



IMPACT OF HUMAN CAPITAL DEVELOPMENT ON THE PERFORMANCE OF NIGERIAN ECONOMY

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ABSTRACT

This study examines the impact of human capital development on the performance of Nigerian economy. The study utilised annual time series data sourced from World Bank, World Development Indicator and Index Mundi 2024 respectively. The major objective of this study is to examine the impact of human capital development on the performance of Nigerian economy. The study utilized Auto regressive distributed Lag Model (ARDL) to analyse the data from 2004 to 2021. The ARDL bound test for cointegration revealed that there is a long run relationship among the variables. The findings shows that human capital development indicators had positive impact on the performance of Nigerian economy and statistically significant at 5% level. The coefficient of human capital development (HCD) is negative and statistically significant at 5% level within the reviewed periods. The coefficient of labour force (LAB) is positive and statistically significant at 5% level. The coefficient of trade openness (TOP) is negative and statistically significant at 5% level. The coefficient of population (POP) is positive and statistically significant at 5% level. The Error Correction Term (ECT-1) confirms that there is a long run relationship among the variables. Coefficient of the ECT-1 show that 94% of the short run deviation from the long run equilibrium of the variables utilised for the study is corrected each year until they attain the long run equilibrium. The study recommends that government should invest more in human capital development and endeavours to prioritize the health and education sectors budgeting considering their growth driving potential in Nigeria. Similarly, government can as well make a deliberate policy that will create the atmosphere for investment and employment for economic growth in Nigeria.

Keywords: *Human Capital Development, Economic Growth, Auto-regressive distributed lag & Nigeria.*

1.0 Introduction

A nation can prosper optimally if three cardinal factors are present; they include human development, technological advancement, and natural resources. While natural factors are almost always endowments, human capital and technology enhance one another and facilitate growth when they are appropriately combined. Human capital development has been emphasized by most economists as an important factor that contributes to the socio, economic and political transformation of a nation.

It is also considered an additional reason explaining effective outcomes achieved by developed and, to a more or less reasonable extent, newly industrialized countries (World Bank, 1995; Barro, 1991; Adedeji & Bamidele, 2023). This progress is accomplished through increased knowledge, training, and skills attained through education for the population.

Human capital is one of the vital components in the development progress and it help in maximizing the growth capacity of a nation. In this regard, Harbinson (1973) puts it succinctly that ‘human resources are the ultimate basis of a nation’s wealth’. While capital and other resources may be enabling in production processes, people are the ones who gather capital, create resources, develop organizations, and propel the nation forward. A country that does not foster the development and application for its people of the skills and knowledge they possess will only perform at a subsistent level. Development of human capital is a competitive factor, enhances well-being, and benefits development of the economy, (Parente & Prescott, 2000).

Other developed countries that have put in place strategies directed towards the human capital development so as to enhance their economic growth; this area has been largely overlooked in Nigeria. In terms of governmental expenditures, education spending has improved – making more school constructions and an increase in the number of students in school. However, challenges such as poor education quality, many graduates who are unemployable, and a great deal of the population without specific skills persist in Nigeria. Such challenges speak volumes about the gaps in Nigeria’s human resource development.

Worse is the irony that as a consequence of poor education coupled with an increasing population of uneducated people, Nigeria has become the biggest market in Africa and the third fastest developing economy in the world. This growth is mainly oil-based, making it necessary to understand exactly what human capital contribution and how it operates in this economic development context, on the nation, in this case, Nigeria. The objective of this paper is to understand in what ways human capital development affects the economic growth and development in Nigeria.

Following the background, the paper is structured to consist of introduction, literature review, methodology, conclusion and recommendations.

2.1 Literature Review

Early studies of the effects of human capital on growth, such as Mankiw, Romer and Weil (1992) and Barro (2024), were based on data sets pertaining to a very diverse array of (more than 100) countries during the post- 1960 era. They used narrow flow measures of human capital such as the school enrolment rates at the primary and secondary levels, which were found to be positively associated with output growth rates. Barro and Sala-i- Martin (2024), among many others, have also included life expectancy and infant mortality in the growth regressions as a proxy of tangible human capital, complementing the intangible human capital measures derived from school inputs or cognitive tests considered; their finding is that life expectancy has a strong, positive relation with growth. Acemoglu (2024) has offered a formal demonstration of how positive spill-over effects (pecuniary externalities) created by workers’ educational and training investment decisions can give rise to macro-level increasing returns in human capital. His model supposes that workers and firms make their investments in human and physical capital respectively, before being randomly matched with one

another. The direct consequence of random matching is that the expected rate of return on human capital is increasing in the expected amount of (complementary) physical capital with which a worker will be provided. According to Leeuwen (2024), human capital is formal and informal education, yet it can also contain factors such as the costs of raising children, health costs and ability. He observes further that the health and education components are recognized although, education comes ahead of health, showing the priority placed on it. Similarly, Igun (2024) defines human capital as the total stock of knowledge, skills, competencies, innovative abilities possessed by the population. These obviously have education as their bedrock.

Neoclassical growth implies conditional convergence; growth of income depends upon initial income plus determinants of eventual steady state income. The most critical determinant is technology improvement, which is expensive and can be influenced by policy (Parente and Prescott, 1999). By contrast there is no steady state with endogenous growth, and therefore no conditional convergence, because there are no diminishing returns in the aggregate production function. Poor countries will continue to be relatively poor, and big economies will grow faster than small. One reason for endogenous growth (see Rebelo, 1991) is that human capital is embodied in labour; one worker's human capital cannot benefit another's in the same way as from their own improved human capital.

No doubt, there can be no significant economic growth in any country without adequate human capital development. In the past, much of the planning in Nigeria was centred on the accumulation of physical capital for rapid growth and development, without recognition of the important role played by human capital in the development process. People are assets – in fact a country's most valuable assets. It is essential for human development that these assets be deployed sensibly. Nigeria's overarching objective since independence in 1960 has been to achieve stability, material prosperity, peace and social progress. However, this has been hampered as a result of internal problems. These include inadequate human development, primitive agricultural practices, weak infrastructure and uninspiring growth of the manufacturing sector, a poor policy and regulatory environment and mismanagement and misuse of resources. In order to ensure the economy delivers on its potentials, the country experimented with two development philosophies; a private sector-led growth in which the private sector served as the “engine house” of the economy and a public sector driven growth in which the government assumed the “commanding heights” of the economy. The initial low level of private sector development however, led to public sector dominance of the economy, encouraged by growth in the oil sector, (UNDP, 2024).

2.2 Theoretical Review

Contemporary discussions on human capital development and economic growth are often explained by three key theories:

Human Capital Theory

This theory goes a step further to explain the reasons behind the returns on educational investment, through the lifting up of skill levels as a means of improving output and productivity in the workforce. There are supportive literatures from scholars like Theodore Schultz, Gary Becker, or Jacob Mincer who opine that educational investment exercises human capital by augmenting intrinsic abilities with education (Babalola,

2000). Such investment includes the cost of attending school, retraining, and feeding. As a result, the increase in the amount of human capital occurs and is delayed in cases where gross accumulation is greater than the gross amount depreciated due to certain lags.

Modernization Theory

This theory analyzes the inverse approach and how in this case, education affects a person's values, beliefs, and behaviour patterns. Those who are exposed to contemporary institutions such as schools, factories and the mass media learn to appreciate modern values and attitudes. Such as being open to new ideas, breaking free from traditional authority, being willing to participate in the processes of planning and forecasting, and actively doing things both personally and socially, (Babalola, 2000).

Dependence Theory

This theory is derived from Marxist ideas and examines how the global economic system influences economic transformation in both central and peripheral regions. It suggests that aspects of the global political landscape such as the fiscal strength of states, levels of centralization, and external political integration can impact economic growth in developing countries, (Babalola, 2000).

2.3 Empirical Review

This chapter thoroughly examines various literature on the effect of human capital development on the performance of Nigerian economy from 2004 to 2024. Some studies report a positive relationship of human capital variables on growth while others report negative relationship between human capital variables and growth. The various studies also examine the causes, effects and implications of their results on the economy and proffer possible solutions for the benefit of Nigerians and the world at large. But for every economy to achieve sustainable development, the human capital development objective should be made a priority, most studies concluded.

Magai et al. (2021), Law-Biadio (2022), and Francis et al. (2023) all explored the impact of human capital on Nigeria's economic development over different time periods, employing the Autoregressive distributed lag (ARDL) model method for their analysis. Magai et al. (2021) found a significant relationship between human capital and economic growth, both in the short and long term. In contrast, Law-Biadio (2022) and Francis et al. (2023) found that key human capital development variables in their models did not significantly affect economic growth. For example, Law-Biadio (2022) observed that total government expenditure on education and health had a positive but insignificant long-term relationship with GDP, while gross capital formation showed a similarly insignificant positive relationship. Additionally, life expectancy was found to have a negative and insignificant long-term relationship with GDP. Francis et al. (2023) also found that government expenditure on education and tertiary school enrollment negatively impacted economic growth in the long run, though these effects were insignificant. Conversely, government expenditure on health, gross fixed capital formation, and primary and secondary school enrollments had insignificant positive impacts on economic growth.

In contrast, Wakeel and Alani (2022) Used Ordinary Least Square (OLS) and descriptive analysis to assess the contribution of various human capital development measures to economic growth in Nigeria. Their

findings indicated that both education and health components of human capital development significantly affect economic growth in Nigeria. Shobowale et al. (2022) utilized panel least squares method to assess the direct impact of human capital development and specific total factor productivity components (technology and infrastructure) on economic growth in selected sub-Saharan African countries. Their findings indicated that human capital development alone is insufficient to drive economic growth, aligning with the conclusions of Law-Biadio (2022) and Francis et al. (2023).

Joseph et al. (2022) investigated the effects of human capital formation on output and employment using a vector error correction model (VECM). Their results showed that while government expenditure on education and the human capital index were statistically significant, government expenditure on health was not. This suggests that the quantity and quality of human capital indicators do not significantly contribute to employment growth in Nigeria.

Titus (2023) employed a qualitative research design to explore how human capital development affects Nigeria's economic growth. The study employed Ordinary Least Square (OLS). The study found a clear and positive connection between the development of human capital and economic growth in Nigeria.

This study employed Auto regressive distributed lag (ARDL) model to analyze dependent and independent variables identified. The study adopted three theories includes human capital, modernization and dependency theories were utilized for the purposes of this study. There are studies carried out on the impact of human capital development on the economic growth but little using (ARDL) and OLS, but little have conducted in 2004 to 2024.

3.1 Methodology

Research Design

This study employs correlation research design to examine the relationship between the dependent and explanatory variables. To empirically investigate how human capital development affects economic growth in Nigeria, the research utilizes the Augmented Dickey-Fuller Unit Root Test, ARDL, and the Error Correction Model (ECM). The data for this analysis is drawn from annual secondary sources, including the World Bank's World Development Indicators (2024) and Index Mundi (2024).

Model Specification

To assess both the short-term and long-term relationships between human capital development and economic growth, this study uses a modified version of the ARDL model originally developed by Pesaran, Shin, and Smith (2001) and applied by Magai Abe et al. (2021). The model incorporates variables such as economic growth (RGDP), government expenditure on education, government expenditure on health, government expenditure on social services, tertiary enrollment rate, and life expectancy. The Autoregressive Distributed Lag (ARDL) model is as follows:

$$\Delta RGDP_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta RGDP_{t-i} + \sum_{i=0}^n \alpha_{2i} \Delta EXR_{t-i} + \sum_{i=0}^n \alpha_{3i} \Delta HCD_{t-i} + \sum_{i=0}^n \alpha_{4i} \Delta LAB_{t-i} + \sum_{i=0}^n \alpha_{5i} \Delta TOP_{t-i} + \sum_{i=0}^n \alpha_{6i} \Delta POP_{t-i} + \beta_1 RGDP_{t-1} + \beta_2 EXR_{t-1} + \beta_3 HCD_{t-1} + \beta_4 LAB_{t-1} + \beta_5 TOP_{t-1} + \beta_6 POP_{t-1} + \mu_t \dots \dots \dots 3.0$$

Thus, the error correction version of ARDL model pertaining to the variables in equation (3.0) is as follows:

$$\Delta RGDP_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta RGDP_{t-i} + \sum_{i=0}^n \alpha_{2i} \Delta EXR_{t-i} + \sum_{i=0}^n \alpha_{3i} \Delta HCD_{t-i} + \sum_{i=0}^n \alpha_{4i} \Delta LAB_{t-i} + \sum_{i=0}^n \alpha_{5i} \Delta TOP_{t-i} + \sum_{i=0}^n \alpha_{6i} \Delta POP_{t-i} + \lambda EC_{t-1} + \mu_t \dots \dots \dots 3.1$$

Where λ is the speed of adjustment parameter and EC is the residuals that are obtained from the estimated cointegration model of equation (3.1)

Where:

RGDP = economic growth (proxied by real GDP)

HCD = Human Development Index

EXR = Exchange rate

LAB = Labour force

TOP = Trade openness

POP = Population

Variables and Measurements

S/N	Donation	Variables	Measurement	Source/Dates
1	RGDP	Economic growth	real Gross domestic product (local currency unit in billions)	(WDI)2024
2	LAB	Labour force	Comprises people ages 15 and older who supply labor to produce goods and services during a specified period.	(WDI)2024
3	EXR	Exchange rate	Official exchange rate determined by national authorities (local currency units relative to the U.S. dollar	(WDI)2024
4	HCD	Human Development	Average achievement in key dimensions of human development in terms of health,	Index Mundi 2024

		Index	education and gross national income.	
5	TOP	Trade openness	Trade ratio	(WDI)2024
6	POP	Population growth	population growth rate.	(WDI)2024

Source: Compiled, WDI. by Author.

Results and Discussion

This section shows different technique of analysis used to arrive at a logical conclusion

a. *Correlation Test Results*

Table: 1 Correlation Matric

	RGDP	EXR	HCD	LAB	TOP	POP
HCD	-0.418781	0.441688	1.000000			
RGDP	1.000000					
EXR	-0.576986	1.000000				
LAB	-0.270775	0.233776	0.960811	1.000000		
TOP	-0.086469	-0.083221	-0.115445	-0.113585	1.000000	
POP	0.687048	-0.600443	-0.875344	-0.581092	0.027870	1.000000

Source: *Authors computation E-views 10, 2024*

Based on the correlation results presented in Table 1, Population (POP) has a strong positive correlation (0.68) with economic growth (RGDP), exchange rate (EXR), human capital development (HCD), labor force (LAB), and trade openness (TOP) have negative correlations with RGDP. Trade openness (TOP) and population (POP) have a negative correlation with exchange rate (EXR), although human capital development (HCD) and labor force (LAB) have a positive correlation. Additionally, there is a positive correlation between the labor force (LAB) and human capital development (HCD), but a negative correlation between the population and trade openness (TOP) and HCD. Likewise, there is a negative correlation between labor force (LAB) and population (POP) and trade openness (TOP). Trade openness (TOP) and population (POP) have a positive correlation and are strong.

Table: 2 Unit Root Test

VARIABLES	Augmented Dicky-Fuller test statistic		Critical Value at 5% at level		Order of integration
	At Level	At 1 st Difference	At level	At 1 st Difference	
	EXR	-4.329934	-	-3.759743	
LAB	-3.793440	-	-3.052169	-	I (0)
TOP	-5.104255	-	-3.052169	-	I (0)
POP	-3.483834	-4.625166	-3.791172	-3.733200	I (1)
RGDP	-4.482844	-4.483844	-4.41253	-3.310349	I (1)

Authors: computation using E-views version 10, 2024.

The unit root test results revealed that the variables exchange rate (EXR), labor force (LAB), trade openness (TOP) are stationary at level. This because their ADFs are less than their critical value at 5%. Thus, integrated of order zero I (0). The variables population (POP) and economic growth proxied by (RGDP) are not stationary at level but become stationary after first differencing thus integrated of order one I (1).

Lag Selection Criteria

Table:3 Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-363.7830	NA	4.62e+08	36.97830	37.27701	37.03661
1	-291.4773	93.99735*	14735831*	33.34773*	35.43877*	33.75592*

Authors computation using E-views 10, 2024.

Based on the result presented in Table 3, among the maximum lag lengths of two lags, the optimal lag length of (1) was chosen based on four distinct factors, with the least values for one lag. The study estimated the ARDL limits (Wald) test after determining the number of lags to be employed in the models; the results are shown in Table 4

Table 4 Bound Test

Lag =2		F-statistics = 16.16121*							
		Critical Value Bound of the F-statistics							
K	10%		5%		2.5%		1%		
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I (0)	I (1)	
5	2.08	3	2.29	3.38	2.7	3.73	3.06	4.15	

Note: * implies that computed f-statistics is above upper bound values

Source: Authors computation using E-views 10, 2024.

Based on the result presented in Table 4, the co-integration approach and bound test result shows that the first method compares the computed f-statistic result to the crucial values provided in the Pesaran, Shin, and Smith (2001) paper. Thus, at 10%, 5%, 2.5%, and 1%, the f-statistic of 16.16121, which is computed at k=5 (number of independent variable), surpasses the upper critical threshold. Without taking into account

whether or not they are integrated of the same order, the null hypothesis that there is no co-integration was thus rejected. As a result, it was determined that the variables have a long-term relationship

Table 5. Estimated long run Coefficients based on ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR	0.242782	0.090084	2.695067	0.0309
HCD	-46.54549	70.19645	-6.630747	0.0003
LAB	6.90E-07	1.78E-07	3.873467	0.0061
TOP	-0.055490	0.018282	-3.035157	0.0190
POP	22.09863	7.463735	2.960800	0.0211
C	118.2225	36.62576	3.227851	0.0145

Source: Authors computation using E-views 10, 2024.

The long-term exchange rate coefficient (EXR) in Table 5 is positive and statistically significant at the 5% level. This suggests that economic growth will increase by 24 for every unit increase in the exchange rate. At the 5% level, the coefficient of human capital development (HCD) is statistically significant and negative. This suggests that economic growth will be lowered by 46 for every unit increase in human capital development. This implies that Nigeria might be experiencing brain drain or underutilizing its human capital. Most Nigerians leave the country for white-collar work abroad, which causes a flight of human capital. However, at the 5% level, the labor force coefficient (LAB) is positive and statistically significant. This suggests that increasing the labor force could boost Nigeria's economic expansion.

Error Correction Model

Table 6 Error Correction Model Test Results

CointEq(-1)*	-0.963111	0.135437	-14.49468	0.0000
R-squared	0.943160	Mean dependent var		-0.329610
Adjusted R-squared	0.930044	S.D. dependent var		2.587226
S.E. of regression	0.684303	Akaike info criterion		2.281492
Sum squared resid	6.087515	Schwarz criterion		2.477542
Log likelihood	-15.39268	Hannan-Quinn criter		2.300980
Durbin-Watson stat	2.469079			

Authors: *computation using E-views 10.*

Based on the result presented in Table 6 there is a long-term correlation between the variables, which is confirmed by Error Correction Term coefficient (ECT-1). According to ECT-1, 94% of the variables' annual deviations from their long-term equilibrium are fixed until they reach their long-term equilibrium.

Diagnostic Test

Table 7 Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.621582	Prob. F (1,6)	0.4605
Obs*R-squared	1.595827	Prob. Chi-Square (1)	0.2065

Authors: *computation using E-views10.*

Based on the result presented in Table 7 there is a long-term correlation between the variables, which is confirmed by Error Correction Term coefficient (ECT-1). According to ECT-1, 94% of the variables' annual deviations from their long-term equilibrium are fixed until they reach their long-term equilibrium.

Table:8 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.678332	Prob. F (9,7)	0.7124
Obs*R-squared	7.919489	Prob. Chi-Square (9)	0.5423
Scaled explained SS	0.905272	Prob. Chi-Square (9)	0.9996

Authors: *computation using E-views 10.*

Based on the result presented in Table 8, the heteroskedasticity test reveals that the Obs*R-Squared, which gauges the model's quality or fitness, indicates that we are unable to reject the null hypothesis of constant variance because the P-value of 0.5423 is higher than the usual significance level of 0.05%. Therefore, the residuals show no discernible signs of heteroscedasticity.

Conclusion

This study looks into how Nigeria's economic growth is impacted by the development of human capital. Annual time series data from the World Bank World Development Indicator and Index Mundi 2024, respectively, were used in the study. The primary goal of this research is to examine how Nigeria's economic growth is impacted by the development of human capital. The analysis of the data from 2004 to 2021 was done using the Auto Distributed Lag Model (ARDL). There is a long-term link between the variables, according to the results of the ARDL bound test for cointegration. The results showed that the exchange rate's long-term coefficient (EXR) is positive and statistically significant at the 5% level. At the 5% level, the coefficient of human capital development (HCD) is statistically significant and negative.

The variables have a long-term association, as indicated by the Error Correction Term coefficient (ECTt-1). According to the ECTt-1, 94% of the short-term differences from the long-term equilibrium are resolved annually until the long-term equilibrium is reached.

Recommendations

- i. Given that the development of human capital has a detrimental effect on economic growth, it is possible that Nigeria is experiencing problems with human capital flight. This is a result of Nigeria's poor human capital development, which isn't strong enough to propel the country's

economy toward expansion. Therefore, it will be appropriate to implement a purposeful policy that will foster investment and employment in order to achieve economic growth.

- ii. Good governance can only thrive in a corrupt-free environment hence, the government, private firms and other corporate bodies together with the general public must ensure that corruption is reduced to its barest minimum if not completely eradicated in the country.
- iii. The country's human capital should be developed through the allocation of sufficient financial resources to the education sector.
- iv. The government ought to start significant programs that give Nigerian graduates employment opportunities. This is because a large number of today's youth engage in social vices such as armed robbery, prostitution, and kidnapping as a result of unemployment.

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