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Human Capital Development and Economic Growth in Nigeria: An Empirical Examination

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Abstract: *The general goal of this article is to explore the influence of human capital development on Nigerian economic growth. Its goal was to investigate the link between human capital indices (education and health) and economic growth. The Johansen co-integration approach and Error correction model analysis were utilized in the study to estimate or determine the relationship between the variables involved in the investigation. According to the study's findings, there is a favorable long-run association between school enrollment, labor force participation, government spending on education and health, and economic growth. According to the study's conclusions, the government and policymakers should make concerted and sincere efforts to establish and enhance human potential through proper financing and to provide excellent education at all levels. In order to improve human capital development, the government should also dedicate more esources to the health sector.*

Keywords: Human capital development; education; health; economic growth; school enrolment.

1 Introduction

Human beings are the active agents of modernisation since they are the only ones who can acquire wealth, harness natural resources, and construct political and social structures (Eigbiremolen & Anaduaka, 2014). Economic development theorists generally believe that human resource quality has a substantial influence on economic growth. Because labor is an element of production, this school of thought believes that the quality and amount of labor determine productivity (Adelakun, 2011). Improving workforce quality generates implicit non-economic output in the form of ideas and decisions, which has a substantial beneficial influence on investment innovation and other development potential (Roux, 1994). As a result, the concept of human capital refers to a country's human resources' ability and skills, whereas human capital development refers to acquiring and increasing the number of people with the skills, education, and experience that are critical for economic growth and development of a country's economy (Okojie 2005).

Human capital formation or development, according to Harrison (1973), is defined as the purposeful and continual process of obtaining necessary knowledge, skills, and abilities that are employed to provide economic value for driving sustainable national growth. No country can achieve long-term economic growth and development by wishing. With no significant investment in human capital development, the importance of human capital development in economic growth cannot be overstated (Adelakun, 2011). Human capital development is thus a critical requirement for a country's socioeconomic and political transition.

A country that is unable to develop its people's skills and knowledge and successfully use them in the national economy would be unable to develop anything else. “Investment in human capital development, rather than physical capital, drives industrial progress” (Momoh, 2021). Physical capital cum human capital have a complementary connection, with two imbalances in both stocks, plus human capital spillovers, affecting economic growth. Physical capital is dependent on human capital production, which is the process of developing all citizens' knowledge, skills, and capacities.

Less developing countries like Nigeria are characteristic by low labour efficiency, factor immobility, limited specialization in occupations, deficient supply of entrepreneurship and in addition low quality population with a little knowledge of natural resources. In fact, devoid an enhancement in the quality of people or human factor, no progress is likely. The trajectory of progress is through schooling, learning, on

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job-training etc. Moreover, despite the immense effort of government is to improve the quality of the people's life and also enhance that human's capability; it has not yielded the desired result basically as a result of insufficient funds and policy.

In the past, most of Nigeria's rapid growth strategy was oriented on acquiring physical capital for quick expansion and development, with little understanding of the critical role of human capital in the development process. However, the truth rests on the fact that people are a country's most important asset, and developing these assets is critical to competing with economic growth. A flawed incentive system can lead to a misuse of human resources, an increase in poverty, and increased economic disparity (Ogujiuba & Adeniyi, 2005). It is not sufficient to use current resources properly; we must also add to them through capital development (Adenuga, 2002).

Developing Nigeria's human capital is crucial, particularly as the globe works towards the year 2030. However, as long as human capital building is not prioritized, this aim would be futile (Afridi & Baloch, 2015). Human capital building is required for Nigeria and Nigerians to be competitive in the skilled and knowledge-based globalized economy of the twenty-first century. "A country is competitiveness in the New International Economic Order (NIEO) is strongly connected to the quality of human capital. Hence human capital formation is undoubtedly the pivot for any meaningful programme of socio-economic development of Nigeria; and indeed of any country" (Ejere, 2011).

It is clear from the above statement that capital development is highly required for a meaningful economic growth and sustainability to exist. In Nigeria, there has been the inability to effectively strategize on how to allocate resources effectively to the education sector in order to enhance economic growth. Despite the fact that Nigeria is blessed with abundant natural resources, we have not been able to attain the peak of development as far as human capital is concerned. Adequate attention must be given to the education sector, because a country with adequate manpower can attain the highest level of development.

The study's main goal is to objectively analyze the relationship between human capital development and economic growth in Nigeria. However, the precise aims are as follows: to research the long-run linkage concerning human capital development and economic growth in Nigeria; and to analyze the influence of human capital development on economic growth in Nigeria.

It is a fact and certainty that if there is a substantial rapport amid human capital development cum economic growth in Nigeria, the government will benefit enormously from the study, particularly economic policymakers in planning appropriate policy measures to undertake in order to further enhance the capability and skills of human capital in Nigeria. Employer of labour will also find the research useful in their human resource department in coming with different policies that will enable organization to increase employee output through skill acquisition and training.

2. Literature Review and Theoretical Framework

2.1 Conceptual Framework

As the global economy shifts towards more knowledge based sectors, skills and human capital development becomes a control issue for policy makers and practitioners engaged in economic development both (OECD 1996). Human Capital development determines the extent of growth of economy of any country this is because; every other inputs of production depend in the human capital for explanation and exploitation. For instance, machine in a factory will remain redundant until it is being put to use by skilled workers for there to be output which will contribute to the growth of an economy of a particular country. Hence, the character of this human capital development rest on formal education and on the job training. As a result, this assessment will concentrate on issues concerning human capital development and economic growth.

Human capital development is acknowledged by developmental economists as a crucial prerequisite and a priceless asset for a country's socioeconomic success. This can only be accomplished by increasing the

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knowledge, skills, and capacities of all citizens via education and training. Human capital refers to a country's human resources' talents and capabilities, whereas human capital creation refers to the process of obtaining and expanding the number of people who have the skills, education, and experience necessary for a country's economic growth and political development (NES, 2002).

Capital is defined in economics as "the factors of production used to create goods or services that are not significantly consumed in the production process, whereas the human element is in charge of all economic activities such as production, consumption, and transactions required to move production to consumers" (Boldizzoni, 2008). This means that human capital is an important production component that contributes value to the manufacturing process (Eigbiremolen & Anaduaka) (2014). In the 1950's, it was discovered that investment on human capital was the primary way to raise an individual wage making it more effective when compared to other production inputs such as land, financial capital and lab our force (Woodhall, 2011).

Human Capital as a term may be traced back to the classical school of thinking in 1776, rather than Fitzsimons' scientific hypothesis (1999). Schultz (1961) identified human capital as a significant factor influencing economic progress. He defined human capital as the stock of productive knowledge and skill held by employees (Eigbiremolen & Anaduaka, 2014). Human capital may be defined as knowledge and abilities ingrained in a human, similar to property (Beach, 2009). Rastogi (2002) defines human capital as an individual's knowledge, competency, attitude, and conduct.

Human capital has also been classified as significant, although the accumulation process is equally vital. This perspective or point of view emphasizes information and skills acquired via educational activities (Fuente & Ciccone, 2002). The third viewpoint is strongly related to the production-oriented view of human capital (Borg, 2009). According to Romer (1990), human capital is the primary source of economic production. According to Rosen (1999), human capital is an investment that people make in themselves in order to boost their productivity.

Furthermore, human capital has been characterized as "a combination of qualities such as education, experience, training, intellect, energy, work habits, trustworthiness, and initiative that influence the value of a worker's marginal output" (Barmanke, 2007). In acknowledgement of the prominence of human capital development, the United Nation Economic Commission for Africa (1999) has described human resources as the knowledge, skills, attitude, physical, managerial effort required to manipulate capital, technology, land and material to produced goods and services for human consumption.

2.2 Theoretical Literature

Since then, the fundamental human capital theory, a modification of the marginal productivity theory, has been the main way of explaining how wages are decided. According to Gary Becker, an American student of Theodore Schultz, human capital regards education and training as important for ability and competence (Becker, 1964). It maintains that wages in the labor market are determined by an individual's knowledge and skill set. It is further argued that individuals make decisions on the education and training they receive as a way of increasing their productivity based on the rapture expectation of return on investment, and that investment in human capital is dependent on the cost of acquiring the skills and the expected returns. According to this theory, "a more educated individual makes it easier for a firm to adopt new technologies and implement them" (Adelakun, 2011).

This theory explains how education increases worker productivity and efficiency by raising their cognitive skill level. Schultz, Becker, and Mincer (1964) proposed a stock in human skills that may be generated by combining natural activities with human capital investment (Baralola, 2000). Examples of such investments include schooling, on-the-job training, and so on. However, the human stock rises in a period only when gross investment exceeds depreciation over time. Education is viewed as "a productive investment in human capital, which the proponents of human capital theory believe is equally or even

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more valuable than an investment in physical capital" (Adelakun, 2011). Human capital theorists have proven that basic literacy increases productivity among low-skilled workers (Adelakun, 2011).

They go on to say that training that requires logical and analytical thinking and offers technical and specialized knowledge boosts the marginal productivity of people in high-skilled professions and positions. The better the provision for a schooling society, however, the higher the national productivity and economic growth (Adelakun, 2011).

2.2.1 Modernization Theory

This theory focuses on how education changes a person's values, beliefs, and conduct. Modernization in places like schools, industry, and the media reveals modern ideals and attitudes. Openness to new ideas, independence from established authority, readiness to prepare for and anticipate future necessities, and an increasing feeling of self and societal efficacy are among the heights. "These normative and attitudinal changes persist throughout the life cycle, permanently affecting the individual's interaction with the social structure," say modernization theorists (Adelakun, 2011). The higher the number of individuals exposed to modernisation, the faster economic progress. Thus, educational expansion sets in action the necessary building pieces for a more productive workforce and a more sustainable economy through its influence on individual values and rewards.

2.2.2 The Dependency Theory

This theory evolved from Marxist conceptualizations based on the dynamics of the global system, which structure conditions for economic change in both the core and periphery of the global economy. As a result, developing countries rely on developing countries for skills and experience in the manufacturing process (Adelakun, 2011). Certain aspects of global governance, such as state physical strength, regime centralization, and foreign political integration, may contribute to economic progress in emerging countries.

2.3 Empirical Literature

Several studies have been conducted in Nigeria and overseas to assess the relevance or value of human capital development in achieving economic growth. Some of these research appears to agree that the development of human capital leads to economic growth. Adenuga (2006) used Nigerian data from 1970 to 2003 to investigate the link between economic growth and human capital development. They used co-integration analysis with the Error Correction Mechanism and discovered that investment in human capital through the availability of educational infrastructure accelerates economic growth. This study finds that without human capital development, no economy will see significant economic growth.

Sankay, Ismail, and Shaari (2010) evaluated the influence of human capital development on Nigerian economic growth from 1970 to 2008. This association was discovered using the Johansen co-integration approach and vector error correction analysis. The following core macroeconomic variables are used to proxy human capital development: "real gross domestic product, real capital expenditure on education, real recurrent expenditure on education, real capital stock, total school, enrolments, and labour force. According to the findings, human capital development has a major influence on Nigeria's economic growth".

Dauda (2010) investigated the importance of human capital in Nigeria's economic development using the human capital model of endogenous growth proposed by Mankiw, Romer, and Weil (1992). A range of analytical methods were used in the work, including unit root tests, cointegration tests, and error correction mechanisms (ECM). Empirical evidence suggests that there is a long-run link in Nigeria between labor force, physical capital investment (proxied by real gross domestic capital formation), human capital creation (proxied by enrolment in educational institutions), and economic growth. As a result of the findings, the policy conclusion is that the government should prioritize human capital development.

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Substantial efforts should be geared towards boosting investment in human capital in order to achieve the growth that will lead to economic development. Above all, education should be prioritized in Nigeria's development efforts. This would drive the economy's productivity up.

Lawal & Wahab (2011) investigated the link amid education and economic growth in Nigeria. The study emphasized that investing in quantity and education quality will cause an upsurge in human capital, resulting in growth and long-term economic development. The study's model was estimated using the OLS approach revealed a clear association between education investment and economic growth in Nigeria. The growth model revealed that including more than one economic sector and taking technology into account will result in spillover across sectors.

Oluwatobi & Ogunrinola (2011) investigated the link concerning the government's human capital development initiatives and Nigeria's economic growth. It aims to investigate the impacts of government recurrent and capital expenditures on education and health in Nigeria, plus their repercussions on economic growth. The study's data came from secondary sources, and the enhanced Solow model was also utilized. The findings reveal that government recurrent expenditure on human capital development is positively associated to the level of real output, but capital expenditure is adversely related to the level of real output. The report suggests that the nation's capital spending on education and health be channeled appropriately to achieve economic growth.

Akintunde & Satope (2013) investigated the impact of health investment on economic development from 1977 to 2010. The error correction process was used, and a long-run association between health spending and economic growth was found. A positive association between health spending and economic growth was also found, and the report suggested that investing in health might enhance economic growth if the government invests more in human capital development.

Ogungbenle, Olawumi, and Obasuyi (2013) conducted an empirical study of "the link between life expectancy, public health spending, and economic growth in Nigeria". The data was analyzed using a VAR model. In Nigeria, no bidirectional correlation amid life expectancy cum public health spending exists in line with the study. Furthermore, a bidirectional connection concerning public health spending cum economic growth was discovered, although no bidirectional causality was discovered concerning life expectancy cum economic growth. The study advocated that in order for Nigeria to enjoy sustainable economic progress, initiatives to boost citizens' life expectancy be implemented. This may be accomplished by increasing government spending on education and health.

Enefiok & Sunday (2014) investigated the role of human capital development and economic empowerment in Akwa Ibom State's socioeconomic growth. In order to acquire data for the study, a historical and descriptive technique was used. According to the study, from 1999 to 2012, the government, as the primary engine of the economy, had a favorable influence on the training and retraining of personnel in the public sector. The research advised that the state government conduct intensive training of domestic engineers in the fields of oil and gas.

Aduralere & Olufemi (2015) set out to investigate the influence of health spending on Nigerian economic growth. To test for the presence of a long-run link between the variables, the study used OLS regression analysis, the ARDL method, and the ECM technique. The study discovered that gross capital creation and total health spending have a positive influence on economic growth in Nigeria, but life expectancy has a statistically negative impact on growth, contrary to theoretical expectations. The report advised that the government stimulate savings and investments in the economy, boost expenditures on health care, enhance labor productivity, and prioritize concerns of life and property protection in order to prepare the path for growth and development.

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Omotayo (2015) explored the association between education and good health care services and Nigerian economic growth. The OLS technique was used in the study. According to the findings, a 1% rise in GDP is accompanied by a 22% growth in human capital. This assumes that increasing spending on education and health will result in a rise in GDP. The estimated coefficient of multiple determination of 0.80, indicating that the independent factors explain 80% of the variance in the dependent variable, indicates that the independent variables explain 80% of the variation in the dependent variable. The findings have significant implications for Nigerian educational and health policies. The report advised that investment in these sectors be made to improve the level of education and health in order to expedite the country's economic growth.

Jaiyeoba (2015) conducted an empirical study on the link between education, health, and economic growth in Nigeria. The Johansen cointegration and OLS approaches were used by the author. However, empirical studies suggest that "there is a long-run link between government spending on education and health and economic development". The study also identified a high impact on education and health policy, which are hotly debated in the country. As a result, the report advises that the government implement policies aimed at large investment in the education and health to accelerate growth.

Anyanwu, Adam, Ben & Yelwa (2015) investigated the long-run and short-run effects of human capital development on Nigerian economic growth. The ARDL framework was used by the authors. The study found cointegration between the variables under consideration, and the long-run model revealed that the bulk of the human capital development indicators had a favorable influence on economic growth. Their effects, however, were statistically negligible. Based on the study's results, the government should spend more in human capital development and prioritize funding for the health and education sectors, which have the most potential for growth in Nigeria.

Under the OLS framework, Ojewumi & Oladimeji (2016) investigated the influence of education capital and recurrent spending on economic development. The study found that the two components of health spending had a negative influence on economic development. The study advised that the high degree of corruption in the educational sector be controlled to guarantee that monies earmarked for education, particularly capital investment in the sector, be used wisely. Furthermore, government at all levels in Nigeria should raise both capital and recurring spending to enhance Nigeria's educational sector in accordance with the United Nations' suggestion.

Inimino, Tubotamuno, and Shaibu (2017) used Cointegration, ECM, and the Granger causality test to study the impact of education spending on economic growth in Nigeria. The co-integration test demonstrated that the variables had a long-run connection. Government capital education spending and government recurrent education spending have a strong correlation with economic growth. The pairwise Granger Causality analysis revealed a unidirectional relationship between government capital education spending and real GDP, government recurrent education expenditure and real GDP, and gross capital formation and real GDP. The report proposed that the government invest in capital projects in the educational sector, such as the construction of high-quality classrooms and labs, as well as the acquisition of teaching and learning aids such as computers, because they have a multiplier impact on the economy.

Effiong (2020) investigated the essentiality of investing in education and health so as to propel growth in this Covid-19 era. The study utilized time series data that were analyzed using Bounds test for cointegration and error correction mechanism. The Bounds test revealed "evidence of a long run relationship between government expenditure on education and health and economic growth in Nigeria". The error correction mechanism revealed that 58.38% of the distortions in the equilibrium is corrected annually. The paper therefore recommended the need to invest massively on the education and health

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sector so as to make provisions for the necessary infrastructures that could be required for their smooth operations in this period of global pandemic and beyond.

Dawud (2020) also examined "the impact of human capital development on economic growth in Ethiopia". The study utilized time series data for the period 1980 – 2018 and the data were analyzed using cointegration test and vector autoregressive (VAR) model. The result indicated that both ratios of government expenditure on health and education to GDP, labour force and policy change dummies have positive impact on Ethiopian economy. However, Gross primary school enrolment shows a negative relationship with economic growth during the study period.

Momoh (2021) explored the sway of human capital development on economic growth in Germany from 1991 to 2018. With the OLS and cointegration analysis being deployed, the result revealed a long-run relationship between human capital variables and economic growth; with a positive and significant effect being recorded. According to the report, in order to improve economic growth in Germany, the German government needs guarantee that enough resources are given for human capital development.

2.4 Human Capital Development in Nigeria

Education is one of the earliest social services to be introduced to Nigeria. Initially, the majority of primary and secondary educational institution were established and run by missionaries. A relatively few were government owned. (This education system was more readily accepted in the south). Education is very important for sustaining and developing the people. With education people area able to endure, mature; acquire experience, wisdom and capability communities and nation. Nigerian is the most populous black action with about 168 million people, 30 million of which are students (Acemogh, 1998).

Education is shared responsibility of the three tier of government; the federal government is primarily responsible for tertiary institutions, while state government is responsible for secondary school, education, though there are some federal funded secondary schools. Primary education is a local government responsibility is a local government responsibility, but they exist also a national primary education commission (NPEC) that draws draw curriculum for primary schools. The formal education system Nigeria is 6-3- 3-4 system. The basic education typically begins at the age of six and comprising six years of primary school and three years of junior secondary is very mandatory. Beside there is three years of secondary education and four year of higher education (Ibok and Ibanga, 2014).

Primary education provides children with basic reading, writing and mathematical skills along with an elementary understanding of such subject as history, geography, natural science. The value of school enrollment in Nigeria was 40.84 in 1970. The trend steadily increases to 110 in 1980 and began to decline. Since then, there has been a steady increase in primary school enrollment. Secondary education completes the provision of basic that begin at the primary level, and aim of laying the foundation for lifelong learning and human development by offering more subject or skill oriented instruction using more specialized teachers. The trends have been fluctuating same with secondary school enrolment. In 1 970s the value of school enrolment at secondary school level was 4.41 and during the fourth decade it increased to 43.84. Tertiary education normally requires as minimum condition for admission, after the successful completion of education at the secondary level. The percentage value of school enrolment in Nigeria during the first decade (1970s was 0.74). In the past four decade the value has reached a minimum point of 10.41. This shows that there has been a steady increase in tertiary school enrolment till date. In the same vein, the number of school enrolment has increased tremendously at all level of school enrolment (CBN 2006).

The expansion of the education system was accompanied by structured defects inefficiency and ineffectiveness which affects Nigerian's level of human capital development. There is also problem of inadequate funding and poor infrastructure and facilities for learning. Nigerian's education system tends to produce more graduate which lacks the technical skills for employment than those the economy require to

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remain vibrant. Therefore, it is important to have graduates with complementary skills in order to build a sustainable economic growth.

2.5 Human Capital Formation

Galbraith (2000) observed "we now get the large part of our industrial growth not from more capital investment but from investment in men and improvements brought about by improved men", unless these developed economic spread education, knowledge, technical knowhow are raise the level of skills and physical efficiency of their people, the productivity of physical would have been reduced at this moment.

To Becker (1988), in the lack of significant investment in human capital, physical capital usage will be slow, resulting in development retardation. "Economists such as Harbison, Schultz, Kuznets, Kendrick, and Denison observed that one of the important factors contributing to the rapid growth of the American economy is the increasing allocation of outlays for education, which results in a significant improvement in the level of human capital formation" (Adelakun, 2011).

Although the accumulation of physical capital is vital in the process of a country's economic growth, it is becoming increasingly clear that the expansion of tangible capital stock is heavily dependent on human capital production and must be given proper consideration (Afridi & Baloch, 2015). Countries such as Nigeria are suffering from low rates of economic growth, which is partly due to insufficient investment in human capital, resulting in a lack of critical skills very much needed for the industrial sector. This human capital formation aims to solve this problem by developing necessary skills in man as a product resource and also providing gainful employment. To avoid economic backwardness and to instill the capacity and incentive for advancement, it is critical that individuals enhance their level of knowledge and skills. In the lack of adequate development, Nigeria's human element quality must be attained if they are to progress (Adenuga, 2002).

2.6 Brain Drain and Economic Growth

Tadaro and Smith (2011) submitted that "education plays a powerful role in the growing problem of the international migration of high level education workers the so called brain drain; from poor to rich countries". This is partially true in the case of scientists, engineers, academicians, physicians and many thousands of who have been trained in home country institutions at considerable social cost only to reap benefit from and contribute to the further economic growth of the already affluent nations.

Peare (1992), posited that brain drain can be described as the migration of education and skilled labour from poorer to richer countries. "Education or skill which represents investment in human capital is usually cheap to acquire in poorer labour abundant countries since its provision is usually a labour intensive activity". Those with the skills or education the move to developed countries where the return of their human capital in higher, such immigration is often encourage by laws and institution of factor as must countries look favourable on immigration in those with skills often than those without education and training constitutes the more typical form capital that makes migration a potentially important source of economic growth. Host countries like the United States benefit enormously from a large number of scientists and engineers fleeing Europe before World War II; as it is benefiting today from the talented people migrating from countries such as India, China and several African countries (Adeyemi and Ogunsola, 2014).

As a result of the brain drain of highly qualified individuals, developing countries (like Nigeria) lose considerable tax income. Most developing countries, such as Nigeria, are desperate for valuable professionals and personnel to develop their workforce, but ironically, several bright, highly skilled people who contribute significantly to the gross domestic product of their host countries are from Africa's developing countries. The decline in Nigerian economic growth may be attributed to a number of issues, including a lack of investment, institutional failure, violent crime, multi-dimensional corruption, and inadequate infrastructure such as health, education, and other amenities that make life worthwhile.

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Natural resource exports alone cannot sustain long-term economic growth in Nigeria. Professionals migrating out of Nigeria include people with technical competence, as well as entrepreneurial and management abilities. People with knowledge fuel economic progress in the new world order. The most brilliant citizens should be in charge of the people.

2.7 Investment in Human Capital Development

According to Gaibriath (2000), he affirms that industrial growth is a function of investment on human capital development rather than physical capital and it becomes more productive if a country possesses efficient human capital. Meier and Rauch (2000) posited that the development in human capital is premised on first, building skills and then providing productive employment for non-utilized or underutilized manpower. These relates to investment of man in form of education and training which constitute the process under which human capital is accumulated.

Schultz (1960) categorized and developed human resources into six ways:

i. Health facilities and services; this involves all expenditures that affects the life expectancy, strength and stamina and vigor and vitality of the people.
ii. On training; which include all type of apprentice organized by firms.
iii. Formally organized education at elementary, secondary and tertiary level.
iv. Study programmes for adults that are not in agriculture.
v. Factor mobility: It involves migration of individual and families to adjust changing job-opportunity.
vi. Expertise: transfer or importation of technical assistance, expertise and consultants.

Investment in human capital, in its broadest definition, refers to spending on health care, education, and social services in general. It is widely acknowledged that the expansion of a nation's tangible capital stock is heavily reliant on human capital, which is the process of expanding the knowledge, skills, and ability of all citizens.

2.8 Challenges and Limitations of Human Capital Development

Human capital developments are faced with some challenges that impede the smooth running of human capital planning and implementation in Nigeria (Adamu, 2002). Some of which include:

i. The problem of misappropriation of funds by the various educational sectors.
ii. Poor funding and in adequate infrastructure and learning facilities.
iii. Poor monitoring of the various facilities.
iv. Lack of information that is seen in the case where employer doesn't have adequate information of the employees.
v. Lack of institutional linkage among various unit and department responsible for manpower planning in Nigeria.

3 Research Methodology

3.2 Specification of Model

In order to appropriately capture the effect of human capital development on economic growth in Nigeria, this study employ augmented Solow human capital model adopted from Oluwatobi and Ogunriola (2011) as originally enshrined by Makiw, Romer and Weil (1992).
The augmented Solow model is therefore specified as

$$Y=AK^{\alpha}(hL)^{\beta} \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (1)$$

Where
Y = output level

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K = physical capital
h = level of human capital development
L = Labour force
A = Total Factor Productivity;
α = Elasticity of capital input with respect to output
β = elasticity of labour input with respect to output

In econometric form, the model is specified as follows;

$Y=AK^{\alpha}(hL)^{\beta}$ - - - - - - - - (2)

The model is not linear so in order to transform it to a linear model; we introduce log forms which would transform it to an augmented model form;

$LogY = \alpha_0, + \alpha_0 LogK + \beta LoghL + LogGREE + LogGREH + logLF + U$ - (3)

Where
Y = output level or economic growth is proxy by Real gross domestic product (RGDP)
K = stock of physical capital is represented by gross total capital formation
hL = total stock of human capital is a product of primary and secondary school enrolments (h) and total labour force (L).

Therefore, the model for this study can be rewritten specifically as:

RGDP = f (GREE, GREH, SE, LF) - - - - - (4)

$RGDP = \alpha_0 + \alpha_1 GREE + \alpha_2 GREH + \alpha_3 SE + \alpha_4 LF + U_t$ - - - (5)

Where PSE is proxy as a foundation for (School Enrolment)

Equation (4) would be transformed into equation (5) in order to linearize the non-linear variable.
$1nRGDP + \alpha_0 lnGREE + \alpha_2 1nGREH + \alpha_3 lnSE + \alpha_4 lnLF + U_t$ - - - - (6)

Where
RGDP = Real Gross Domestic Product
GREE Government Recurrent Expenditure on Education
GREH = Government Recurrent Expenditure on Health
PSE = Primary School Enrolment
SE = School Enrolment
GCF Gross Capital Formation as proxy for stock of physical capital
LF = Labour Force
U_t = Erorr term

It is predicted that $\alpha_0, \alpha_1, \alpha_2, \alpha_3, \alpha_4 > 0$. This means the parameters have a positive relationship with GDP. A unit change in either of the independent variables will bring about a proportionate change in the GDP ceteris paribus. A positive sign is expected from the coefficient of the relationship between GDP and GREH, GDP and GREE, GDP and SE, and GDP and LF.

3.3 Method of Data Collection

The data used for this research is secondary data. They exist in the form of published data and can be obtained from internet, libraries, public offices etc. The data used for the study were sourced from Central Bank of Nigeria (CBN) statistical Bulletin, and World Bank Development Indicators (WDI). The data used

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as earlier defined include GREE, GREH, LF, GDP, and SE. The LF, GCF and SE were sourced from World Bank development indicator while GREE, GREH and GDP were obtained from the CBN.

3.4 Estimation Techniques

The technique used in this study is the co-integration and error-correction modeling technique. To estimate the co integration and error-correction, three steps are required: these are testing for order of integration using ADF and Phillip Perron, the co-integration test (Johassen co-integration) and the error correction estimation. To test the hypothesis, it is necessary to ensure that some tests are carried out to make adequate allowance for the dynamic relationship, non-stationarity, and spurious regression problems.

3.4.1 Unit Root Test

The unit root test involves testing the order of integration of the individual series under consideration. Several procedures have been developed for the test of order of integration including the choice for this study: Augmented Dickey-Fuller (ADF) test due to Dickey and Fuller (1979, 1981), and the Phillip-Perron (PP) due to Phillips (1987) and Phillips and Perron (1988). "Augmented Dickey-Fuller test relies on rejecting a null hypothesis of unit root (the series are non-stationary) in favor of the alternative hypotheses of stationarity".

3.4.2 Co-integration Test

This is the testing of the presence or otherwise of co-integration between the series of the same order of integration through forming a co-integration equation. The basic idea behind co-integration is that "if, in the long-run, two or more series move closely together, even though the series themselves are tended, the difference between them is constant". It is possible to regard these series as defining a long-run equilibrium relationship, as the difference between them is stationary (lyoha, 2004). "A lack of co-integration suggests that such variables have no long-run relationship: in principal they can wander arbitrarily far away from each other" (Dickey, 1991). We employ the maximum-likelihood test procedure established by Johansen and Juselius (1990) and Johansen (1991). Specifically, to determine the number of cointegration vectors, Johansen and Juselius (1990) suggested two statistic tests, the first one is the trace test (λ trace). It tests the null hypothesis that the number of distinct co-integrating vector is less than or equal to q against a general unrestricted alternatives q = r. The Second statistical test is the maximum eigenvalue test (λ max). "The test concerns a test of the null hypothesis that there is r of co-integrating vectors against the alternative that r + 1 co-integrating vector".

3.4.3 Error Correction Model

To detect the existence of the possibility of our model to adjust in order to achieve a long-run equilibrium, the error correction model (ECM) is deployed. The ECM will portray how fast the short-run distortions are corrected to attain long-run equilibrium. The error correction term (ECT) in this case must be negative and at the same time be statistically significant for such correction to take place. If the ECT is high, it reflects that the model adjusts faster to establish a long-run equilibrium compared to when it is small.

4 Presentation and Analysis of Regression Results

4.1 Unit Root Result

From the econometric theory standard, inference does not apply to regression that contains non-stationary time series. We therefore conducted unit root test in order to arrive at conclusions concerning the integration properties of the time series used in this model. Table 4.3 displays the unit root test result. The decision rule in the ADF test is to reject the null - hypothesis if the ADF test statistics of any of the variables is greater than the critica1 values of the 1%, 5% and 10% level of significance.

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Table 4.1: Augmented Dickey Fuller Unit Root Test Results

Variables	ADF Statistic	Critical Value (1%) Level	Critical Value (5%) Level	Critical Value (10%) Level	Order of Integration
GDP	-5.4198	-3.7696	-3.0049	-2.6422	I(2)
GREE	4.3162	-3.8085	-3.0207	-2.6504	I(0)
GREH	3.5435	-3.8085	-3.0207	-2.6504	I(0)
SE	-4.0680	-3.7696	-3.0049	-2.6422	I(I)
LF	-5.3309	-3.7696	-3.0049	-2.6422	I(2)

Source: Researcher Computation.

The results of the ADF test for unit root in the time series are presented in able 4.1. Column 1 shows the variables as already defined. Column 2 shows the value of the ADF statistics at which the variables became stationary at levels, at first and second difference as the case may be. Columns 3 to 5 shows the critical values at 1%, 5% and 10%, while column 6 shows the conclusive order of integration of the variables. As shown in the table, (GREE) and (GREH), become stationary at level, at all levels except GREH which becomes stationary at 5% and 10%. (SE) become stationary at first difference at all levels while gross domestic product (GDP) and (LF), become stationary at second difference at all levels of significant.

4.2 Co-Integration Test

Table 4.2: Johansen Co-Integration Test

No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None *	0.8394	102.7353	69.8189	0.0000
At most 1*	0.7227	60.6662	47.8561	0.0020
At most 2*	0.5723	31.1667	29.7971	0.0346
At most 3*	0.3392	11.6300	15.4947	0.1756
At most 4	0.0873	2.1005	3.8415	0.1473

Sources: Researcher computation.

The relationship between macroeconomic variables in the long run is very important for the purpose of policy-making. If variables have a causal relationship that allows them to move in perfect harmony in the long run, policy making and implementation become less worrisome. In the light of this, a co-integration test was conducted to determine if this type of relationship exists amongst the variables under consideration in this study, and the results produced are shown in Table 4.2.

The table reports the test statistics for determining the co-integrating relations in the model. The results indicate that the null hypothesis of no cointegration among the variables ($r = 0$) is rejected at the 5 percent level by the trace-statistic and maximum Eigen-statistic. Similarly, the hypotheses of at most one co-integrating relation ($r < 1$) and two co-integrating relations ($r < 2$) are rejected at the 5 percent level by the trace-statistic and maximum Eigen-statistic. Three co-integrating relations ($r < 3$) are rejected at the 5 percent level by the trace-statistic and the maximum Eigen-statistic. Four cointegrating relations ($r < 4$) are rejected at the 5 percent level by the trace-statistic and maximum Eigen-statistic. From table 4.2 above, the results of the maximum Eigen values and trace statistics indicate that the variables are co-integrated since the results reveals the existence of at least 4 co-integrating vectors among the variables of interest in the model hence they possess high probability of converging in the long run which augurs well for policy making.

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We began by estimating the model which incorporates the appropriate lagged transformations in the variables as shown in Table 4.1.

4.3 Ordinary Least Square Results

Table 4.3 presents the OLS results of the variables in objective 1 that influences GDP. The equation was experimented using linear function. The OLS result for the model was generated using E-views 7.0 econometric software.

Table 4.3: OLS regression result

Variable	Coefficient	Std. Error	t-statistic	Probability
C	-28334.4800	9676.2750	-2.9282	0.0083
GREE	5.7895	45.4028	0.1275	0.8998
GREH	0.0339	0.0341	0.9941	0.0320
SE	0.0003	0.0005	0.6286	0.0367
LF	0.00 1258	0.0005	2.7337	0.0 128
R-squared	0.8492	Mean dependent var		34778.570
Adjusted R-Squared	0.9631	S.D. Dependent		15983
F-statistic	157.5447	Durbin-Watson stat		1.374
Prob(F-statistic)	0.0000			

Source: Researcher computation.

Given the result represented in table 4.3 above, our analysis was based on linear function. The R^2 of the model is 0.849239, showing that the explanatory variables (GREE, GREH, SE and LF) explains about 84.9% of the dependent variables (GDP) and the remaining 15.1% is explained by variables in the error term. The value also implies that the model is a good fit for the relationship because the R^2 is large. According to Gujarati (2009), if R^2>DW, then the regression is a spurious one, otherwise, it is not spurious and hence can be used for policy decision making. From the result in table 4.3, DW 1.374095, and R^2 0.849239. Thus, R^2< DW, therefore our model is not spurious and it's fit for policy making.

The intercept of GDP when all explanatory variables are held constant is -28334.48 and it has a negative significant effect on GDP. The coefficient of Government Expenditure on Education (GREE) shows that with a unit increase in (GREE), GDP will increase by 5.789 %, this shows statistically not significant result though the result conforms to our a priori expectation.

The coefficient (GREH) helps us to understand that when government expenditure on health increases by a unit, GDP will increase by 0.033889, these shows statistically significant result and the result conform to our a priori expectation.

The coefficient of school enrolment (SE) shows that, with a unit increase in (SE), GDP will increase by 0.000309, this shows statistically significant result and the result conform to our a priori expectation.

The coefficient labour force (LF) tells us that when there is a unit increase in the (LF), (GDP) will increase by 0.00 1258, this shows statistically significant result and the result conform to our a priori expectation.

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Table 4.4: Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-743.2488	1700.2790	-0.4371	0.6679
D(GDP(-1))	0.6506	0.1990	3.2700	0.0048
GREE	13.2795	12.7049	1.0452	0.3115
GREH	-0.0123	0.0092	-1.3367	0.2000
D(NSE)	0.0002	0.0002	1.0702	0.3004
D(LF)	0.0010	0.0020	0.4795	0.6381
ECM(-1)	-0.4273	0.0948	-4.5074	0.0040
R-squared 0.7854	Adjusted R-squared 0.7049	F-statistic 9.7590		Durbin-Watson stat 2.0753

Sources: Researcher computation.

The results of the over-parameterized model presented in Table 4.4 show that the error correction term i.e. ECM (-1) is negative and significant which is consistent with econometric literature. The R2 signifies that all the explanatory variables in the model accounts for 78.5% total variation in GDP while the remaining 21.5% is attributed to the white noise residual. This shows an impressive overall goodness of fit as only about 21.5% of the systematic variation was left unaccounted for but attributed to the error term.

Examining the F-statistic of 9.75 shows that the model is significant at the 5% level of significance since it exceeds the critical f value (4, 20) = 2.87. Thus the hypothesis that the slope coefficients are simultaneously significantly different from zero is not rejected, implying that the overall model is significant in explaining the variations in (DGDP). The Durbin Watson statistics of 2.07 reveals the absence of serial correlation in the short run. Given the soundness of goodness of fit as analyzed above, we can therefore rely on the estimated parameters of the variables.

From the ECM result, we can therefore account for the speed of adjustment of the short run dynamics back to its long run relationship by dividing the coefficient of the ECM by 1. Hence, 1/ 0.427308 = 2.34. The calculation shows that it will take about 2.3 years for variations in the short run to adjust back to long run equilibrium if there exist a shock in any of the variables. In relation to our research hypothesis, given the result in table 4.4 some of our explanatory variables (GREH, SE, LF) are statistically significant in explaining variations in GDP. With our research hypothesis as: there is significant impact of human capital development on economic growth in Nigeria.

4.4 Pair-Wise Granger Causality Results and Objective Two Testing

The Granger causality test was used to determine the nature and direction of causality between real gross domestic product (GDP), government expenditure on education (GREE). Table 4.6 presents the Granger causality result. We reject the null hypothesis if the probability of our F-statistics is less than 0.05.

Table 4.5: Granger causality test result

Null Hypothesis:	Observations	F-Statistic	Probability
GREE does not Granger Cause GDP	23	3.39898	0.0559
GDP does not Granger Cause GREE		7.03526	0.0055
GREH does not Granger Cause GDP	23	2.57188	0.1041
GDP does not Granger Cause GREH		4.26605	0.0304

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HCD does not Granger Cause GDP	23	1.61401	0.2266
GDP does not Granger Cause HCD		1.4124	0.2693
LF does not Granger Cause GDP	23	3.21833	0.0638
GDP does not Granger Cause LF	23	5.78437	0.0115

Source: Researcher Computation.

The results indicate a bidirectional causality between government expenditure on education (GREE) and gross domestic product (GDP) with causality running from government expenditure on education (GREE) to gross domestic product (GDP) and causality running from gross domestic product (GDP) to government expenditure on education (GREE). A unidirectional causality exists between government expenditure on health (GEH) and gross domestic product (GDP) to government expenditure on health. No causality exists between human capital development(HCD) and gross domestic development (GDP) and there exist a bidirectional causality between labour force (LF) and gross domestic product(GDP) and causality running from gross domestic product(GDP) to labour force (LF). Since our granger causality test revealed that government expenditure on education (GREE) granger causes gross domestic product (GDP) and gross domestic product granger causes government expenditure on education.

5 Summary, Conclusion and Recommendation

5.1 Summary of Findings

This study empirically investigates the impact or effect of human capital development on economic growth in Nigeria. The study revealed that there is a positive long run relationship among school enrolment, labour force, government expenditure on education and health and economic growth. The education sector needs increased government funding in order to enhance their role in the growth process. Also there is need for more infrastructures and on periodic training of staff.

The analysis also reveals that the issue is not just funding education but lack of basic functional policy and interest in the development of appropriate human capital that can bring about economic growth in Nigeria. Successive government and policy have not placed much premium in the value of education and the development of human capital for Nigeria's economic growth and as such did not bother to provide adequate funding to run the system. This analysis shows that there is a relationship between human capital development and economic growth.

5.1.1 Policy Implementation

School enrolment, government expenditure on health, labour force and government expenditures on education contribute positively to economic growth in Nigeria. Government expenditures was found to contribute more to growth than its counterpart which means that expenditure on education contributes greatly to economic growth of a country. The implication is that government should consider investment spending in education sector as critical to enhancing quality of education, efficiency of labour, increasing productivity and by implication, economic growth. This finding indicates that there is need for continuous improvement in infrastructure in the educational institution in the country in order to enhance the effectiveness and efficiency in the sector. Adequate policy should be implemented to make education accessible to every citizen. That means that the problem of weak foundation at all level of education should be addressed properly.

However, the result from labour force, government expenditure on health and total school enrolment which is positive also indicates that Nigeria, through its free education and free health program in some states has contributed tremendously to economic growth in Nigeria. Thus, any policy in human capital must be supportive to economic development. Put differently, the nature and structure of human capital development must be provided in tune to development goals and policy. From the analysis, shortage of appropriate skills and knowledge implied a limiting factor to economic development and this ought to be

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bridged through careful design and planning of education, health programs and increasing labour force which will boost a greater level of output in the economy.

5.2 Conclusion

The researcher has explored empirically the relationship between economic growth and human capital development in Nigeria, using the co-integration and error correction method. It reveals that investment in human capital in the form of education and capacity building through training, skills, impact positively on economic growth. The regression estimates show that all the independent variables; gross total capital formation, total stock of human capital and total government expenditure on education and health are statistically significant in the determination of the level of the economy's output. This implies that they cannot be ignored if we must achieve economic growth and development in Nigeria. Moreover, the results indicate that all the independent variables exhibit positive relationship with output level.

Consequently, government and policymakers should as a matter of urgency give high priority to human capital development. Nigeria should reposition its effort in building and developing human capacity through adequate educational funding across all levels and making her manpower relevant in the highly competitive and globalized economy through a structured, well-funded and strategic planning of her educational institutions.

5.3 Recommendation

In view of the current economic situation in the country, this study hence recommends the following policies:

i. The government should continue to encourage primary, secondary and tertiary enrolments as this effort will add up to improve the low literacy level through free and compulsory Universal Basic Education (UBE).

ii. The government should provide quality and qualitative education by providing the necessary educational infrastructures pay attractive salaries and bonuses to teachers and lecturers so as to avoid brain drain.

iii. The free Universal Basic Education (UBE) and health care programmes established by the Federal and State Governments should be improved upon and sustained. Also an effective reform is required to guide the disbursement and control of the UBE funds for capital projects.

iv. Better infrastructural facilities should be provided in existing school and hospital, while new educational and research based institutions should be established to provide quality education as well as carryout periodic upgrade and maintenance of existing facilities.

v. The government should adopt planned strategies in the education and health sector as highlighted in the NEEDS documents, as well as provide periodic reports of progress made at each stage.

vi. The government should increase budgetary allocations and ensure more funding channels to the education and health sector. At least the government should adopt the 10% bench mark recommended by NEEDS.

vii. The government should encourage private sector to increase participation in the provision of advance and technology based educational facilities to the people. There should be provocative government – private sector partnership in the areas of research funding.

viii. There is an urgent need for a concerted effort in the parts of individual, communities, government and partners interested in the provision of qualitative education and health care delivery in

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developing nations, to put in place workable structures to alleviate the problems facing both sectors, on the short and long run respectively.

ix. In the short term, provision the Good HMO's ICT centers, research incubation centers that are adequate, accessible, available affordable and user friendly as well as good transportation network, good roads, affordable housing and portable water, should be provided in other to preserve the lives of our educated and skilled labour, thus increasing the life expectancy.

x. In the long term, government should improve the socioeconomic standard of the people, ensure women empowerment and education of women and ensure full access to information and services that will have the target impact on human capital development in Nigeria.

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