Human Capital Development and Nigeria Economic Performance, 1990-2019

Emmanuel Nathan
Department of Economics, Faculty of Social Sciences
Niger Delta University, Wilberforce Island, PMB 071, Yenagoa, Bayelsa State, Nigeria
E-mail: nathanemmauel98@yahoo.com

&

Endurance, Keyamo
Department of Banking and Finance, School of Management Science
Federal Polytechnic, Ekowe, Bayelsa State, Nigeria
firstclasskeyamo@yahoo.com

Abstract

It is a truism that the expansion of a country's human capital in all of its guises is essential to the nation's overall progress and development. In point of fact, there is a general agreement that if the developing world is going to achieve major economic growth, the governments of those countries need to make an effort to build up their human capital. This study looks at the link between the growth of human capital and the expansion of the economy in Nigeria between the years 1990 and 2019. Investments in education and healthcare, as well as the average life expectancy of Nigerians, were used as proxies for human capital development, whereas real gross domestic product was used as a measurement of economic growth. The data for the variables were estimated using the autoregressive distributed lag (ARDL) estimation approach. ARDL stands for autoregressive distributed lag. The findings indicate that expenditures made in areas such as education and healthcare have, both in the short and long terms, an effect that is both favourable and materially significant on real GDP. In particular, in the short term, parameter estimates for investments in education (IE) show a value of 5.130166 and a p-value of 0.0197, whereas parameter estimates for investments in health (IH) show a value of 0.595365 and a p-value of 0.0020. Both education and health care investments have long-term coefficients that are 4.235273 and 0.491511, respectively, with p-values that are 0.0273 and 0.0004, respectively. As a result, the paper suggests that additional funding should be allotted to education and healthcare services in Nigeria in order to increase the proportion of skilled workers, the proportion of active workers, the proportion of increased output, and the proportion of increased life expectancy among the population.

***Keywords**: Human capital, life expectancy, economic growth, Nigeria*

1. Introduction

Due to the fact that no nation can be entirely managed by machines, human people are at the core of all economic operations that take place across the world. It is rather surprising that the majority of economic researchers are of the opinion that the significance of the development of human capital to the expansion of a nation's economy cannot be overstated. According to Paul, Akume, and Etim (2017), the idea of human capital development may be defined as the process of acquiring and increasing the number of people who have the skills, education, and experience that are essential for the socio-economic and political growth of any nation. Consequently, the development of human capital is inextricably tied to investments made in man and his growth as an imaginative and productive individual (Jhingan, 2012).

The process of empowering individuals can lead to the creation of human capital since it is anticipated that this will lead to the promotion of dynamic involvement and, from this vantage point, may be seen as a key source of economic growth. A great number of industrialised nations have made major advancements in terms of their levels of production and technical growth by utilising their human capital. Despite the fact that more developed nations have come to terms with the concept of using human capital, many less developed nations have not yet come to terms with the idea that human capital may be used as a significant driver to expedite the development of an economy of higher quality. Many developing nations, particularly those in sub-Saharan Africa, have not yet reached their full potential in terms of the amount of money they spend on the component of their economy known as human capital, which is responsible for enhancing the performance of their economy.

There is no doubt that the relatively low levels of government spending on human capital development in Sub-Saharan African countries have contributed enormously to a host of challenges. These challenges range from low levels of academic delivery, which ultimately lead to personnel in the human resource sector that is inadequately equipped, to pitiful infrastructure in the health sector (Ragan and Lipsey, 2005). Less developed nations of the world are typically characterised by low literacy rates, inadequate health care systems, low per capita incomes, gender imbalances, and poor living standards. Less developed nations also tend to have less educational opportunities for their citizens. In addition, because of the low amount of money spent by the government on the education and health sectors, there is an incredibly inadequate amount of the necessary infrastructure to support the growth of human capital. As a result of the low level of human capital progress, the potential for individual productivity is hindered, which in turn leads to a wide range of social and economic issues.

These issues include extreme poverty and unemployment in the society, both of which have reached an all-time high in a number of less developed countries, particularly those in Sub-Saharan Africa. On the other hand, countries that have very well-developed human capital enjoy quite a number of benefits, including a lower overall rate of poverty, equitable distribution of income and wealth, significantly increased employment opportunities, gender parity, and a greater rate of economic growth that is both sustainable and long-term. Countries with weak human capital development also have terrible demographic indices, such as a lower life expectancy and a higher mortality rate, among other things. In a nutshell, the following activities can be carried out in every nation in order to foster the growth of their human capital: I participating in on-the-job training, which includes all types of apprenticeship organised by business outfits; (ii) the transmission or importation of technological assistance, consultants, and proficiency; (iii) officially planned education at different levels, such as elementary school, secondary school, and higher educational levels; (iv) study programmes for individuals who are not involved in agriculture; and (v) the relocation or migration of individuals and families so that they can adjust to the new environment.

In spite of the countless efforts made by the government to improve the potential of people and the standard of living of its residents, the anticipated outcomes have not yet been achieved. This is mostly due to insufficient financing as well as policies that are not compatible with one another. In modern-day Nigeria, there has been an increase in spending in education at all levels, yet the outcomes are seldom commensurate with the enormous amount of money that is being spent. This body of study is consequently intended to investigate the reasons why this is the case. The objective of this study is to investigate the short-run and long-run dynamic connection between total expenditures of the Nigerian government on education, health, life expectancy, and Nigeria's economic performance. As a consequence of this, the focus of this study is an empirical investigation into the linkage between human capital development and economic growth in Nigeria from 1990 to 2019. The study has the definite target of investigating the short-run and long-run dynamic connection. Because of the findings of our

inquiry, we will be able to make important suggestions that will not only lead to an increase in the standard of living of the populace but will also stimulate the expansion of the economy.

2.0 Literature Review

2.1 Economic growth in Nigeria

The term "economic growth" refers to a rise in a nation's capacity to produce commodities or products and services for its population during a certain time period, and the term is sometimes used interchangeably with "economic development." Calculating the percentage of increase in gross domestic product is the standard method for measuring economic growth as a variable in the economy (GDP). According to Gbosi and Omoke (2004), Gross Domestic Product (GDP) is defined as the total market value of all finished products and services that are generated in an economy over the course of one year or any other specified period of time. According to the latest report published by the World Bank (2019), the economy of Nigeria began the 1970s with a growth rate that was rather robust, averaging 11.88 percent annually during the period of five years spanning 1970 to 1974. This information can be found in the report. After the early 1970s, the Nigerian economy did not continue to have the remarkable outlook it had throughout the first decade of the 1970s. Unfortunately, the Gross Domestic Product (GDP) for the first time ever registered a negative growth rate of -5.22 percent in 1975. In a similar vein, the proportion of total government spending that went toward healthcare was barely one percent in 1975. In a similar vein, the amount spent on education was equivalent to ten percent of the entire amount spent by the government.

However, the Gross Domestic Product (GDP) grew with astonishing record growth rates of 9 percent and 6 percent correspondingly during the years 1976 and 1977. However, when the oil boom of the 1980s finally came to an end, the Nigerian economy went into a recession of some degree. As a direct result of this, the GDP growth rates for the economy were negative. The conventional method of measuring aggregate output, known as GDP, revealed unfavourable growth rates of -13.13 percent, -0.23 percent, -5.229 percent, and -4.82 percent in the years 1981, 1982, 1983, and 1984, respectively. The economy, on the other hand, showed signs of improvement in 1985 and 1986, when it recorded improved performance and respectable growth rates of 9.7 percent and 2.5 percent, respectively.

This suggested that the economy had begun to recover. In spite of this, one year after the Structural Adjustment Program (SAP) was put into place, the growth rate of the economy was a dismal -0.7 percent, which was a significant drop from the low point of 2.5 percent in 1986. This makes sense when one considers that the period of time including the Structural Adjustment Program (SAP) was characterised by exceptionally stringent budgetary policy on the part of the government. Even though the Gross Domestic Product (GDP) increased at a substantial rate between 1990 and 1999, the growth rates were fairly modest, averaging about 3 percent. The Nigerian economy had a decent performance for the period of fourteen years, averaging a rise in GDP of five percent. This growth occurred between the years 2000 and 2013. Unfortunately, between 2014 and 2019, the average growth rate in Nigeria dropped to 2.55 percent, which is a clear reflection of the hardship facing the Nigerian economy at that time.

2.2 The amount of money spent by the Nigerian government on education

The federal government of Nigeria allots a certain sum of money from her annual budget to fund educational initiatives. This represents the amount of money spent on education by the government of the nation. In Nigeria, the majority of educational costs are borne by the public sector, with the exception of a select few private education spending activities. The appropriate educational bodies, such as the National Universities Commission (NUC) and the National Board for Technical Education (NBTE), and so on, are the ones responsible for

providing subventions to educational institutions. These subventions are distributed to educational institutions through the various levels of government's respective Ministries of Education. The data from the World Bank (2019) show that shortly after the Nigerian Civil War in the early 1970s, educational expenditure witnessed a tremendous increase. This increase can be easily attributed to the policy of reconstruction, rehabilitation, and reconciliation (3Rs) that was embarked upon by the Gowon-led Federal Government as a result of the massive destruction of educational and other public infrastructure during the Civil War. The data also shows that this increase occurred shortly after the end of the Civil War.

For example, the government allotted the sum of N17.14 million to the field of education in the year 1971. It reached N47.23 million in 1972, which was an increase of almost 275.55 percent from the previous year. This trend of rising school costs continued from 1974 to 1976, with the percentage rise coming in at 341.8 percent in 1974, 331.47 percent in 1975, and 23.6 percent in 1976, respectively. However, it would appear that during the past few years, education has taken a smaller and smaller portion of the entire financial allotment. According to the available statistics, the proportion of Nigeria's total budget allocated to educational spending was 10.15 percent in the year 2013, however this figure plummeted to 7.04 percent the following year. Given the significance of education to the functioning of an economy as a whole, the trend that has been continuing for some time is cause for concern.

2.3 The amount spent by the Nigerian government on healthcare

In Nigeria, the term "government spending on health" refers to the sum amount of the annual budgetary allocation that the government makes toward health care. According to a report published by the United Nations in 2019, it was found that Nigeria's expenditure on healthcare (the country's healthcare budget) has showed an unpredictable trajectory throughout the years. The total amount that Nigeria spent on healthcare in 1970 was N49.96 million, but by 1976 this number had increased to N1051.7 million. In 1977, it had decreased to N173.57 million, which indicated a negative increase of almost 60.5 percent. In 1978, it fell a further 1.05 percent from the previous year. In 1984, before to the start of the Structural Adjustment Program (SAP), the amount of N152.65 million was allotted for the budget of the health sector. It reached N215.32 million in 1986, which constituted a gain of 61.97 percent from the previous year. In general, spending on healthcare has not fared well when measured as a proportion of the overall amount that the government spends on the budget. For example, the percentage of total expenditures that went for health care varied between 0.5% and 1.46 % during the years 1970 and 1980.

This occurred within the same time period. The CBN 2020 statistics bulletin revealed that there was an upward trend in the amount of money spent by the government on healthcare between the years 2011 and 2019. In 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019 it was 21,352, 57,51104, 81,212, 85,419, 86,321; 8,6610; 86,956; and 87,294 accordingly. In 2020 it is projected to be 87,294. According to the data shown above, it is abundantly obvious that the expenditures made by the government of Nigeria on healthcare services do not even come close to meeting the proposed standard. This is one of the primary factors that contributes to Nigeria's status as one of the nations with the cheapest overall healthcare costs around the globe.

2.4 Years of expected life span in Nigeria

Life expectancy is a measurement of the duration of life that is anticipated to be lived by an individual from the time of their birth, as defined by Peter and Williams (2015). The average life span of the population is a crucial indicator of a nation's overall level of development. In Nigeria and other less developed countries, the variations in morbidity and mortality are frequently linked to a wide variety of measures of socio-economic status. Some

of these measures include the adult illiteracy rate, the per capita GDP, the adult fertility rate, the per capita calorie intake, the unemployment rate, expenditure on the health sector, and access to portable drinking water. Therefore, while it is true that the amount of money spent on health care has the potential to have a beneficial impact on life expectancy, the reality is that life expectancy is governed by a broad variety of factors, including religious and superstitious beliefs. As a result of this, the purpose of this study is to analyse, in addition to a wide range of other factors, how life expectancy affects the expansion of the economy.

According to the information that was available, the average life expectancy of Nigerians is still less than 56 years. For example, the average life expectancy of a Nigerian in the year 2019 is 54.49 years, which indicates the average number of years a Nigerian should live on earth. In 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, and 2018 it was 50.64, 51.07, 51.51, 51.95, 52.4, 52.84, 53.73, and 54.18 accordingly (CBN Bulletin 2020). The above data are not adequate representations of our nation's situation. There is room for development in this regard. In the remaining wards, the government and the people living there should collaborate on an initiative to raise the life expectancy to at least 70 years.

2.5 **A body of theoretical writing**

The theory that was utilised during the course of this endeavour was an expanded version of the Solow growth model known as the Augmented Solow Growth Model. The difference between the Solow growth model and the Augmented Solow growth model is that the former does not consider human capital to be a component that can contribute to increased economic growth, whereas the latter does. The human capital that a country possesses is one of the factors that is taken into account by the Augmented Solow Growth Model, which is a model that attempts to explain why different countries experience varying levels of economic expansion.

It is important to point out that the incorporation of human capital into the Augmented Solow Growth Model enhances our capability to analyse data from several countries. One of the primary foci of study in the field of social science is the question of why certain nations are more developed than others. The Augmented Solow Growth Model is predicated on the following three key assumptions: first, that people invest in human capital in the same manner that they invest in physical capital, which is to say, by foregoing consumption and devoting a portion of their income to the acquisition of human capital; second, that human capital depreciates at the same constant rate as physical capital; and third, that output can be used either for consumption or investment in either physical or human capital.

2.5 Empirical Literature

Using the Johansen co-integration approach and the vector error correction model, Babatunde and Afolabi (2005) explored the long-run link between education and economic growth in Nigeria from the period of 1970 to 2003. Their study included the time span from 1970 to 2003. Because the findings indicate that there is a link between education and economic growth over the long term, they highlight the fact that a well-educated workforce may considerably impact the rate at which economic growth occurs. The findings of the study were based on data, and it's possible that more recent developments in human development have rendered those results obsolete.

Bakare (2006) utilised the vector autoregressive error corrections method in order to evaluate the implications of human resource development for economic growth in Nigeria. According to the findings of the study, there is a substantial institutional link, in addition to a functional one, between the investments in human capital and the expansion of the economy in Nigeria. It was discovered that a loss of around 1 percent in human capital investment led to a fall of 48.1 percent in the rate of growth in GDP between the years 1970 and 2000. This finding

was made public. On the other hand, the findings of the study can possibly be rendered obsolete by more recent research.

The ordinary least squares (OLS) approach was employed by Lawanson (2009) in his research to evaluate the contributions that investments in education and health had in driving economic growth in Nigeria. In spite of the fact that the government expenditure on health and primary education enrollment had negative coefficients, which are not consistent with economic expectations, it was discovered that human capital actually boosts economic growth on average in Nigeria. This was discovered despite the fact that these coefficients do not align with economic anticipations. The research was flawed due to the absence of crucial factors, and as a result, it cannot produce accurate results. Adawo (2011) conducted research to determine the extent to which basic, secondary, and postsecondary education all contribute to economic expansion in Nigeria. In order to stand in for the variables, we used enrollment in schools of varying levels. Other criteria were the accumulation of physical capital and the provision of medical care, which was evaluated based on the overall cost of medical care. According to the findings of the study, growth may be contributed to the construction of physical capital, enrollment in primary schools, and investments in healthcare. It was discovered that enrollments in secondary and postsecondary schools decrease growth, which runs counter to the aspirations of the economic community.

Isola and Alani (2012), for their part, investigated the relationship between several metrics of human capital development and economic growth in Nigeria. They focused specifically on the country of Nigeria. The growth account model, which states that the expansion of GDP is a function of both capital and labour, was utilised in the research, and the data for the study came from Nigeria. A metric for analysing policy changes is also incorporated into the model. The study argued that even though less commitment had been rendered to healthcare in comparison to education, empirical analysis showed that both the education and health components of human capital development are fundamental variables in promoting economic growth and development in Nigeria. This was based on an estimated regression and a descriptive statistical analysis of trends of government investment in human capital development. The study also included a descriptive statistical analysis of trends of government investment in human capital development. The research substituted nominal GDP growth for actual GDP growth as its measure of economic expansion. This may have resulted in inaccurate estimations of the factors that were being studied.

Eric (2013) investigated the role that human capital plays as a driver of economic progress in underdeveloped nations like Nigeria. According to him, poor nations have made significant strides in closing the gap with wealthy countries in terms of educational fulfilment; nonetheless, new research has highlighted the significance of cognitive skills for economic success. As a result, he brought up the fact that the focus has turned to concerns about the quality of educational institutions, and that in this respect, developing nations have had a lot less success in bridging the gap with industrialized countries. It will be difficult for developing countries to enhance their economic performance over the long term if they do not increase the quality of the educational institutions in their countries. The study did not take into account the complementary function that investments in health and life expectancy have in the development of human capital.

Ajadi and Adebakin (2014) investigated the rise of human capital in Nigeria and how it links to the country's overall economic expansion. The descriptive survey research approach was ultimately chosen as the strategy to use. A total of two hundred people participated in the survey after going through a series of stages in the sampling procedure. In order to acquire the necessary information, a questionnaire with a reliability value of 0.86 was utilized. The data were examined by employing Pearson's Product Moment Correlation Coefficient as the determining factor. According to the data, education has a predictive r-value of 0.76 on

individual personal income, and the kind of work employment is associated to individual personal income (r = 0.64). Both of these factors are related to individual personal income. The conclusion of the paper, which was based on this finding, was that the level of individual income is a function of economic growth, and it recommended that the government develop suitable educational policy not only to improve personal income but also to provide the human capital need of the society for economic growth and development. The research design and method of data estimate were not suited for the investigation, which was a limitation of the study. Primary data should not be used in an investigation of this kind since it may provide conclusions that are not robust and unreliable.

Saad and Kalakech (2019) investigated the impacts of Lebanese government spending on economic development over the course of the period from 1962 to 2007, focusing specifically on the expenditures made in the areas of military, education, health care, and agriculture. The study, which made use of the co-integration method, came to the conclusion that spending on education had a positive relationship with growth in the long run but a negative influence in the short term. In addition, it was observed that rise in health expenditures had no significant relationship to short-term growth, but did have a favourable connection with growth overall. According to the findings of the study, one of the most effective ways to stimulate economic expansion is to augment the financial resources that are allocated to the educational system. The research was founded on data on expenditures made by the government of Lebanon and served as a foundation for an investigation into the growth of human capital and the economy in Nigeria. It opened up a geographic void and highlighted the necessity for a research that is unique to Nigeria.

It is clear from the analysis of the relevant research that studies on the development of human capital and economic growth have not taken life expectancy into account as a human capital variable in order to investigate the ways in which it influences economic growth. This research addresses that issue by incorporating life expectancy into the measurement of human capital as one of the variables. We also used the more complex ARDL approach of data analysis. This method enables a more robust cointegration connection to be established between a mixture of I(0) and I(1) variables, and it works incredibly well even with small sample sizes. We utilized this strategy.

3.0 Research Methodology

3.1 The layout of the research

In this study, a research design that may be described as quasi-experimental was adopted. Abraham and MacDonald (2011) likened the design of the quasi-experimental study to the design of the experimental research since an independent variable was changed in both types of studies. As a result of the absence of a control group, a random selection process, a random assignment process, and active manipulation, this type of study differs from experimental research.

3.2 Model specification

The model for this study is specified as follows:

$$RGDP = f(IE, IH, LE) \quad \ldots\ldots(1)$$

When linearized and put in econometric form, equation one above becomes:

$$RGDP = a_0 + a_1 IE + a_2 IH + a_3 LE + u \quad \ldots\ldots(2)$$

Where:

RGDP = Real Gross Domestic Product

IE = Investment in Education

IH = Investment in Health

LE = Life Expectancy.

u = Error Term

a_0, a_1, a_2 and a_3 are all parameters to be estimated with the a priori expectation that they will all be greater than zero.

Assuming that the variables in the model are not well-behaved, the model is restated as follows:

$RGDP = a_0 + a_1(\Delta IE_{t-1}) + a_2(\Delta IH_{t-1}) + a_3(\Delta LE_{t-1}) + u$ .....(3)

Where:

Δ = Difference Operator

a = Parameters to be estimated

$_{t-1}$ = Unknown lags

u = Error Term

3.3 Data Source and Estimation Technique

The analysis focused on the time series secondary data collected on an annual basis for the specified variables and taken from the National Bureau of Statistics Report, 2020 and the Central Bank of Nigeria Statistical Bulletin, 2020. The information that was gathered includes the following: Life Expectancy (LE), Real Gross Domestic Product (GDP), Investment in Education (IE), and Investment in Health (IH) (RGDP).

Estimating the association between the variables in this study is accomplished by the application of the Autoregressive Distributed Lag (ARDL) approach. The ARDL approach is quite helpful since it will help establish whether or not the variables have a long-run connection, and it will also help determine whether or not it incorporates the Error Correction Model (ECM). Both of these aspects are very important.

4.0 Results and Discussion

A. Unit root test

The table that follows is an example of a test known as the unit root test. This test is used to determine whether or not the data that were gathered for the research are stationary.

Table 4.1 Unit root test (Augmented Dickey Fuller Statistics)

Variables	Levels	1st Difference	Order of Integration
RGDP	-0.8192	-10.0051	1(1)
IE	-1.8545	-7.0280	1(1)
IH	-0.9741	-7.6941	1(1)
LE	-0.7544	-84783	1(0)

Source: Authors' computation

The sequence of integration of the variables in this study is shown to be inconsistent throughout Table 4.1. In light of this information, the Autoregressive Distributed Lag (ARDL) approach was utilized to estimate the values of the model's parameters. It also serves as the foundation for the application of the ARDL Bounds Test, which is used to determine whether or not there is a connection that exists between the variables over the long run.

B. ARDL Bounds Test

The results of the ARDL Bounds test are presented in the following table, which may be used to determine whether or not the variables of this research have a long-run relationship with one another.

Table 4.2 ARDL Bounds test

Test Statistic	Value	K
F-statistic	5.016194	3

Critical Value Bounds

Significance	10 Bound	11 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.00

Source: Authors' computation

The F-statistic has to be higher than the upper limits at the level of significance that was set in order to determine whether or not there is a long-run link between the variables in a model by applying the ARDL Bounds test. The results of the test are presented in Table 4.2, and the F-statistic value was found to be 5.016194. This value is higher than the upper boundaries for all levels of significance. As a consequence of this, there is a link between the variables of the model in the long term.

The short-run and long-run estimates for the model parameters are presented in Tables 4.3 and 4.4, respectively, below.

Table 4.3: ARDL short-run estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP(-1)	-0.211295	0.165393	-1.277531	0.2154
D(IE)	5.130166	2.031340	2.525508	0.0197
D(IH)	0.595365	0.168336	3.536763	0.0020
D(LE)	-100259.6	18633.65	-5.380567	0.0000
C	-121603.7	102437.6	-1.187099	0.2484
R-squared	0.797063	Adjusted R-squared		0.748744

F-statistic	16.49605	Durbin-Watson stat	1.988705
Prob(F-statistic)	0.000001		

Source: Authors' computation

According to the short-run estimates in Table 4.3, investments in education (IE) had a parameter estimate of 5.130166 with p-values of 0.0197, whereas investments in health (IH) had a parameter estimate of 0.595365 with p-values of 0.0020. Both of these estimates are presented in the context of an examination of the relationship between the two variables. This indicates that investments in education and healthcare have a positive and statistically significant link with real gross domestic product (RGDP) over the time period under consideration of the study. The implication of this finding is that a percentage increase in investments both in education and in health will contribute significantly to economic growth in Nigeria, to the tune of 5.130166 percent and 0.595365 percent respectively, depending on which investment receives the greater percentage increase.

A parameter estimate of -100259.6 for life expectancy may also be seen in the data, which are presented in table 4.3. Despite the fact that the short-run estimate for life expectancy (LE) has a p-value of 0.0000, which indicates that it is statistically significant, this estimation does not support the a priori hypothesis of a positive link between real gross domestic product and LE (RGDP). The fact that mortality at an early age reduces a person's ability to contribute to the expansion of the economy is brought to light by the negative correlation that exists between life expectancy and real gross domestic product. It is important to highlight that the excellent explanatory power of the model for this study is shown by the high coefficient of determination as well as the adjusted coefficient of determination, which are both about 80 percent, as shown in Table 4.3. In a similar vein, the F-statistic for the study came in at 16.49605, and its p-value was 0.000001, indicating that the model had a good overall significance for the study. The result of the Durbin-Watson statistic, which is 1.988705, demonstrates, in addition, that the model being used does not contain any serial correlation.

Table 4.4 below presents results of ARDL long-run estimates of the study model

Table 4.4: ARDL long-run estimates

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
IE	4.235273	1.785037	2.372652	0.0273
IH	0491511	0.117386	4.187135	0.0004
LE	2611.010676	1816.647541	1.437269	0.1654
C	-100391.418850	82790.260644	-1.212599	0.2387

Source: Authors' computation

Investments in education and health had corresponding coefficients of 4.235273 and 0.491511, with p-values of 0.0273 and 0.0004 respectively, as shown in Table 4.4. The numbers suggested that spending in education and investments in health had a favourable and considerable influence on Nigeria's real gross domestic product throughout the time period that was being studied. This outcome is likewise compatible with economic assumptions, so buttressing the short-run results stated before. On the other hand, life expectancy is positively connected to real gross domestic product in the long run with a coefficient of 2611.010676;

nevertheless, this relationship does not meet the criteria for statistical significance at the 5% level of significance since its p-value is 0.1654.

4.3 Diagnostic Tests

The findings of two diagnostics tests (the serial correlation test and the Ramsey reset test) that were carried out during the investigation are presented in the following subsections. In order to verify the accuracy of the data obtained from research projects, diagnostic tests are typically performed.

4.3.1 Serial correlation test

Table 4.5: Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.004864	Prob. F(1,20)	0.9451
Obs*R-squared	0.006565	Prob. Chi-Square(1)	0.9354

The results of any tests of serial correlation or autocorrelation that were performed on the variables that make up the research model are presented in Table 4.5. The p-value of 0.9451 is obviously higher than the standard threshold of 0.05, which represents a probability of five percent. As a result, we have a confidence level of 95% that the data for the variables that were utilised in this investigation did not indicate serial correlation.

4.3.2 Ramsey RESET stability test

Table 4.6 Ransey RESET test

Ramsey RESET Test

Equation: UNTITLED

Specification: RGDP RGDP(-1) IE IH LE LE(-1) C

	Value	Df	Probability
t-statistic	0.555774	20	0.5845
F-statistic	0.308884	(1, 20)	0.5845
F-test summary:			
	Sum of Sq.	Df	Mean Squares
Test SSR	55586271	1	55586271
Restricted SSR	3.65E+09	21	1.74E+08
Unrestricted SSR	3.60E+09	20	1.80+08

Source: Authors' computation

The results of the Ramsey RESET test that are displayed in the aforementioned Table 4.6 reveal that the F-statistics value of 0.308884 is higher than the standard value of 0.05, which represents five percent. On the basis of this, one might get the conclusion that the model used for this investigation is reliable.

5.0 Conclusion and Recommendations

5.1 Conclusion

In Nigeria between the years 1990 and 2019, the authors of this study investigated the link between the production of human capital and economic growth. As a theoretical point of reference, the Augmented Solow Growth Model was selected. This model is an expansion of the Solow growth model. According to the findings of the study, the development of Nigeria's human capital does have an effect on the country's overall economic growth. This is demonstrated by the fact that human capital measures, such as investments in education and investments in health, have a positive and considerable contribution to the real gross domestic product in Nigeria. However, the outcomes of a negative link between Nigeria's life expectancy and the country's real gross domestic product (RGDP) in the short-run and an insignificant association between Nigeria's life expectancy and the country's RGDP in the long-run are extremely concerning. This highlights the need for Nigerians to adopt healthier lifestyles, since increasing the amount of money spent on healthcare would not always result in an increase in people's life expectancy if they do not also make changes to the way they live their lives.

5.2 Recommendations

According to the results of this research, our team suggests that decision-makers give top priority to increasing overall spending on education. This would allow for the provision of appropriate educational facilities that would ensure students receive an education that is both comprehensive and of a high standard. Those who are on the cutting edge of providing education should be provided with sufficient incentives to encourage them to support the efforts made by the government to provide quality education. This is another key aspect. In addition, in order to extend their life expectancy, individuals should ensure that they live a healthy lifestyle. This is because the amount of money spent by the government on health care, regardless of how much money is spent, will not automatically translate into improved health for individuals if those individuals do not adopt a healthy lifestyle.

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