formation and human capital development. Health on the other hand mirrors a state of complete well-being which lead to competent work force and improve human capital development through acquisition of skill and knowledge. Oluwakemi et al. (2018) stated that public expenditure on health, education, social community services, agriculture, transfer services and research and development accelerate human capital development in Nigeria. Edeme et al. (2017) noted that increase in public expenditure improves the level of human capital development. This led to the fact that advancement in human capital development led to healthier life and greater life expectancy.

Education has been considered as one of the most significant investments in human capital and has been discussed extensively in the literature of economic growth. It has been argued that education can affect growth through many different mechanisms. For instance, education can affect growth by increasing the efficiency of the workforce, by reducing inequity, by promoting health, by reducing fertility levels, by creating better conditions for good governance, and by increasing the knowledge and the innovation capacity of an economy (Chinasa, et al, 2018). Education being one of the major components of human capital ought to be given adequate attention. It has been argued that Nigerian government, over the years, has performed abysmally poorly in its budgetary allocation to the sector

despite the outrageous tuition fees paid by students in the various federal education institutions in the country, especially at the tertiary level.

The importance of health as a key aspect of development and economic wellbeing of individuals and nations is increasingly being recognized in the world. This can be seen from a series of reforms taken by African countries to increase investments in health in order to meet the health Millennium Development Goals (MDGs). African leaders have expressed this trust through actions such as the 2001 Abuja Declaration on an increase in government funding for health by allocating 15% of the government budget to the health sector, the 2006 AddisAbaba Declaration on community health in the African Region and the 2008 Ouagadougou Declaration on primary health care and health systems in Africa (Bidzha, et al, 2017).

The main engine of growth is the accumulation of human capital of knowledge and the main source of differences in living standards among nations is differences in human capital. Physical capital plays an essential but decidedly subsidiary role (Richardson &Chigozie, 2019). Broadly defined, human capital has several aspects, including education, training, and health. The relationship between education and development is well established such that education is a key index to development and that the development of nations in the 21st century depends on the quality and quantum of their educated citizens (World Bank, 2020). It has been documented that schooling improves productivity, health and reduce negative features of life such as child labour as well as bringing about empowerment.

From a global perspective, economic and social developments are increasingly driven by the advancement and application of knowledge. Education in general and higher education in particular, are fundamental to the construction of a knowledge-based economy and society in all nations (World Bank, 2020). Besides acting as an important vehicle of achieving equitable income distribution, human resource development is also a potent means of addressing the problem of poverty. Thus, education is very vital to the pace of social, political and economic development of any nation.

2.1.2 Economic Development

The concept of economic development is often misunderstood. Many times, the term is confused with economic growth to define any type of money generating activity in the community. To further cloud the issue, there is no one prescription for economic development that will fulfil the needs of all communities. Successful economic development is a process that fills different needs for different communities at different times (Jyun-Yi &Chih-Chiang 2008). Its success is often case specific, depending on the development goals, implementation and funding resources available. Communities need to thoroughly understand the process before jumping into the economic development bandwagon. The results of misunderstanding the process can be misunderstanding by the community and political congestion in the bureaucracy (Nuzhat, 2009).

Economic Development can be defined as "a sustained community effort to improve both the local economy and the quality of life by building the area's capacity to adapt to economic change" (Feridun & Sissoko, 2011). This definition suggests a distinction between economic growth and economic development. Economic growth represents an increase in jobs and income in the community. It refers to the expansion of total economic activity in the community. While economic development can involve job and income growth, it also involves sustainable increases in the productivity of individuals, businesses and resources to increase the overall well-being of residents and maintaining or even enhancing the quality of life (Erhieyovwe& Jimoh, 2012).

Economic development involves a process of fulfilling the different needs of the society. As a sustained community effort, economic development involves improvement on the local economy and living standard of the people through the building of the capacity to adapt to changing economic environment (Alam& Zubayer, 2010). The actualization of the goal of economic development is meaningful with a collective effort of all citizenry in the state. Over the years economists have identified certain indicators as a measure of economic development, these include reduction in poverty rates, mass literacy, high life expectancy and low infant mortality (Feridun & Sissoko, 2011). These indicators are used to compare the human development index of a country with respect to others.

2.1.3 Human Capital Investment and Economic Development

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 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). Another indicator of economic development is under-five mortality. This indicator which is also one of the targets of SDG is unimpressively 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.

2.2 Human Capital Theory

Human capital theory sees education as a tool that increases the stock of human capacities available in a nation which then determines the level of economic growth. This theory further explains that the stock of output in an economy can be consumed, invested in physical capital and human capital.Human capital theory rests on the assumption that formal education is highly instrumental and necessary to improve the productive capacity of a population. In short, human capital theorists argue that an educated population is a productive population. Human capital theory emphasizes how education increases the productivity and efficiency of workers by increasing the level of cognitive stock of economically productive human capability, which is a product of innate abilities and

investment in human beings. The provision of formal education is seen as an investment in human capital, which proponents of the theory have considered as equally or even more worthwhile than that of physical capital (Woodhall, 1997).

Human Capital Theory (HCT) concludes that investment in human capital will lead to greater economic outputs. However, the validity of the theory is sometimes hard to prove and contradictory. In the past, economic strength was largely dependent on tangible physical assets such as land, factories and equipment. Labor was a necessary component, but increases in the value of the business came from investment in capital equipment. Modern economists seem to concur that education and health care are the key to improving human capital and ultimately increasing the economic outputs of the nation (Becker,2012).

2.3 Empirical Literature

Nsanja, Kaluwa and Masanjala (2021) explored whether education sector foreign aid influences economic growth in Africa based on a panel of 32 countries over the period 2005-2017. The major novelty of the study is that on the supply side the major dependent variable, education aid flows, are disaggregated by education level. On the demand side, the recipient economies are accorded their income groups to account for capacities that complement the effects of human capital development on economic growth as well as the benevolent complementary or destabilizing effects of different political systems of government. The key findings are that: (i) education aid in aggregate form and primary education aid both enhance economic growth in low-income countries; (ii) in middle income countries higher education aid is more important for economic growth than primary and secondary education foreign aid; (iii) democracies have a stronger tendency to allocate more education sector foreign aid to primary education, while in autocracies the orientation is towards higher education. The findings imply that low-income autocracies that allocate more education sector foreign aid to higher education than to primary education do so at the expense of economic growth. The same applies to middle-income democracies whose allocation orientation is more towards primary education compared to higher education.

Hamdan, Sarea, Khamis, and Anasweh (2020) investigate the relationship between expenditure on higher education and economic development in Saudi Arabia. Saudi Arabia has invested in higher education and knowledge creation since its independence as part of the sustainable development process. Accordingly, this study aims at conducting an initial survey of the policies of expenditure on higher education in Saudi Arabia and then developing a standard model in which the results of this investment will be measured in achieving the economic development in Saudi Arabia for a period of forty years from (1978) until (2017). Based on econometric instruments; the study model did not succeed in finding a relationship between investment in higher education and economic development in Saudi Arabia.

Makwe, Akeeb and Ernest (2020) investigated the effect of human capital investment on economic growth in Nigeria within the periods 1981-2019. Time series data covering these periods of study were obtained and analyzed using Ordinary Least Square method. The data were further subjected to unit root test using the Augmented Dickey-Fuller (ADF) test, and a test of co-integration was performed using Johansen rank-based test. The result of the ADF test showed that the variables were all integrated at order one, and the Johansen co-integration test confirmed the existence of at least a co-integrating equation. The researchers went further in estimation an Error Correction Model (ECM) aimed at reconciling the short run deviations from the long run equilibrium. The test results showed that capital and recurrent expenditures on education and health have not impacted significantly on the

growth of the Nigerian economy both in the short run as well as the long run periods. Recommendations proffered include; government should intensify investments in education and health sectors in Nigeria to improve quality of services; government should embark on a general upgrade of the health sector in Nigeria as well as provision of adequate educational facilities in public schools.

Oluwatoyin (2020), study looked at human capital investment and economic growth in Nigeria – the role of education. Even though there are different perspectives to economic growth, there is a general consensus that growth will lead to a good change manifested in increased capacity of people to have control over material assets, intellectual resources and ideology, and obtain physical necessities of life like food, clothing, shelter, employment, e.t.c. This is why some people have argued that the purpose of growth is to improve peoples' lives by expanding their choices, freedom and dignity. The belief in human capital as a necessity for growth started in Nigeria during the implementation of the 1955-60 Development Plan and today, with the importance of knowledge in the economy, human capital has increasingly attracted both academic and public interest. Their study made use of the Unit Root and Augmented Dickey Fuller (ADF) tests and found out that a positive relationship exists between government expenditure on education and economic growth while a negative relationship exists between government expenditure on health and economic growth. Therefore, based on these findings, the study recommended that the government should increase not just the amount of expenditure made on the education and health sectors, but also the percentage of its total expenditure accorded to these sectors. The ten percent benchmark proffered by the present national plan should be adopted.

Okezie (2020), looked at the benefits of human capital development and concluded that investing in same cannot be overemphasized as over the years, nations that have towed similar lines in recognizing the wealth that investing in human capital development brings have testified that its pros far outweighs its cons. Nigeria, being the largest African nation with a huge population within the work force range, is seen to be lacking in this sphere as a vast majority of its citizens have lived the mainstream life of mediocre and this solely springs from the fact that human capital development is at its lowest ebb.

Abraham and Ahmed (2020) argue that sustainable economic growth leads to economic development. This study examines the relationship between economic growth and development in the context of an error correction model. The approach is unique in that it provides evidence for the short and long run relationships between the variables and the direction and rate at which disequilibrium between the variables would be corrected over time. Gross Domestic Product (GDP) was used as a proxy for economic growth while the Human Development Index (HDI) was used as a proxy for human development. Irregular secondary data were collected from 1975 to 2008 from the Central Bank Statistical Bulletin, UNDP yearly Report and World Fact Book. Although the ECM showed that economic growth have a negative short run relationship with human development index, the result was not significant. The coefficient for the long run relationship was however significant. The study concludes that policies aimed at accelerating growth would have a negative impact on human development in the short run but in the long run, equilibrium will be restored by HDI adjusting to correct the equilibrium error. This implies that economic growth leads to human development and that macroeconomic policies aimed at achieving sustainable economic growth should be maintained.

3.0 Methodology

3.1 Research Design

The research design for this study was based on the use of time-series data in the analysis. Therefore, the study adopted the quasi-experimental research design in determining the structural relationship existing between human capital investment and gross domestic product in Nigeria. Quasi-experimental design is also referred to as survey. The quasi-experimental designs are widely used in administrative and social sciences research because of the complex relationship that exists between variables, as such relationship is not subject to manipulation. Therefore, the choice of quasi-experimental research design (particularly the ex-post factor analysis) is premised on the fact that the research variables could not be subjected to controlled laboratory tests which made the experimental design option not suitable for this study.

The major source of data used in this study was the secondary source. Thus, the data for this research analysis was obtained from various issues of the Central Bank of Nigeria Statistical Bulletin, the National Bureau of Statistics Summary of Abstract (1980 to 2020) and the United Nations Development Programme Reports. These data covered information on Human Capital Investment in Education, Human Capital Investment in Health and tertiary enrolment statistics serving as the dimensions of Human Capital Investment, while real gross domestic product, human development index and poverty index were adopted as measures for economic development.

3.2 Model Specification

This study adopted and modified the model of Makwe, Akeeb and Ernest, (2020), who investigated the relationship between human capital investments and economic growth using the Ordinary least squares model. They stated their model as thus: $RGDP_t$= f(CEEt, REE_t, CEH_t, REH_t). Further, these models were anchored on the theory of human capital development. The theory clearly captures the essence of this study.

3.2.1 Economic Development Model

Model I:**RGDP** = f (CEE, REE, CEH, REH, TER, INF, POPG) ……..……...….(1)

Nigeria's development model is stated below in its functional form:

$RGDP_t$ = f(CEE_t, REE_t, CEH_t, REH_t, TER_t INF_t, $POPG_t$……(2)

This is further stated in econometric form below:

$RGDP_t = \beta_0 + \beta_1 CEE_t + \beta_2 REE_t + \beta_3 CEH_t + \beta_4 REH_t + \beta_5 TER_t + \beta_6 INF_t + \beta_7 POPG_t + U_i$…..(3)

Model II:**HDI** = f (CEE, REE, CEH, REH, TER, INF, POPG)……..... (4)

The functionalformisstated as :

Model II : HDI_t = f(CEE_t, REE_t, CEH_t, $REH_t TER_{tt}$ INF_t, $POPG_t$)…….…….…….....…(5)

This is further stated in econometric form below:

$HDI_t = \beta_0 + \beta_1 CEE_t + \beta_2 REE_t + \beta_3 CEH_t + \beta_4 REH_t + \beta_5 TER_t + \beta_6 INF_t + \beta_7 POPG_t + U_i$……..(6)

Model I:**NPI** = f (CEE, REE, CEH, REH, TER, INF, POPG) ……..……..….(7)

Its functional form thus is;

$NPI_t = f(CEE_t, REE_t, CEH_t, REH_t TER_t\ INF_t, POPG_t)$ ……..…...(8)

This is further stated in econometric form below:

$NPI_t = \beta_0 + \beta_1 CEE_t + \beta_2 REE_t + \beta_3 CEH_t + \beta_4 REH_t + \beta_5 TER_t + \beta_6 INF_t + \beta_7 POPG_t + U_i$.....(9)

Where:

RGDP = Real Gross Domestic Product

HDI = Human Development Index

NPI = National Poverty Index

CEE = Capital Expenditure on Education

REE = Recurrent Expenditure on Education

CEH = Capital Expenditure on Health

REH = Recurrent Expenditure on Health

TER = Tertiary Education Enrolment

β_0 = The slope (intercept) of the function

Check Variables

Check variables were introduced to reduce the possibility of having spurious results from the models. The check variables used are:

INF = Inflation

POPG = Population growth

β_1 = coefficient (slope) of capital expenditure on Education

β_2 = coefficient (slope) of recurrent expenditure on Education

β_3 = Coefficient (slope) of capital expenditure on health

β_4 = Coefficient (slope) of recurrent expenditure on health

β_5 = Coefficient (slope) of tertiary enrolment

β_6 = Coefficient (slope) of inflation rate

β_7 = Coefficient (slope) of population growth rate

u = stochastic term

t = unit of time.

A priori expectations: $b_1 - b_7 > 0$

3.3 Methods of Data Analysis

This study adopted the econometric technique. According to Theil (1971), cited in Gujarati and Sangeetha (2007), econometrics is concerned with the empirical determination of economic laws. It is a combination of economic theory, mathematical economics and statistics, but is completely distinguished from each of these three branches of science (Koutsoyianis, 1977).

For the purpose of our analysis here, the Autoregressive Distributive Lag (ARDL)/bond test approach developed by Peseran et al (2001) were adopted if our data sets consist of variables integrating both at level (0) and at first difference (order I).

The Autoregressive Distributive Lag (ARDL)/bond test approach were used to establish a long run relationship between the variables in each model. This approach was adopted at this instance because it is suitable for use with a mixture of variables integrated at level I (0), variables integrated at first difference I (1) or variables that are fractionally integrated (see Peseran et al, 2001).

However, for the avoidance of having any variables integrated at order 2, we made use of the Augmented Dickey Fuller (ADF) test to formally explore the stochastic properties of each individual series. Another reason for the suitability of the ARDL approach is because it involves a single equation setup, making it simple to implement and interpret. Also, different variables can be assigned different lag lengths as they enter the model. And finally, because of its extra robustness and better performance for small sample size such as this study period (see Peseran& Shin, 1997). However, the ADF method was authenticated with the non-parametric techniques of Philip & Perron (1987). This is because statistical techniques have some level of biasness or simply put, statistical techniques are not bias free.

The bond test is based on the f-test which has a non-standard distribution and with two sets of critical bounds provided by Peseran et al (2001). The lower critical bound assumes that all the variables are integrated at level I (0), while the upper bound assumes all the variables to be integrated at first difference I (1). Consequently, the following procedures were followed in accomplishing the analysis in this study;

Short-run analysis was conducted based on:

i. **A priori** test to check whether the signs and sizes of the variables used conforms with the a priori expectations in the economy. The A priori expectations is: $b_1 - b_7 > 0$

ii. **Statistical** tests were conducted using the t-tests and f-test. The t-tests tests the individual significance of the variables used while the f-test, the overall significance of the variables used in the model.

iii. **Econometric Criterion**: the study used serial correlation test to test for the presence serial autocorrelation. It is important to find out if the error terms of the independent variables are serially related. If they are serially related, this makes the estimate questionable. The rule of thumb is 2. If (d) is ≥ 2, we will conclude that there is no presence of serial autocorrelation.

3.3.1 Pre-Model Estimation Diagnostic Analyses

3.3.1.1 Descriptive Statistics. The common descriptive statistics involving all the variables was first conducted, using basic quantitative statistical measures to ascertain relevant characters of the time series data included in the model, which will aid decision on the next empirical step to be taken. The primary measures utilized for the analyses of the variables included in this study are the mean, skewness, kurtosis and jarque-bera.

3.3.1.2 Unit Root Test: This test was adopted to check the stationarity properties of the times series data sets employed for this study. It is employed to determine the order of integration of each variable in the model. To achieve this, the researcher applied the Augmented Dickey Fuller (ADF) test for unit root. The ADF test is thus estimated on the basis of the following model:

$$\Delta GDP_t = \lambda_0 + \lambda_{1t} + \delta GDP_{t-1} + \sum_{i=1}^{n} \lambda_1 \Delta GDP_{t-i} + \mu_t \qquad (3.1)$$

Where, *GDP* = the time series under consideration, *t* = Linear time trend, Δ = First difference operator, λ_0 = Constant term, *n* = Optimum number of lags on the dependent variables and μ_t= the error term. Equations (3.1) included both drift and linear time trend. This decision is on the consideration that time series data are usually dynamic in nature.

3.3.1.3 Cointegration Test: The appropriate test adopted to ascertain existence or otherwise of cointegration or long-run relationship among the variables of this study is the ARDL Bounds test for cointegration (Pesaran, et. al, 2001). They postulate that when the data series are of different order of integration in unit root analyses; *I(0)* and *I(1)*, the suitable test to check for long-run relationship is the Bounds cointegration test. In line with (Pesaran et.al, 2001), the three possible decision options are: i. when the calculated F-statistic is greater than the upper bound *I(1)* theoretical critical value of the Bounds test result, then conclude that there is cointegration (long-run relationship), (ii. when the calculated F-statistic falls below the lower bound *I(0)* theoretical critical value of the Bounds test result, then conclude that there is no cointegration, hence, no long run relationship, and (iii. when the calculated F-statistic falls between the lower bound *I(0)* and the upper bound *I(1)* theoretical critical values, then the test is considered inconclusive.

3.3.2 Model Estimation Technique

3.3.2.1 Autoregressive Distributed Lag (ARDL) Testing Approach

As stated earlier, adopted for estimation of the model in this study is the ARDL test. It is employed to determine the long-run relationship between dependent and independent variables and the short-run dynamics of the model. The key reasons for using this technique in relation to other approaches range from its applicability in small data size, easy application by employing OLS, no endogeneity problem, concurrently estimating long-run and short-run coefficients to applicability with combination of both I(1) and I(0) stationary variables (Pesaran et.al, 2001). Thus, the ARDL model for this study is specified as follows;

$$\Delta LnRGDP_t = \lambda_0 + LnRGDP_{t-1} + \lambda_1 LnTEN_{t-1} + \lambda_2 LnLAF_{t-1} + \lambda_3 LnGFC_{t-1} + \lambda_4 LnGEE_{t-1} + \lambda_5 LnGEH_{t-1} + \varepsilon_t \quad \ldots \quad (3.2)$$

Where: *RGDP, λ_0, TEN, LAF, GFC, GEH, GEE* are as earlier defined, Δ = first difference of the variables and ε_t= white noise error term.

3.3.2.2 Post Model Estimation Diagnostic Analyses

Various post estimation diagnostic measures were employed in this study to confirm whether or not the estimated ARDL model is stable and suitable for policy application and recommendation. To decide on this, post-estimation tests adopted for this study are: Ramsey Reset test to check whether or not the model is correctly specified in linear form, the Breusch-Godfrey Serial Correlation LM test to check if the model suffers autocorrelation problem in the residuals up to the specified lag order, the White's heteroskedasticity test to verify whether or not the variance of the residuals of the model are homoscedastic, the Jarque-Bera test to verify if the variables of the model are normality distributed and the CUSUM test for stability to determine whether or not the model is stable and suitable for making long run decision (Pesaran, et. al, 2001).

4. RESULTS AND DISCUSSION

Table 1: **Presentation of the Data for the Study Variables (values are in numerals and percentages)**

Year	RGDP	CEE	REE	CEH	REH	TER	HDI	NPI	INF	POPG
1980		952.60				57742.00			9.97%	72,951,439
1981	15258.00	440.90	0.17	0.3	0.08	77791.00	0.40	40.20	20.81%	75,175,387
1982	14985.08	488.40	0.19	0.12	0.10	90751.00	0.36	41.88	7.70%	77,388,067
1983	13849.73	346.60	0.16	0.14	0.08	104774.00	0.32	41.96	23.21%	79,351,586
1984	13779.26	144.90	0.20	0.05	0.10	116822.00	0.36	43.08	17.82%	81,337,553
1985	14953.91	180.70	0.26	0.06	0.13	126285.00	0.39	44.60	7.44%	83,585,251
1986	15237.99	442.00	0.26	0.07	0.13	125783.00	0.39	45.30	5.72%	85,804,185
1987	15263.93	139.10	0.23	0.06	0.04	151967.00	0.38	46.30	11.29%	88,044,187
1988	16215.37	281.80	1.46	0.16	0.42	160767.00	0.37	47.30	54.51%	90,351,467
1989	17294.68	221.90	3.01	0.22	0.58	174133.00	0.38	48.30	50.47%	92,744,064
1990	19305.63	331.70	2.40	0.32	0.50	179494.00	0.44	49.30	7.36%	95,214,257
1991	19199.06	289.10	1.26	0.15	0.62	200774.00	0.33	50.30	13.01%	97,685,360
1992	19620.19	384.10	0.29	0.24	0.15	232282.00	0.35	51.30	44.59%	100,182,045
1993	19927.99	1563.00	8.88	0.24	3.87	255730.00	0.39	57.10	57.17%	102,775,465
1994	19979.12	2405.70	7.38	0.75	2.09	281303.00	0.38	54.76	57.03%	105,456,121
1995	20353.20	3307.40	9.75	1.31	3.32	309433.00	0.45	55.90	72.84%	108,187,610
1996	21177.92	3215.80	11.67	1.66	3.18	269687.00	0.39	57.10	29.27%	110,956,183
1997	21789.10	3808.00	14.85	2.62	3.89	862023.00	0.46	63.50	8.53%	113,791,181
1998	22332.87	12793.00	13.59	8.31	4.74	941329.00	0.44	60.60	10.00%	116,690,527
1999	22449.41	8516.60	43.61	7.39	16.64	983689.00	0.46	61.90	6.62%	119,695,565
2000	23688.28	23342.60	57.96	27.97	15.22	1032873.00	0.47	63.10	6.93%	122,851,984
2001	25267.54	19860.00	39.88	53.34	24.52	1136160.00	0.46	64.40	18.87%	126,152,678
2002	28957.71	9215.00	80.53	32.47	40.62	124776.00	0.45	65.70	12.88%	129,583,026
2003	31709.45	14680.20	64.78	55.74	33.27	1272772.00	0.45	66.90	14.03%	133,119,801
2004	35020.55	9053.10	76.50	30.03	34.20	417281.00	0.46	53.50	15.00%	136,756,848
2005	37474.95	13451.40	82.80	71.36	55.70	1540021.00	0.47	53.30	17.86%	140,490,722
2006	39995.50	14127.95	119.02	78.68	62.25	1562010.00	0.48	53.02	8.23%	144,329,764
2007	42922.41	14804.51	150.78	150.90	81.91	1567550.00	0.48	53.12	5.39%	148,294,028
2008	46012.52	15481.06	163.98	152.17	98.22	1602441.00	0.49	52.99	11.58%	152,382,506
2009	49856.10	16157.62	137.12	144.93	90.20	1680112.00	0.49	53.60	12.56%	156,595,758
2010	54612.26	16834.17	170.80	151.77	99.10	1701123.00	0.50	53.50	13.72%	160,952,853

2011	**57511.04**	**17510.73**	**335.80**	**92.85**	**231.80**	**986673.00**	**0.51**	**54.43**	**10.84%**	**165,463,745**
2012	**59929.89**	**18187.29**	**348.40**	**97.40**	**197.90**	**862, 601**	**0.51**	**54.90**	**12.22%**	**170,075,932**
2013	**63218.72**	**18863.84**	**390.40**	**154.71**	**180.00**	**1252913.00**	**0.52**	**55.01**	**8.48%**	**174,726,123**
2014	**67152.79**	**19540.40**	**343.75**	**111.29**	**195.98**	**1622123.00**	**0.53**	**55.21**	**8.06%**	**179,379,016**
2015	**69023.93**	**20216.95**	**325.19**	**82.98**	**257.70**	**1529049.22**	**0.53**	**55.90**	**9.01%**	**183,995,785**
2016	**72799.56**	**20893.51**	**339.28**	**79.63**	**200.82**	**1583221.99**	**0.53**	**55.80**	**15.68%**	**188,666,931**
2017	**75952.86**	**21570.06**	**403.96**	**137.74**	**245.19**	**1637394.77**	**0.54**	**57.20**	**16.52%**	**193,495,907**
2018	**65068.49**	**22246.62**	**465.30**	**142.80**	**296.44**	**1691567.54**	**0.54**	**60.50**	**12.09%**	**198,387,623**
2019	**66751.92**	**22923.18**	**593.33**	**147.86**	**388.37**	**1745740.31**	**0.54**	**60.92**	**11.40%**	**203,304,492**
2020	**68435.36**	**23599.73**	**646.75**	**152.92**	**423.33**	**1799913.09**	**0.55**	**61.29**	**13.25%**	**208,327,405**

Source: CBN Statistical Bulletin, 2021

4.1 Unit Root Test

Table 2 Unit Root Test Result

Coefficient	At levels (Prob)	First Difference (Prob)	Stationarity
LOG(RGDP)	0.9761	0.0015	I(1) at first diff
LOG(CEE)	0.8251	0.0000	I(1) at first diff
LOG(REE)	0.1985	0.0000	I(1) at first diff
LOG(CEH)	0.7918	0.0000	I(1) at first diff
LOG(REH)	0.4548	0.0000	I(1) at first diff
LOG(TER)	0.5367	0.0000	I(1) at first diff
HDI	0.8482	0.0000	I(1) at first diff
NPI	0.3076	0.0000	I(1) at first diff
INF	0.0479	0.0016	I(0) at levels
POPG	0.0002	0.0408	I(0) at levels

Source: Author's computation using E-views.

The table shows that the variables have a mixed results of stationarity at levels and first difference using the ADF unit root tests. This meets the required condition to use the ARDL method of analysis in testing the hypotheses of the analysis.

4.2 Bounds Tests for Cointegration

The bounds tests for cointegration test whether there is a long-term relationship between the variables used in the model. As shown below, the results for each of the models shows that there is a long-term relationship between the dependent and the independent variables. This is confirmed with the f-stat is higher than the lower and upper bounds of the results.

Table 3: Model I: RGDP

F-Bounds Test

Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.380268	10%	2.45	3.52
K	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

Source: E-views

Table 4: Model II: HDI

F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.899480	10%	2.45	3.52
K	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

Source: E-views

Table 5: Model III: NPI

F-statistic	12.53414	10%	2.45	3.52
K	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

Source: E-views

4.3 ARDL ECM Tests

Table 6: Model I RGDP ECM

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.516769	0.790510	5.713744	0.0001
DLOG(RGDP(-1))	-0.188597	0.132086	-1.427836	0.1769
DLOG(RGDP(-2))	-0.152370	0.125059	-1.218383	0.2447
DLOG(RGDP(-3))	-0.968172	0.224468	-4.313184	0.0008
DLOG(CEE)	-0.050474	0.018245	-2.766528	0.0160
DLOG(CEE(-1))	0.036423	0.021578	1.687953	0.1152
DLOG(REE)	0.044284	0.021637	2.046684	0.0615
DLOG(REE(-1))	-0.108175	0.025156	-4.300192	0.0009

DLOG(REE(-2))	-0.085120	0.027496	-3.095671	0.0085
DLOG(CEH)	0.014373	0.018044	0.796578	0.4400
DLOG(CEH(-1))	-0.066377	0.022569	-2.941066	0.0115
DLOG(CEH(-2))	-0.052154	0.016378	-3.184283	0.0072
DLOG(CEH(-3))	-0.035513	0.013780	-2.577061	0.0230
DLOG(REH)	0.004356	0.023330	0.186713	0.8548
DLOG(REH(-1))	0.006132	0.025381	0.241581	0.8129
DLOG(REH(-2))	0.047585	0.022904	2.077545	0.0581
DLOG(TRE)	0.011236	0.030220	0.108213	0.6328
DLOG(TRE(-1))	0.077191	0.065211	0.087321	0.7839
DLOG(TRE(-2))	0.047585	0.020112	2.079805	0.0081
INF	0.001643	0.000440	3.731449	0.0025
POPG	0.810403	0.160679	5.043608	0.0002
CointEq(-1)*	-0.602514	0.086735	-6.946625	0.0000

R-squared	0.831187	Mean dependent var	0.044520
Adjusted R-squared	0.652444	S.D. dependent var	0.047299
S.E. of regression	0.027884	Akaike info criterion	-4.016243
Sum squared resid	0.013218	Schwarz criterion	-3.180496
Log likelihood	91.29237	Hannan-Quinn criter.	-3.724545
F-statistic	4.650173	Durbin-Watson stat	2.233921
Prob(F-statistic)	0.001316		

Source: E-views Version 10.

The result of the analysis shows that the goodness-of-fit (R-Square) is 0.83. This means that 83% of the changes in the dependent variable is explained by the changes in the independent variables. 17% is taken care of by the stockastic term (all other variables that affect the dependent variable but were not included in the model). The annual speed of adjustment is 60%. The model is also statistically significant based on the f-stat 4.65.

Table 7: Model II: HDI ECM

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.163366	0.277789	-4.187957	0.0013
DLOG(HDI(-1))	-0.655330	0.108858	-6.020065	0.0001
DLOG(HDI(-2))	-0.662829	0.095901	-6.911624	0.0000
DLOG(HDI(-3))	-0.280337	0.088670	-3.161582	0.0082
DLOG(CEE)	0.055412	0.013818	4.010066	0.0017
DLOG(CEE(-1))	0.002238	0.014801	0.151182	0.8823
DLOG(CEE(-2))	0.031319	0.010020	3.125559	0.0088
DLOG(REE)	0.017286	0.020232	0.854381	0.4096
DLOG(REE(-1))	0.139963	0.023016	6.081138	0.0001
DLOG(REE(-2))	0.134477	0.020560	6.540638	0.0000
DLOG(REE(-3))	0.073512	0.014221	5.169150	0.0002
DLOG(CEH)	-0.030098	0.013554	-2.220654	0.0464
DLOG(CEH(-1))	0.035103	0.015387	2.281365	0.0416
DLOG(REH(-1))	-0.011345	0.021388	-0.530412	0.6055
DLOG(REH(-2))	-0.145326	0.021435	-6.779951	0.0000
DLOG(TRE(-1))	-0.118806	0.019065	-6.231515	0.0000
DLOG(TRE(-2))	-0.096858	0.016763	-5.777917	0.0001
INF	-0.002157	0.000367	-5.883603	0.0001
POPG	0.104809	0.076427	1.371354	0.1954

CointEq(-1)*	-0.685108	0.094407	-7.256941	0.0000

R-squared	0.973309	Mean dependent var	0.011773
Adjusted R-squared	0.941613	S.D. dependent var	0.077336
S.E. of regression	0.018687	Akaike info criterion	-4.821789
Sum squared resid	0.005587	Schwarz criterion	-3.942057
Log likelihood	106.7922	Hannan-Quinn criter.	-4.514739
F-statistic	30.70785	Durbin-Watson stat	1.767784
Prob(F-statistic)	0.000000		

Source: E-views

The result of the analysis shows that the goodness-of-fit (R-Square) is 0.97. This means that 97% of the changes in the dependent variable is explained by the changes in the independent variables. 3% is taken care of by the stockastic term (all other variables that affect the dependent variable but were not included in the model). The annual speed of adjustment is 69%. The model is statistically significant when taken together based on the f-stat 30.7.

Table 8: Model III: NPI ECM

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.71564	2.894534	9.920645	0.0000
DLOG(NPI(-1))	0.162646	0.142141	1.144256	0.2901
DLOG(NPI(-2))	0.521006	0.165093	3.155838	0.0160
DLOG(NPI(-3))	0.316448	0.081634	3.876450	0.0061
DLOG(CEE)	0.257739	0.104233	2.472715	0.0427
DLOG(CEE(-1))	1.190967	0.247069	4.820388	0.0019
DLOG(CEE(-2))	0.137019	0.118867	1.152713	0.2869
DLOG(CEE(-3))	0.520610	0.115588	4.503995	0.0028
DLOG(REE)	0.627464	0.123706	5.072229	0.0014
DLOG(REE(-1))	0.411633	0.181836	2.263756	0.0580
DLOG(REE(-2))	0.584623	0.244437	2.391707	0.0480
DLOG(CEH)	0.472286	0.199193	2.370997	0.0495
DLOG(CEH(-1))	-0.865079	0.222468	-3.888550	0.0060
DLOG(REH)	-0.774127	0.171380	-4.517030	0.0027
DLOG(REH(-1))	-1.028986	0.184055	-5.590658	0.0008
DLOG(TRE)	-0.862870	0.214983	-4.013671	0.0051
DLOG(TRE(-1))	-0.404753	0.069758	-5.802248	0.0007
INF	-0.009839	0.003636	-2.705842	0.0304
POPG	-3.419824	0.775827	-4.407971	0.0031
CointEq(-1)*	-0.955788	0.126543	-9.923836	0.0000

R-squared	0.982443	Mean dependent var	0.072967
Adjusted R-squared	0.952118	S.D. dependent var	0.703903
S.E. of regression	0.154028	Akaike info criterion	-0.649133
Sum squared resid	0.260971	Schwarz criterion	0.276020
Log likelihood	30.06157	Hannan-Quinn criter.	-0.347557
F-statistic	32.39669	Durbin-Watson stat	2.457342
Prob(F-statistic)	0.000000		

Source: E-views Version 10.

The model III result of the analysis shows that the goodness-of-fit (R-Square) is 0.85. This means that 85% of the changes in the dependent variable is explained by the changes in the independent variables. 15% is taken care of by the stockastic term (all other variables that affect the dependent variable but were not included in the model). The annual speed of adjustment is 43%. The model is statistically significant when taken together based on the f-stat 5.33.

4.4 Post Estimation Test Results

4.4.1 Serial Correlation Tests

Table 9: Model I

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.277000	Prob. F(2,11)	0.7632
Obs*R-squared	1.726157	Prob. Chi-Square(2)	0.4219

Table 10: Model II

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.769252	Prob. F(2,10)	0.2199
Obs*R-squared	9.409173	Prob. Chi-Square(2)	0.0091

Table 11: Model III

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.321248	Prob. F(2,5)	0.3462
Obs*R-squared	10.71867	Prob. Chi-Square(2)	0.0047

Sources: E-views 10

Serial Correlation analysis shows how much a variable affects itself over the period of study. The effect will result to spurious result from the regression analysis. The results of the analysis show that the models do not have problem of serial correlation of the first order.

4.5 Tests of Hypotheses

Model I: Real Gross Domestic Product Model

H_1: *There is no relationship between Real Gross Domestic Product and Capital Expenditure on Education.*

The result of the analysis using the ECM shows that Real Gross Domestic Product is negatively related to Capital Expenditure on Education. As Capital Expenditure on Education increases by a unit, Real Gross Domestic Product decreases by -0.05 and vice versa. Capital Expenditure on Education is shown to be statistically significant using the t-stat. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between Real Gross Domestic Product and Capital Expenditure on Education over the period of study.

H_2: *There is no relationship between Real Gross Domestic Product and Recurrent Expenditure on Education.*

The result of the analysis using the ECM shows that Real Gross Domestic Product is positively related to Recurrent Expenditure on Education. As Recurrent Expenditure on Education increases by a

unit, Real Gross Domestic Products increases by 0.04 and vice versa. Recurrent Expenditure on Education is shown to be statistically significant using the t-stat probability. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between Real Gross Domestic Product and Recurrent Expenditure on Education over the period of study.

H_3: *There is no relationship between Real Gross Domestic Product and Capital Expenditure on Health*

The result also shows that there is a negative relationship between Real Gross Domestic Product and Capital Expenditure on Health. The analysis reveals that as Capital Expenditure on Health increases by a unit, Real Gross Domestic Product decreases by -0.066 and vice versa. Capital Expenditure on Health is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the Real Gross Domestic Product and Capital Expenditure on Health over the period of study.

H_4: *There is no relationship between Real Gross Domestic Product and Recurrent Expenditure on Health.*

The result also shows that there is a positive relationship between Real Gross Domestic Product and Recurrent Expenditure on Health. The analysis reveals that as Recurrent Expenditure on Health increases by a unit, Real Gross Domestic Product decreases by -0.04 and vice versa. Recurrent Expenditure on Health is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the Real Gross Domestic Product and Recurrent Expenditure on Health over the period of study.

H_5: *There is no relationship between Real Gross Domestic Product and Tertiary Enrolment.*

The result also shows that there is a positive relationship between Real Gross Domestic Product and Tertiary Enrolment. The analysis reveals that as Tertiary Enrolment increases by a unit, Real Gross Domestic Product increases by 0.047585 and vice versa. Tertiary Enrolment is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the Real Gross Domestic Product and Tertiary Enrolment over the period of study.

Model II: Human Development Index Model

H_1: *There is no relationship between Human Development Index and Capital Expenditure on Education.*

The result of the analysis using the ECM shows that Human Development Index is positively related to Capital Expenditure on Education. As Capital Expenditure on Education increases by a unit, Human Development Index increases by 0.055 and vice versa. Capital Expenditure on Education is shown to be statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between Human Development Index and Capital Expenditure on Education over the period of study.

H_2: *There is no relationship between Human Development Index and Recurrent Expenditure on Education.*

The result of the analysis using the ECM shows that Human Development Index is positively related to Recurrent Expenditure on Education. As Recurrent Expenditure on Education increases by a unit, Human Development Index increases by 0.13 and vice versa. Recurrent Expenditure on Education is shown to be statistically significant using the t-stat probability at 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between Human Development Index and Recurrent Expenditure on Education over the period of study.

H_3: *There is no relationship between Human Development Index and Capital Expenditure on Health*

The result also shows that there is a positive relationship between Human Development Index and Capital Expenditure on Health. The analysis reveals that as Capital Expenditure on Health increases by a unit, Human Development Index increases by 0.035 and vice versa. Capital Expenditure on Health is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the Human Development Index and Capital Expenditure on Health over the period of study.

H_4: *There is no relationship between Human Development Index and Recurrent Expenditure on Health.*

The result also shows that there is a negative relationship between Human Development Index and Recurrent Expenditure on Health. The analysis reveals that as Recurrent Expenditure on Health increases by a unit, Human Development Index decreases by -0.15 and vice versa. Recurrent Expenditure on Health is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the Human Development Index and Recurrent Expenditure on Health over the period of study.

H_5: *There is no relationship between Human Development Index and Tertiary Enrolment.*

The result also shows that there is a positive relationship between Human Development Index and Tertiary Enrolment. The analysis reveals that as Tertiary Enrolment increases by a unit, Human Development Index increases by 0.096858 and vice versa. Tertiary Enrolment is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the Human Development Index and Tertiary Enrolment over the period of study.

Model III: National Poverty Index Model

H_1: *There is no relationship between National Poverty Index and Capital Expenditure on Education.*

The result of the analysis using the ECM shows that National Poverty Index is positively related to Capital Expenditure on Education. As Capital Expenditure on Education increases by a unit, National Poverty Index increases by 0.25 and vice versa. Capital Expenditure on Education is shown to be statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between National Poverty Index and Capital Expenditure on Education over the period of study.

H_2: *There is no relationship between National Poverty Index and Recurrent Expenditure on Education.*

The result of the analysis using the ECM shows that National Poverty Index is positively related to Recurrent Expenditure on Education. As Recurrent Expenditure on Education increases by a unit, National Poverty Index increases by 0.62 and vice versa. Recurrent Expenditure on Education is shown to be statistically significant using the t-stat probability at 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between National Poverty Index and Recurrent Expenditure on Education over the period of study.

H_3: *There is no relationship between* National Poverty Index *and Capital Expenditure on Health*

The result also shows that there is a positive relationship between National Poverty Index and Capital Expenditure on Health. The analysis reveals that as Capital Expenditure on Health increases by a unit, National Poverty Index increases by 0.47 and vice versa. Capital Expenditure on Health is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the National Poverty Index and Capital Expenditure on Health over the period of study.

H_4: *There is no relationship between* National Poverty Index *and Recurrent Expenditure on Health.*

The result also shows that there is a negative relationship between National Poverty Index and Recurrent Expenditure on Health. The analysis reveals that as Recurrent Expenditure on Health increases by a unit, National Poverty Index decreases by -1.02 and vice versa. Recurrent Expenditure on Health is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the National Poverty Index and Recurrent Expenditure on Health over the period of study.

H_5: *There is no relationship between National Poverty Index and Tertiary Enrolment.*

The result also shows that there is a positive relationship between National Poverty Index and Tertiary Enrolment. The analysis reveals that as Tertiary Enrolment increases by a unit, National Poverty Index increases by 0.096858 and vice versa. Tertiary Enrolment is statistically significant using the t-stat based on 5% confidence level. We will therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between the National Poverty Index and Tertiary Enrolment over the period of study.

5.0 Conclusion and Recommendations

5.1 Conclusion

The result of the study is filled with some interesting insights about the relationships between the dependent and the independent variables. The independent variables: Capital Expenditure on Education, Capital Expenditure on Health, Recurrent Expenditure on Education, Recurrent Expenditure on Health and Tertiary Enrolment, were found to have both positive and negative but significant relationships with the dependent variables: Real Gross Domestic Product, Human Development Index and National Poverty Index, which are collectively, the economic development variables.

The results of this study on HDI disagrees with the findings of Makwe, Akeeb and Enerst (2020) investigated the effect of human capital investment on economic growth in Nigeria within the periods 1981-2019. Time series data covering these periods of study were obtained and analyzed using Ordinary Least Square method. They disagreed that there is a significant relationship between human development capital and the economic variables used in the study. They concluded that variables such

as REH, REE, CEH, and CEE have not impacted significantly on the Nigerian economy over their study period.

However, the empirical works of Olisadum and Anulika (2020) on the indispensable roles human capital development plays to achieve sustainable socioeconomic growth in Nigeria. Human capital development encompasses academic and technical skills a labour force acquires for impressive output performance, agrees with the findings of this study on the impact of independent variables in the economic development of Nigeria.

Arabi and Abdalla (2013), empirically investigated the impact of human capital on economic growth in Sudan for the period 1982-2009, using a simultaneous equation model that linked human capital proxied by school attainment, investment in education and health on economic growth, total productivity, foreign direct investment, and human development index. They also arrived at that conclusion that investments in health and education have impacted positively on the Nigerian economy.

On education, the study of Nsanja, Kaluwa and Masanjala (2021) explored whether education sector foreign aid influences economic growth in Africa based on a panel of 32 countries over the period 2005-2017. The major novelty of the study is that on the supply side the major dependent variable, education aid flows, are disaggregated by education level. On the demand side, the recipient economies are accorded their income groups to account for capacities that complement the effects of human capital development on economic growth as well as the benevolent complementary or destabilizing effects of different political systems of government. Their findings show that investments in education have positive impact on the Nigerian economy. This agrees with the findings of this study.

5.2 Recommendations

Based on the findings of the study, the following policy recommendations are made:

a) The government of Nigeria is advices to intensify her investments in the areas of education and health so as to improve on the quality of education and health care facilities and as such, the quality of the human resources that could be instrumental to improving of the real gross domestic product of Nigeria and consequently, the achievement of desired economic growth and development. Therefore, there is an urgent need for appropriate authorities to shift their current emphasis from the development of building only structures, to the building of people's capacities through the restoration and uplifting of our educational standards by implementing the 25 prevent recommended annual budgets to education by UNESCO.

b) The Government should embark on a general upgrade of the health sector. There is need for a sustained development of infrastructural facilities in this sector. World class public hospitals, equipment's etc. should be provided to cushion the effect of seeking medical services abroad, on the economy. A corresponding percentage of budgetary allocation recommended by the world health organization should be committed to the health sector. The Nigerian government should continually provide the enabling environment required to guarantee macroeconomic stability, consistency and continuity in policy implementation and the creation of a positive international image that can encourage increased investment in human capital not only by the government, but also by individuals and private bodies, which will in turn, improve of the human development index of the nation and consequently, economic development.

c) The reforms of the federal government of Nigeria relating to the education and health sectors of the economy as provided in the NEEDS document, should be sustained by the government with great commitment and will. A specialized institution should be created by the federal government to ensure that all the budgetary allocations to both the education and health sectors of the economy are totally invested in the provision of quality education and health care services to her citizens as such is instrumental to the quality of human capital resources produced. It is also important that the government pay more attention to the development and standardization of tertiary institutions in Nigeria, especially those within the public domain as the quality of output that comes out of these institutions have the potentials to bring about a reduction in the poverty index of the country and consequently, enshrining economic development in Nigeria.

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