

# Effect of Population Growth and Human Capital Development on Economic Growth in Nigeria.

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## ABSTRACT

The study evaluates the impact of population growth, human capital development on economic growth in Nigeria for the period of 1988 to 2022. Secondary data were used and sourced from the World Development Indicators and United Nations World Population Prospects. Auto-regressive distributive lag was employed to analyse the long-run and short-run effects of both the population growth and human capital development on economic growth. The result of the analyses showed that population growth has a negative impact on economic growth, a 1% increase in population growth will lead to a 23988 increase in economic growth while human capital has a negative impact on economic growth with a 1% leads to 25.6998 decrease in economic growth. Life expectancy variable also have negative relationship with economic growth. The results of the fixed capital formation and the government expenditure have positive relationship with economic growth. Based on these findings, the paper concludes that the government should increase investment in human capital and provide employment opportunities to reduce the negative impact of population growth. Government should also increase spending (expenditure) on education, training and health.

**Key words:** population growth, human capital, short-run, long-run, economic growth

## INTRODUCTION

Human capital is an important component for economic growth because it coordinates all sectors that make economic grow. (Ogundari and Awokuse, 2018, Fang and Chang, 2016;).The level of human capital in any economy can be determined by the population of such country. The correlation between population growth and human capital supposed to be positive, i.e the higher the population growth rate, the higher the human capital growth rate. Population growth may contribute to the economy either positively or negatively depending on the appropriate and accuracy of human capital development as well as utilization of their skills in terms employment opportunities. Nigeria, like many other countries in Sub-Saharan Africa, is experiencing population growth that is outpacing economic growth (Zahonogo, 2016), this happen when population growth rate is higher than the economic growth rate. Human capital development and population growth are becoming increasingly crucial as the cutoff time for the Sustainable Development Goals approaches (Swain, 2018; United Nations, 2015). Nigeria is well-positioned in relation to population growth, as well as having a large stock of various resources. (World Bank, 2016) A high growing population necessitates a realistic growth strategy that incorporates human resource development. Despite the population growth, the country faces various socio – economic problems, such as unemployment, poverty and a low per capita income (Asaley, Olurinola, Oloni and Ogunjobi, 2017). One reason attributed to the low efficiency of economic growth is the low interest in appropriate human capital accumulation, brain drain of the few skilled capital, poor economic management, and rates of unemployment. (Lai, Li, Zhao and Wang 2016). The failure to coordinate and prepare of human capital to achieve development goals leads to ineffective use of human resources in Nigeria. (Lawanson,2015). Various governments,

Institutions and private sector have invested large sums of money to train and improve human capital (and thus poverty reduction), the investments have failed to keep up with growth of Nigeria's human resources because of the poor economic management of the country's resources. (Aliyu 2014). Many higher educational institutions are springing up daily to take care of high youth population who are seeking for admission as well as to provide necessary human skills needed in the production of goods and services after graduation.

The two main elements of human capital are health and education, and they are components of population growth, for example, high-risk pregnancies, mortality rate, literacy level and other healthcare activities are closely linked to steady population growth. Government high-spending on education and health will lead to greater human capital development, which leads to improved efficiency and productivity, and economic growth (Nwosu, 2014). The drive to produce human capital through comprehensive and excellent education, as well as strategies for good working conditions and development related to SDG 8 and SDG 4. These objectives are especially important for African countries with high rates of population growth and youth unemployment (World Economic Outlook, IMF 2018)

The high population growth and growth rates of institutions of learning in Nigeria suppose to provide the needed skilled labour for economic growth. The high population of China and Japan paved way for cheap labour, low cost of production and high productivity rate. Hence, this study therefore evaluated the impact of population growth and human capital development (through government spending on education) on economic growth in Nigeria.

### **Objectives of the Study**

The general objectives of the study is to examine the effects of population growth and human capital development on the economic growth in Nigeria, while the specific objectives are to examine the long-run and short-run effect of population growth on economic growth and also to examine the long-run and short-run effect on human capital on economic growth in Nigeria.

### **EMPIRICAL REVIEW**

Adeyemi and Ogunsola (2016) examined the impact of human capital development on economic growth in Nigeria using time series information from the period 1980-2013 on life expectancy, secondary school attendance, gross investment, public spending on education and economic growth. , the study applied the Auto-regressive Distributed Co-integration (ARDL) approach to examine the long-term relationship between life expectancy, secondary school enrollment, gross investment, public spending on education and economic growth. The results showed positive relationship between human capital and other variables.

Olalekan (2014) in his research work on the effect of human capital on economic growth in Nigeria using time series data on education and health from the period of 1980-2011. The research used Generalized Method of Moment (GMM) techniques in the analysis. The result of the findings showed a positive correlation between human capital and economic growth in Nigeria, It is necessary to pay great attention to the health and education sectors in Nigeria to achieve higher returns from these two leading growth sub-sectors (human capital and population) and to contribute to an increase in productivity in other sectors. Oladeji (2015) analyzed the contributions of human capital through effective healthcare and educational services to economic development in Nigeria using annual time series data for the period 1980-2012. The research used the Ordinary Least Squares (OLS) method and showed that there is a significant institutional and functional relationship between economic growth and investment in human capital in Nigeria. The result showed that there is a long-term relationship between economic development and education in Nigeria. Maji, Tijani, Bala, Waziri & Sulaiman (2015) studied the effect of human capital and technology on economic growth in Nigeria using 35-year annual time series data (1975-2010), it also used auto-regressive distributed lag (ARDL) co-integration to examine the relationship among technology, human capital and economic growth. Two human capital facilitators (secondary and primary education) were used in two separate models. The result of their findings showed that each of the factors in the two models assessed showed that human capital, in the form of secondary and university enrollment, has a strong impact on economic growth; In addition, the technology also shows a clearly positive influence on economic growth. Ekesiobi, Dimnwobi, bekilo & Ifebi (2016) examined the public sector education investment and

production output in Nigeria. Secondary data was used, while unit root test, Augmented Dickey-Fuller (ADF), and Ordinary Least Square (OLS) method were also used to analyze the data. The studies established that public schooling spending has a trifling and high significant effect on production output increases in Nigeria. Yakubu (2020) analyzed the impact of government spending on health and education on economic growth in Nigeria. Time series data was employed while co-integration techniques were used to process the data. Based on VECM, the results showed that, an average 1% increase in public expenditure on education resulted in a 23.8% increase in GDP, while the 1% increase in public spending on healthcare led to a 37.6% increase in GDP. The two variables of human capital – education and healthcare have been found to have a significant impact on economic growth.

In their contribution to literature, Olorunfemi, et al (2021) examined the relationship between population and economic growth in Nigeria between the period of 1981 and 2018. The study used secondary data and ARDL bound testing approach, co-integration and Fully modified Least Square method to process the data its analysis. The result of the finding showed that there is long-run relationship between population growth and economic growth. It also revealed that the significant effect of population growth is more on the long-run income growth than long-run income per capita growth. Furthermore, population growth has an poor impact on the economic in short-run, but positive in the long-run since many will be involved in productivity. Degu (2020) examined the relationship between population and economic growth in Ethiopia between 1981 and 2018. Yearly time series data was collected while augmented dickey-fuller and Phillips-Person (PP), and ARDL co-integration approach was used to process the data and its analysis. The findings showed that population and economic growth (gdp) have a long-run relationship. In the short and long-run, the population growth have negative and significant effect on economic growth. Also, gross domestic product affects population growth positively and significantly both in the short and long-run. The economic implication was that, with the estimated 110 million total population of Ethiopia, a rapidly population growth was not expected to bring economic growth and economic development.

Lahrech and Hadir (2015) assessed the “correlation between human capital development and economic growth in Morocco” with the use of annual data from 1973 to 2011. Ordinary least squares regression techniques (OLS) were used, using total public spending on education and health, enrollment that there is a positive correlation between total public health expenditure, total public education expenditure, enrollment in tertiary, secondary and primary schools. He advocated that government efforts to increase primary school enrollment through free primary education should continue and that the government should invest more and more in health. Jiang and Borojo (2015) examined the effect of education and health on economic growth in Ethiopia from 1980 to 2013. Secondary data was used while the Augmented Dickey Fuller (ADF) test and the Johansen co-integration methods were used to analyze the data. The human capital stock includes enrollment in primary, secondary and tertiary schools, government health expenditure and other variables such as the real gdp, investment ratio, and labour employed. The result of findings revealed that public spending on education and health, as well as primary and secondary school enrollment, had a statistically significant positive relationship with economic growth in Ethiopia.

## METHODOLOGY

### 4.1 Sources of Data

The paper examined the impact of population growth and human capital on economic growth in Nigeria between 1988 and 2022. Secondary data were used and sourced from the World Development Indicators and United Nations World Population Prospects. Johansen co-integration method was used to process the data.

### 4.2 Theoretical framework

The research will follow the “Solow–Swan model” which is an economic model of long-run economic growth in the context of neoclassical economics. It helps to justify long-run economic growth by looking at capital accumulation, labor or population growth, and improvements in productivity, usually referred to as technological development. The production function can be written as  $Y = F(A, K, L)$  Where;  $Y$ = real output,  $A$ = technological advancement,  $K$ = capital stock and  $L$ = labour stock

### 4.3 Model specification

Since this research is based on the study of population growth, human capital on economic growth in Nigeria, by correctly specifying the model, Growth in Real Gross Domestic Product (GRGDP), is expressed as a function of Gross Fixed Capital Formation (GFCF), Employment Rate (EMP), Government Expenditure (GEXP), Population Growth (POP), Human Capital Index (HCI), and Life Expectancy at Birth (LEB). Therefore, the model is given as;

GRGDP =f (GFCF, EMP, GEXP, POP, HCI, LEB). Explicit function is given as;

$$GRGDP_t = \beta_0 + \beta_1 GFCF_t + \beta_2 EMP_t + \beta_3 GEXP_t + \beta_4 POP_t + \beta_5 HCI_t + \beta_6 LEB_t + \mu_t$$

The model is expressed in the logarithm form because they are not in the same unit and also allow us to interpret the results in elasticity. The below is in double-log form of the model.

Log GRGDP=logβ<sub>0</sub> + logβ<sub>1</sub>GFCF + logβ<sub>2</sub>EMP +logβ<sub>3</sub>GEXP+ logβ<sub>4</sub>POP+ logβ<sub>5</sub>HCI+ logβ<sub>6</sub>LEB +Where μ<sub>t</sub>=Error term at time t, β<sub>0</sub>=Intercept and β<sub>1</sub>, β<sub>2</sub>, β<sub>3</sub>, β<sub>4</sub>, β<sub>5</sub>, β<sub>6</sub>= estimated coefficient of variables.

## PRESENTATION OF RESULT AND DATA ANALYSIS

Table 1: Descriptive Analysis.

	LNRGDP	LNPOP	LNLEX	LNHCI	LNGFCF	LNGEXP	LNEMP
Mean	10.49171	4.899704	3.889166	0.440768	3.250781	1.160780	3.766875
Median	10.49756	4.895390	3.870894	0.446657	3.262503	1.498143	3.733021
Maximum	11.17588	5.251678	4.001626	0.654523	3.972595	2.245839	4.176793
Minimum	9.862617	4.556715	3.825223	0.200973	2.651037	-0.092954	3.419712
Std.dev	0.499624	0.211713	0.063299	0.143295	0.426778	0.832333	0.222164
Skewness	0.071225	0.038550	0.440436	-0.115881	-0.004354	-0.154715	0.180663
Kurtosis	1.386740	1.799320	1.654739	1.698624	1.647569	1.446114	1.924158
Jacque-Bera	3.278625	1.688840	3.232079	2.038508	2.286433	3.137885	1.502657
Probability	0.194113	0.429807	0.198684	0.360864	0.318792	0.208265	0.471740
Sum	314.7514	137.1917	116.6750	12.34151	97.52344	34.82341	105.4725
Sum sq.dev	7.239091	1.210200	0.116197	0.554404	5.282054	20.09056	1.332636
Observation	30	28	30	28	30	30	28

Source: computed by author.

The characteristics of the variables are shown in the table above. The mean calculates the average of the series by dividing the total number of observations by the number of observations. When the mean is less than the standard deviation, the coefficient variation is high. There is a good chance of a small coefficient variation when the mean exceeds the standard deviation. The mean for LNRGDP, LNPOP, LNLEX, LNHCI, LNGFCF, LNGEXP and LNEMP are 10.49171, 4.899704, 3.889166, 0.440768, 3.250781, 1.160780 and 3.766875 respectively. And the standard deviation are; 0.499624, 0.211713, 0.063299, 0.143295, 0.426778, 0.832333 and 0.222164 respectively. Skewness measures the shape of the real variables probability distribution around its average value. Skewness can be positive, negative or undefined. In the table, LNRGDP, LNPOP, LNLEX and LNEMP are all right tailed

since they are all positively valued while LNHCI, LNGFCF, and LNGEXP are left tailed since there are negative in value.

Table 2: Unit Root Test using Augmented Dickey Fuller test

Variables	ADF statistics	Critical value 5%	Remark	ADF statistics	Critical value 5%	Order of integration
LNRGDP	0.753301	2.971853	Non-Stationary	3.750353	2.971853	I(1)
LNPOP	0.613408	2.981038	Non-Stationary	4.268769	2.998064	I(1)
LNLEX	1.782559	2.981038	Non-Stationary	3.242428	2.998064	I(1)
LNHCI	1.796289	2.981038	Non-Stationary	4.648213	2.986225	I(1)
LNGFCF	1.776732	2.967767	Non-Stationary	3.204891	2.971853	I(1)
LNGEXP	1.417763	2.967767	Non-Stationary	5.475562	2.971853	I(1)
LNEMP	1.320231	2.976263	Non-Stationary	4.578203	2.981038	I(1)

Source: computed by authors,

The outcomes of the unit root tests for the model's variables are displayed in the table 2 above. All variables were logged (LN) e.g the real gdp, population, life expectancy rate, human capital index, government expenditure and the employment rates. The hypothesis of a trend and an intercept was tested for the table. All variables were stationary at level, but none were stationary at the first difference. Based on this outcome, the co-integration test, would be performed using the Johansen co-integration technique.

Table 3: Johansen Co-Integration Test (Trace Statistics)

Unrestricted Co-integration Rank (Trace)						
Hypothesized CE(s)	No. of	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	
None *		0.990857	406.4075	125.6154	0.0000	Significant
At most 1 *		0.982087	284.3433	95.75366	0.0000	Significant
At most 2 *		0.918488	179.7659	69.81889	0.0000	Significant
At most 3 *		0.804380	114.5839	47.85613	0.0000	Significant
At most 4 *		0.755971	72.16269	29.79707	0.0000	Significant
At most 5 *		0.673887	35.49052	15.49471	0.0000	Significant
At most 6 *		0.216910	6.357205	3.841466	0.0117	Significant

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level  
 \* denotes rejection of the hypothesis at the 0.05 level

Source: compiled by researcher, 2024



Table 4: Johansen Co-Integration Test (Maximum Eigenvalue)

<b>Unrestricted Cointegration Rank Test (Maximum Eigenvalue)</b>					
<b>Hypothesized No. of CE(s)</b>	<b>Eigenvalue</b>	<b>Max-Eigen Statistic</b>	<b>0.05 Critical Value</b>	<b>Prob.**</b>	
None *	0.990857	122.0642	46.23142	0.0000	Significant
At most 1 *	0.982087	104.5774	40.07757	0.0000	Significant
At most 2 *	0.918488	65.18207	33.87687	0.0000	Significant
At most 3 *	0.804380	42.42117	27.58434	0.0003	Significant
At most 4 *	0.755971	36.67217	21.13162	0.0002	Significant
At most 5 *	0.673887	29.13331	14.26460	0.0001	Significant
At most 6 *	0.216910	6.357205	3.841466	0.0117	Significant
Max-eigenvalue test indicates 1 co-integrating eqn(s) at the 0.05 level					
* denotes rejection of the hypothesis at the 0.05 level					

Source: compiled by researchers.

The null hypothesis is rejected at 0.05 levels when the trace statistics and Max-Eigen statistics are greater than 0.05 critical values. As a result, the alternative hypothesis that there are co-integrating equations is accepted and the null hypothesis that there are no co-integrating equations is rejected in the trace and Max-Eigen. Therefore, at a 5% level of significance, there is a long-run relationship between the variables.

Table 5: Normalized Co-integration Coefficient (Standard Error in parentheses)

<b>VARIABLES</b>	<b>1.0000000</b>	<b>STD. ERROR</b>	<b>T-STATISTICS</b>
LNPOP	-23.988850	(0.81074)	{29.5888}
LNLEX	10.55492	(0.79667)	{13.249}
LNHCI	25.69988	(1.21350)	{21.178}
LNGFCF	- 0.111803	(0.07232)	{1.546}
LNGEXP	--0.086685	(0.01227)	{7.065}
LNEMP	3.314172	(0.38218)	{8.672}

Source: compiled by researchers.

The model's long-run normalized co-integrating coefficients can be expressed explicitly as follows:  $LNRGDP = -23.988850LNPOP + 10.55492LNLEX + 25.69988LNHCI - 0.111803LNGFCF - 0.086685LNGEXP + 3.314172LNEMP$

According to the findings above analysis, there is a long-run positive relationship between population growth and economic growth which is in line with our a priori expectation. A percentage increase in population growth will lead to a 23.988850 increase in economic growth. The relationship is statistically significant with a t-statistic

of 29.5888 which is higher than 2.

The result shows that life expectancy has a negative relationship with economic growth which is not in line with the *a priori* expectation. A percentage increase in life expectancy will lead to a 10.55492 decrease in economic growth. The t-statistic is 13.249 (absolute value) which indicates that the relationship is statistically significant. Human capital index appears to have a negative relationship with economic growth, contrary to the *a priori* expectation of a positive relationship, as higher human capital index should increase economic growth. The result show that a percentage increase in human capital index will lead to a 25.69988 decrease in economic growth in the long-run. The t-statistic of 21.178 shows that the result is statistically significant. The result confirms the *a priori* expectation that gross fixed capital formation has a positive relationship with economic growth. A percentage increase in gross fixed capital formation leads to a 0.111803 increase in economic growth. The result is statistically insignificant because the t-statistic (1.546) is less than 2 The government expenditure is perceived to have a positive relationship with economic growth, which is consistent with *a priori* expectations. A 1% increase in government expenditure results in a 0.086685 increase in economic growth. Because it is greater than 2, the t-statistic is 7.065 indicating that it is statistically significant. Contrary to the *a priori* expectation employment rate has a negative relationship with economic growth. A percentage increase in employment rate will lead to a 3.314172 decrease in economic growth. The t-statistic is 8.672 (absolute value) which indicates that the relationship is statistically significant.

Table 6: Error Correction Model ECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNEMP)	-0.422581	0.552360	-0.765047	0.4547
D(LNPOP)	-65.187640	57.298122	-1.137692	0.2710
D(LNLEX)	2.607215	1.596178	1.633411	0.1208
D(LNGFCF)	0.023177	0.104210	0.222406	0.8266
D(LNHCI)	0.443704	2.040368	0.217463	0.8304
D(LNGEXP)	0.027263	0.023779	1.146483	0.2675
CointEq (-1)	-0.271695	0.137448	-1.976715	0.0645

Source: compiled by researchers.

According to the ECM result shown in the table 6 above, the estimated factor for error correction has a negative (-) sign, is between 0 and 1, and is significant based on the T-statistic. The calculated coefficient indicates that approximately 27.1695 percent of the current period's instability is corrected in the long run, indicating model convergence. The rate of convergence, however, is slow.

## CONCLUSION

The paper empirically examined the impact of population growth and human capital development on economic growth in Nigeria between 1988 and 2022. Secondary data was employed while Johansen Co-integration method were used to analyze the data. The results of the findings showed that population growth has a negative impact on economic growth in Nigeria, while human capital has a positive impact on economic growth respectively.

## RECOMMENDATIONS

Based on these findings, the paper concludes that the government should increase investment in human capital development and provide employment opportunities to reduce the negative impact of population growth.

Government should also increase spending (expenditure) on education, training and healthcare services.

1. The government and other stakeholders should create an environment conducive to macroeconomic stability to encourage investment in human capital development.
2. Reproductive health service efforts need to be redoubled and stepped up to meet the ever-increasing population.
3. The government should create conducive environment for the creation of more jobs thereby curbing the problem of unemployment and for employing more hands which can contribute to real growth in real GDP (economic growth) and which also reduces the negative effect of increasing population.
4. Finally, government should increase the annual expenditure on education and the healthcare sectors which will result into a greater human capital asset, and this will improve the effectiveness, efficiency and productivity which leads to economic growth in Nigeria.

## REFERENCES

1. Adeyemi, P.A and Ogunsola A.B (2016). "The effective management of primary schools in Ekiti state, Nigeria: an analytical assessment. *Educational Research and Reviews*, Vol. 4 No. 2, pp. 48-56.
2. Aliyu, M. K. (2014). Investing in human resource development: empirical evidence from banking institutions of Malaysia and Nigeria. *Journal of Economics and Sustainable Development, Sustainable Development*.
3. Asaleye, A. J., Olurinola, Oloni and Ogunjobi J.O (2017). Productivity growth, wages and employment nexus: Evidence from Nigeria. *Journal of Applied Economic Sciences*, XII, 5(51), 1362–1376.
4. Borojo E,G, and Jiang Yushi (2015). The impact of Human Capital on Economic Growth in Ethiopia. *Journal of Economic and Sustainable Development*. Vol.6 No 16
5. Chao, N. I.& Dahu (2017). Human Capital, Economic Growth and Spatial Spillover Effect: An Empirical Study of China's Provincial Panel Data from 1978 to 2015. . *Journal of Beijing Technology and Business University (Social Sciences)*, 6, 012.
6. Dauda, R. (2010). Role of human capital development: an empirical study of Nigerian case. . Oxford business and economic conference program United Nations development.
7. Ekesiobe C.S, Dimnwobi S.K, Ifebi O.E & Ibekilo B.N (2016) Public Sector Investment and Manufacturing Output in Nigeria: Empirical and Policy Options. *Public and Administration Research*. Vol.6, No 7, 95-106.
8. Fang, Z. Y. & Chang (2016). Energy, human capital and economic growth in Asia Pacific countries- Evidence from a panel cointegration and causality analysis. *Energy Economics*, 56, 177-184.
9. Hadir A & Lahrech Abdelmonun ( ) Human Capital Development and Economic Growth in Morocco. *International Journal of Education and Human Development*. Vol.1, No 1. 49-73
10. IMF. (2018). *World Economic Outlook*.
11. Jaiyeoba, S. V. (2015). Human Capital Investment and Economic Growth in Nigeria. . *African Research Review*, 9(1), Pp30-46.
12. Lawanson, A. O. (2015). Economic Growth Experience of West African Region: Does Human Capital Matter? *International Journal of Business and Social Science*, Vol. 6.
13. Lai, Li, T. L. Zhao and Wang (2016). Long-run relationship between inequality and growth in post-reform China: New evidence from a dynamic panel model. *International Review of Economics and Finance*, 41, 238–252.
14. Maji, C. S., Tijani, Bala & Waziri (2015). Human Capital, Technology, and Economic Growth in Nigeria. *SAGE Open*, vol. 5(4), pages 21582440156.
15. Nwosu, C. D., Uche & Ihugba (2014). The Effects of Population Growth on Economic Growth in Nigeria. *International Journal of Engineering And Sciences*, 3(11), 7-18.
16. Ogundari, K. & Awokuse (2018). Human capital contribution to economic growth in Sub-Saharan Africa: Does health status matter more than education? . *Economic Analysis and Policy*, 58, 131-140.
17. Oladeji, A. O. (2015). Impact of Human Capital Development on Economic Growth in Nigeria. *International Journal of Recent Research in Commerce Economics and Management*, 2(2) Pp151- 164.
18. Olalekan O (2014) Human Capital and Economic Growth in Nigeria. *International Journal of Innovation, Scientific Resources*. Vol.11.(2). 291-294



19. Olorunfemi Alimi, Christopher Fagbohun, and Mohammed Abubakar (2021) Is Population an Asset or a Liability to Nigeria Growth? Evidence from FM-OLS and ARDL Approach to Co-integration. *Future Business Journal*. Vol.7 (1), 1-12
20. Oyedele, O. (2014). Human Capital and Economic Growth in Nigeria. *International Journal of Innovation and Scientific Research*, Volume 11, Issue 2, Pages 291–294.
21. Romer, P. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, 94, 1002–1037.
22. Solow, R. (1956). Technical change and the aggregate population function. *Review of Economics and Statistics*, 39: 312-320.
23. Sultanova, V. A. (2016). Human capital as a key factor of economic growth in crisis. *Human capital as a key factor of economic growth in crisis.*, 19(2), 72-79.
24. Swain, R. (2018). “A critical analysis of the sustainable development goals”. In *Handbook of Sustainability Science and Research*, Springer, Cham, , pp. 341-355.
25. World Bank. (2016). “Nigeria’s booming population requires more and better jobs. World Bank, available <https://www.worldbank.org/en/news/press-release/2016/03/15/nigerias-booming-population-requires-more-and-better-jobs>.
26. Yakubu, M. A. (2020). “Labour force participation and economic growth in Nigeria”. *Advances in Management and Applied Economics*, Vol. 10 No. 1, pp. 1-14.
27. Zahonogo, P. (2016). “Trade and economic growth in developing countries: evidence from sub-Saharan African. *Journal of African Trade*, Vol. 3 Nos 1/2, pp. 41-56.