

INSTITUTIONAL QUALITY AND HUMAN CAPITAL DEVELOPMENT IN NIGERIA: IS THERE ANY LINK?

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Despite efforts to improve quality human capital, Nigeria consistently scores poorly in the human development index (HDI). The significance of institutions in human development has been emphasized in recent times as countries grapple with achieving sustainable development goals. Studies show that quality institutions provide equitable and fair development opportunities and capabilities to enhance human development. This study, therefore, examined the effect of institutions—corruption, democratic accountability, and government stability on Nigeria's human capital development index. The ARDL model is employed to analyze data from 1990 to 2022. The outcomes show that a stable political system, high levels of democratic accountability, improved per capita GDP, employment generation, and consistent government spending on essential sectors are all critical for human capital development. Conversely, high rates of poverty and corruption have negative impacts on human capital. The findings lend credence to the intuition that strong institutions have a significant impact on enhancing quality human capital through improved healthcare, education, human capabilities, poverty reduction, employment opportunities, and security. It is therefore recommended that institutional reform that guarantees human development be pursued.

Keywords: Human capital, Poverty, Employment, Government stability, Democratic accountability, Corruption

JEL Classification: J24, P36

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1. Introduction

Investment in human capital has long been a concern for the global economy, particularly in developing countries. The Millennium Development Goals (MDGs) between 2000 and 2015 and the Sustainable Development Goals (SDGs) of 2015 are among the global strategies launched by the United Nations, focusing on both economic and humanitarian development to enhance human capability. This is because human capital is tied to economic prosperity. According to Human Development Report (HDR) (2016), human capital development entails developing people through enhancement of their potential, for the people through the deployment of development benefits to them, and by the people through active participation in the activities that impact and shape their lives. Despite efforts over the years to enhance the quality of human capital, sub-Saharan Africa, particularly Nigeria, continues to face significant challenges in its human capital development, ranking among the low human development index countries. This is in fact surprising given the country’s endowment.

The low human development in Nigeria has been blamed on poor public funding of the education and health sectors, poverty, corruption, and a lack of accountability (Ifejika, 2017; Joseph-Raji & Timmis, 2018, among others). Between 2000 and 2023 (see Table 1), the allocations to the sectors were below 10 percent, except for 2015's education (10.7%), far less than the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the universal benchmark of 15 percent of the budget for health and 15-20 percent for education. The government's 2021 budget allocations were only 5.68% and 4.06% of the total budget for education and health, respectively, despite their pledge to increase spending. This shortfall in funding has resulted in widespread disparities in access to quality education and healthcare services across the country, leading to low-quality human capital.

Table 1. Summary of Results of Unit Root Test

Year	National Budgets (N)	Education (% of total budget)	Health (% of total budget)
2000	677bn	8.36	3.64
2005	1.6trn	4.98	3.98
2010	3.93trn	6.40	3.75
2015	4.49trn	10.7	5.28
2016	6.06trn	7.9	4.13
2017	7.44trn	7.38	4.09
2018	9.12trn	7.04	3.91
2019	8.92trn	7.05	4.18
2020	10.81trn	6.7	4.16
2021	14.57trn	5.68	4.06
2022	17.13trn	7.2	4.29
2023	20.5trn	8.8	5.35

Source: Lawal (2021, October 28); Suleimon (2022, November 11), Dataphyte

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When compared to other African nations, Table 2 shows that Nigeria has consistently scored low in the human development index (HDI). The country ranked 151st with a value of 0.466 among 173 countries and ranked 163rd (0.535) among 191 countries in 2021, an average increase of 12.5 percent (United Nations Development Program, 2022). Besides, the human capital index (HCI) for 2020, according to Table 3, was 0.36, far below Kenya (0.55), Ghana (0.44), and Sub-Saharan Africa (0.40) and below the global baseline of 0.5. This implies that the productive rate of a child born in Nigeria is 36 percent if he has access to quality education and healthcare facilities. According to UNESCO (2022), Nigeria's dropout children surged from 10.5 million in 2018 to 20 million in 2022, making it the top nation in sub-Saharan Africa. This is a worrying trend that needs to be addressed in order to improve the overall well-being and future prospects of the country.

Table 2. Cross-country HDI Comparison

		1990	2000	2010	2015	2021
Nigeria	HDI Value	0.438	0.466	0.423	0.514	0.535
	HDI Rank	...	148/173	142/169	152/165	163/191
	Remarks	Low	Low	Low	Low	Low
Ghana	HDI Value	0.360	0.548	0.467	0.579	0.632
	HDI Rank		129	130	140	133
	Remarks	Low	Medium	Low	Medium	Medium
Kenya	HDI Value	0.481	0.513	0.470	0.556	0.575
	HDI Rank		134	128	146	152
	Remarks	Low	Medium	Low	Medium	Medium
Egypt	HDI Value	0.501	0.642	0.620	0.691	0.731
	HDI Rank		115	101	111	97
	Remarks	Medium	Medium	Medium	Medium	High
South Africa	HDI Value	0.731	0.695	0.597	0.691	0.713
	HDI Rank		107	110	119	109
	Remarks	Medium	Medium	Medium	Medium	High

*Source: U.N. Human Development Report, various issues***Table 3. Human Capital Index: Country Comparison**

Indicator	Nigeria	Kenya	Ghana	South Africa	Sub-Saharan Africa
HCI 1: Survival					
Probability of Survival to Age 5	0.88	0.96	0.95	0.97	0.934
HCI 2: School					
Expected years of school	10.2	11.6	12.1	10.2	8.3
Harmonized test scores	309	455	307	343	374
HCI 3: Health					
Survival rate from age 15 – 60	0.66	0.95	0.93	0.69	0.735
Fraction of children under 5 not stunted	0.63	0.77	0.82	0.73	0.688
Human Capital Index (HCI)	0.36	0.55	0.44	0.41	0.40

Source: World Bank, Human Capital Index (2020)

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Numerous studies have highlighted the significance of institutions in growth, income distribution, and poverty reduction (Chong & Calderon, 2000a, 2000b; Acemoglu, 2005; Butkiewicz & Yanikkaya, 2006; Nawaz, Iqbal, & Khan, 2014; Acemoglu, Naidu, Restrepo, & Robinson, 2019; Jindra & Vaz, 2019; Coccia, 2021, etc.). Furthermore, studies also showed that institutions are crucial in the human capital-growth nexus, which has become increasingly important in the development process, especially in emerging economies where institutional quality is often weak, hindering efficient resource allocation and economic growth (Bhattacharyya, 2009; Dias & Tebaldi, 2012; De Silva & Sumarto, 2014; Faria, Montesinos-Yufa, Morales & Navarro, 2016; Uberti & Knutsen, 2021; Uddin, Ali & Masih, 2021; Ouedraogo, Tabi, Ondoa, and Jiya, 2022). However, there is still much debate and research needed to fully understand the complex interplay between institutional quality and human capital. Tridico's (2005) study underscores the necessity of effective institutional policies that can provide people with opportunities to improve their capabilities, highlighting the state's critical role in ensuring equal access and opportunity for all individuals. According to Tridico (2007), as much as human capital is essential for economic prospects, investment in human capital is necessary; however, strong institutional policies are indispensable in this relationship.

Additionally, some academics (Barro, 1998; Becker, 2010; Son, 2010; Glaeser, Porta, Lopez-De-Silanes, & Shleifer, 2004; Acemoglu, Gallego, & Robinson, 2014; Muhammad, Egbetokun, and Memon's, 2015; United Nations, 2021, among others) contended that quality human capital could drive strong institutions and propel growth and development. This link emphasizes the importance of investing in institutions and human capital. The United Nations Economic and Social Commission for Western Asia (UNESCWA) (2021) emphasizes the importance of robust institutions in government fiscal capacity, employment generation, socioeconomic inclusion, healthcare, education, and sustainable economic growth. This argument further emphasizes the importance of institutions in human development.

Extant research in Nigeria has mainly focused on corruption and government ineffectiveness (Chiekezie, Nzewi, & Emejulu, 2016; Yaroson, Esey, & Abdul-Qadir, 2017; Omotoye et al., 2021; Fagbemi, Osinubi, Nzeribe, & Bankole, 2022) with the exception of Nwokoye, Onugha, and Kalu (2020), who captured democracy using a dummy variable. The literature on the impact of democratic accountability and government stability on human capital, seems to be scanty. Therefore, further research is required to understand the link since the current literature on this topic is limited and inconclusive. This study, therefore, explores the link between Nigeria's human development and institutional quality, accounting for the impact of government stability, corruption, and democratic institutions. The importance of government stability and democratic institutions on human development cannot be underrated in a democratic economy like Nigeria. Strong democracy is crucial for government stability, funding basic services, and human capability enhancement. It protects citizens' rights, ensures justice, and promotes well-being. Balancing these responsibilities is essential for human development. The article is organized as follows: The related literature is presented

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in Section 2. The technique is covered in Section 3, and the empirical findings are covered in Section 4. Section 5 presents the conclusion.

2. Related Literature

2.1. Theoretical Review

Human capital development theories of Schultz (1961, 1971), Weisbrod (1962), and Becker (1962) posits that education, training, knowledge, skills, and health enhance individuals' productivity, earning potential, and economic growth. These scholars view investments in human capital through education, training, healthcare, and other social services as critical factor to higher productivity, innovation, and overall economic prosperity. Several scholars have advocated for quality institutions in promoting human capital for the growth process. Robust institutional frameworks are suggested to support investments in human capital by providing quality education, healthcare systems, and stable political environment that facilitate skill development and individual's productivity. North (1991) defined institutions as the rules, norms and organisations that govern political, economic and social interaction. They can be formal rules such as constitutions, laws, and property rights, or informal such as taboos, customs, traditions and codes of conduct. Several theories emerged linking growth to investment in human capital through institutions. Sen (1984) emphasizes the crucial role of institutions in promoting human capabilities and development, arguing that robust institutions are vital for access to education, healthcare, and other essential services.

2.2. Empirical literature

Studies have shown that robust institutions often enhance human capital. Brown (1999) highlighted that democracy significantly increased primary school enrollment in Central and Southern America, the Middle East, and South and Eastern Asia from 1960–1987. In the same vein, Brown and Hunter (2004) argued that democratic institutions enhance human capital formation by increasing funding for primary education. Political stability is crucial for long-term investments in education and skill development, contributing to human capital formation (Tebaldi & Mohan, 2009). Wong and Gomes' (2014) study posits that poor access to basic needs exacerbates corruption, leading to poor HDI in Africa and other regions. Shuaibu and Oladayo (2016) underscored the significance of investing in social services and policies that foster human capital development, highlighting quality institutions and improving access to basic needs as key determinants. Stryzhak, Tupa, and Rodzik's (2022) study revealed a strong positive correlation between institutions and human capital. Prasetyo and Kistanti (2020) asserted that the achievement of human development strategies is a challenging task without robust institutions. Institutions play a crucial role in fostering human capital development, long-term prosperity, and well-being (De Muro & Tridico, 2005; Balcerzak & Pietrzak, 2017). The United States Agency for International Development (USAID)

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(2023) emphasizes the importance of investing in human capital and strong institutions for fostering resilient societies, lowering poverty, and promoting sustainable growth.

Some literature demonstrates the negative impact of corruption on human development. Studies by Tran (2008), Yaroson et al. (2017), and Emara (2020) revealed a negative correlation between corruption and human capital, indicating that an increase in corruption levels hampers quality human capital. Akcay (2016) found that countries with high corruption levels often have underdeveloped human capital in 63 countries studied using three corruption indexes. Chiekezie et al. (2016) and Abdulla (2021) recognized corruption as an obstacle to human development. Fagbemi et al. (2022) highlighted the significant link between corruption and human capital in Nigeria, emphasizing the necessity of addressing corruption to promote human development.

Furthermore, studies (e.g., Okunmadewa et al., 2005; Takahashi & Otsuka, 2008; Akpomuvie, 2010; Chikelu, 2016; Olopade, Okodua, Oladosun, & Asaleye, 2019; Ewubare & Wokekoro, 2021) posited that improving human capital can significantly reduce poverty, and a reduction in poverty can enhance human capital. Norton's (2003, 2010) studies stress the crucial role of institutions in human development and poverty reduction, highlighting their positive impact across various countries. Absalyamova et al. (2016) found that a 1% increase in corruption worsens the low HCSDI, identifying corruption as a significant obstacle to human development. Ejubekpokpo and Hassan (2019) revealed that weak institutions inhibit the educational attainment of schoolchildren in low-income Sub-Saharan Africa. The study by Khan and Naeem (2020) discovered that corruption and income inequality in developing nations pose a significant threat to human development. Ouedraogo et al. (2022) found that robust institutions significantly improve access to education and human capital development.

Institutions can reduce poverty and improve human capital by impacting income levels (Asongu & Kodila-Tedika, 2017). Another study has shown that quality human capital has a significant influence on institutions. Bekana (2019) revealed that human capital is vital in promoting democracy and innovation, whereas Danta and Rath (2024) identify institutional quality as a key influencing factor. Githaiga and Kilong'i's (2023) study revealed that institutions play a crucial role in regulating the influence of foreign capital on human development. Fomba, Talla, and Ningaye's (2023) study in 82 developing countries revealed that institutions significantly impact school enrollment and completion. In conclusion, most research has demonstrated a positive correlation between a country's quality institutions and its human capital.

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3. Methodology and Data Source

3.1. Model Specification

The estimated model for examining the link between institutions and human capital is specified in equation (1).

$$HC = F(INS, Z) \quad (1)$$

Equation (2) specifies the estimated econometrics model:

$$HC_t = \alpha_0 + \beta_1 INS_{it} + \beta_2 Z_t + \varepsilon_t \quad \text{i.e. } INS_{it} = (COR, DEM, GST) \quad (2)$$

Where HC is the human capital. INS are institutional quality variables: government stability, corruption, and democratic accountability. α_0 is intercept while β 's is the coefficient of the explanatory variables. ε_t is the residual error term.

3.2. Estimation techniques

The series integration order was determined using the Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) unit root tests. Also, pairwise correlation was used to investigate the relationship among the series. The study utilized the Autoregressive Distributed Lags (ARDL) method, developed by Pesaran, Shin, and Smith (2001), to examine the correlation between variables. This method is suitable, particularly in cases where the variables exhibit a mixed order of integration. Besides, the bound test and short-run and LR coefficients are used to establish long-run (LR) relationships between variables, enabling the prediction of dynamic interaction among them (Pesaran, Shin, & Smith, 2001). Equation (3) specifies the ARDL model:

$$HC_t = \beta_0 + \beta_1 INS_{it} + \beta_2 LOGPOV_t + \beta_3 LOGPCGDP_t + \beta_4 PSP_t + \beta_5 LOGEMP_t + \varepsilon_t \quad (3)$$

Equation (3) illustrates the long-term dynamic relationship between human capital and explanatory variables, while LOGPCGDP measures the country's economic growth. This is required in the model because slow growth can make it more difficult to finance high-quality healthcare and education, while low income can limit the development of human capital if growth is not inclusive. Nigeria, for instance, has impressive output growth yet still ranks below the human capital index. LOGPSP is the log of government spending. LOGPOV is the logarithmic form of poverty headcounts in Nigeria. LOGEMP is a log of the employment ratio. The short-run adjustment of the variables is specified in equation (4):

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$$\Delta HC_t = \alpha_0 + \sum_{t=1}^p \alpha_1 \Delta INS_{it-1} + \sum_{t=0}^p \alpha_2 \Delta LOGPOV_{t-1} + \sum_{t=0}^p \alpha_3 \Delta LOGPCGDP_{t-1} + \sum_{t=0}^p \alpha_4 \Delta LOGPSP_{t-1} + \sum_{t=0}^p \alpha_5 \Delta LOGEMP_{t-1} + \gamma ECT_{t-1} + \varepsilon_t \quad (4)$$

Where Δ stands for the first differenced operator, p is the model's lags length selected based on Akaike Information Criterion. ECT_{t-1} represents the error correction term. indicates the speed of adjustment from the SR to the LR equilibrium in the case of any shock. represents summation. The ARDL-ECT specification is re-specified in equation (5):

$$ECT_{t-1} = \sum_{t=0}^p \beta_1 \Delta HC_{t-1} + \sum_{t=0}^p \beta_2 \Delta INS_{it-1} + \sum_{t=0}^p \beta_3 \Delta LOGPOV_{t-1} + \sum_{t=0}^p \beta_4 \Delta LOGPCGDP_{t-1} + \sum_{t=0}^p \beta_5 \Delta LOGPSP_{t-1} + \sum_{t=0}^p \beta_6 \Delta LOGEMP_{t-1} \quad (5)$$

Equation (6) comprise the short- and long-run estimates of the variables.

$$\Delta HC_t = \beta_0 + \sum_{t=0}^p \beta_1 \Delta HC_{t-1} + \sum_{t=0}^p \beta_2 \Delta INS_{it-1} + \sum_{t=0}^p \beta_3 \Delta LOGPOV_{t-1} + \sum_{t=0}^p \beta_4 \Delta LOGPCGDP_{t-1} + \sum_{t=1}^p \beta_5 \Delta LOGPSP_{t-1} + \sum_{t=1}^p \beta_6 \Delta LOGEMP_{t-1} + \beta_7 HC_{t-1} + \beta_8 INS_{it-1} + \beta_9 LOGPOV_t + \beta_{10} LOGPCGDP_{t-1} + \beta_{11} LOGPSP_{t-1} + \beta_{12} LOGEMP_{t-1} + \varepsilon_t \quad (6)$$

The first part of equation (6) is the short run, and the second part of the model indicates the long-run relations among the variables. Equations (7) and (8) represent the null and alternative hypotheses, respectively:

$$H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = 0 \quad (7)$$

$$H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq \beta_9 \neq \beta_{10} \neq \beta_{11} \neq \beta_{12} \neq 0 \quad (8)$$

The F-statistic is used to test the joint relationship between variables, rejecting the null hypothesis if it exceeds the upper bound, thus validating the existence of long-term relationships between the variables. Furthermore, post-estimation tests like diagnostic and stability (CUSUM and CUSUMSQ) tests were carried out to validate model and variable stability. The results are presented in Figures 2 to 4, respectively.

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3.3. Data Source and Measurement

The study uses time series annual data from 1990 to 2022. Human capital development is the human capital index, based on years of schooling and returns to education from the Penn World Table (PWT 10.01), according to Feenstra, Inklaar, and Timmer (2015). Institutional variables are measured using government stability, corruption, and democratic accountability sourced from the PRS Group International Country Risk Guide (ICRG). The data comprise 22 variables in three subgroups (political, financial, and economic) for 146 countries from 1984 (annual). The ICRG data is chosen over the World Bank Worldwide Governance Indicators (WGI) because WGI does not cover long periods and so limits its usage when considering a large number of observations for a time series study. GDP per capita is based on the constant 2015 US\$ and expressed in logarithmic form. Public spending measures the government's recurrent and capital expenditures on education, health, and other social and community services expressed in N'billion, represented in logarithmic form, and sourced from the WDI database (2022). Employment is the number of engaged persons in millions, sourced from Penn World Table 10.0 (2021), Feenstra, Inklaar, and Timmer (2015). Data on poverty is measured as poverty headcounts below \$1.9 per annum and sourced from www.povlcanet.org.

4. Discussion of Results

4.1. Descriptive Statistics

Table 4 reports the summary statistics indicating that the average human capital value is 1.627%, with minimum and maximum values of 1.22% and 1.97%, respectively. The mean value of government stability is 7%, democratic accountability is 3%, and corruption is 2%. Also, the average percentage of government funding for education, healthcare, and other social services is 7%. Compared to the UNESCO standard of 15% and 20% annually for education and healthcare, respectively, this is remarkably low. Thus, providing more insight into the causes of the country's poor human development index. Furthermore, the employment-to-population ratio averages 4%, with the lowest and highest values of 3% and 4%, respectively, indicating a high rate of unemployment in the country. While the average number of people living in poverty is 4%, the GDP per capita is 7% on average. The kurtosis value further demonstrates that all the variables are platykurtic, with the exception of government stability, which is leptokurtic. The descriptive statistics table further shows that the series is favorably and negatively skewed.

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	Mean	Minimum	Maximum	Std.Dev.	Skewness	Kurtosis
HC	1.6271	1.2225	1.9742	0.2474	-0.1222	1.6199
DEM	3.1590	0.5000	4.5000	1.1146	-0.7376	2.8773
GST	7.3143	4.7500	10.500	1.2227	0.5444	4.1806
COR	1.5252	1.0000	2.0000	0.3310	-0.0182	2.3197
LOGEMP	3.8381	3.3998	4.2907	0.2875	0.1609	1.6948
LOGPOV	3.9675	3.6686	4.2056	0.1870	-0.4066	1.6706
LOGPCGDP	7.2425	6.2027	8.0712	0.6071	-0.5273	1.7456
LOGPSP	6.6143	2.7850	9.5314	1.9037	-0.5295	2.1035

Note: HC means human capital, DEM=democratic accountability, GST=government accountability, COR=corruption control, LOGEMP=logarithmic form of employment, LOGPOV=log. of poverty, LOGPCGDP=log. of GDP per capita and LOGPSP=log. of public spending of education, health and other social and community services.

Source: Author's computation

4.2. Correlation Matrix

The human capital index, democratic accountability, per capita GDP, government spending, and employment all have a strong positive link, as Table 5 demonstrates. The table also shows the significant effects of employment, public spending, democratic accountability, and per capita GDP. Democratic accountability and per capita GDP are positively correlated, indicating that robust democratic institutions may promote the growth of human capital.

Table 5. Correlation Matrix

	HC	DEM	GST	COR	LOGEMP	LOGPOV	LOGPCGDP	LOGPSP
HC	1							
DEM	0.884	1						
GST	-0.097	-0.256	1					
COR	-0.354	-0.424	-0.422	1				
LOGEMP	0.990	0.870	-0.115	-0.296	1			
LOGPOV	-0.878	-0.762	0.337	0.055	-0.9094	1		
LOGPCGDP	0.786	0.500	-0.038	0.039	0.7674	-0.665	1	
LOGPSP	0.978	0.872	0.005	-0.479	0.9524	-0.788	0.7625	1

Source: Author's computation

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4.3. Testing for the Series' Stationarity

Table 6 presents the results of the Augmented Dickey-Fuller (ADF) and Philip-Peron (PP) stationarity tests, revealing mixed order in the series. The ADF test indicates that government stability and corruption are both stationary at level $I(0)$, respectively, while other series are stationary after the first differencing, $I(1)$. However, all the variables became stationary after first differenced when the PP test was applied. The ADF test was chosen due to its reliability in approximating the ARMA structure of error terms using parametric autoregression, which is not available in the PP test. The Pesaran, Shin, and Smith (2001) autoregressive distributed lag (ARDL) technique is utilized to estimate short-run and long-run relationships among variables.

Table 6. Stationarity test result

Variables	Level	ADF Test		Level	PP Test	
		First Diff.	Decision		First Diff	Decision
HC	-2.0329 (0.2720)	-3.6647*** (0.0099)	$I(1)$	-1.6604 (0.4411)	-3.7034*** (0.0090)	$I(1)$
DEM	-1.9620 (0.3012)	-4.0642*** (0.0042)	$I(1)$	-1.8873 (0.3338)	-8.3241*** (0.0000)	$I(1)$
GST	-3.4545** (0.0167)	-4.1865*** (0.0030)	$I(0)$	-2.3954 (0.1536)	-4.1012*** (0.0033)	$I(1)$
COR	-3.5099** (0.0155)	-2.7806* (0.0749)	$I(0)$	-1.8697 (0.3417)	-3.1120** (0.0360)	$I(1)$
LOGEMP	-0.3891 (0.8995)	-4.6288*** (0.0008)	$I(1)$	0.3988 (0.8978)	-4.6203*** (0.0009)	$I(1)$
LOGPCGDP	-1.7209 (0.4115)	-4.9068*** (0.0004)	$I(1)$	-1.8215 (0.3637)	-4.8689*** (0.0004)	$I(1)$
LOGPOV	0.4986 (0.9840)	-3.7703*** (0.0077)	$I(1)$	0.0561 (0.9570)	-3.7598*** (0.0079)	$I(1)$
LOGPSP	-2.4030 (0.1503)	-7.1688*** (0.0000)	$I(1)$	-1.7157 (0.4141)	-7.0314*** (0.0000)	$I(1)$

Note: ***, **, and * are 1%, 5% and 10% significance levels, respectively. Prob. are in parentheses.

Source: Author's computation

Table 7. Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	69.54277	NA	4.17e-11	-4.035017	-3.711214	-3.929465
1	289.2185	325.9704*	7.49e-16*	-15.04635	-12.45592*	-14.20194*
2	344.7023	57.27362	8.41e-16	-15.46466*	-10.60761	-13.88139

Note: *shows selected lag order. LR indicates sequential modified LR test statistic (each test at 5%), FPE=Final prediction error, AIC=Akaike information criterion, SC=Schwarz information criterion, HQ=Hanan-Quinn information criterion.

Source: Author's computation

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4.4. ARDL Bound Test for Cointegration

Table 8 presents the ARDL bound test outcome for the long-run relationship, with an F-statistic of 8.04, exceeding critical values at all levels of significance. The result aligns with Pesaran, Shin, and Smith's (2001) Table CI(i) Case I, indicating a longer-term association between the variables. The implication is that quality institutions, coupled with adequate government funding for education, health services, and employment opportunities, could boost human capital in the long run.

Table 8. Bound Test Result

F-statistic	=	8.041**	K=7
Critical value bounds			
Significance		I(0) Bound	I(1) Bound
1%		2.54	3.91
2.5%		2.22	3.49
5%		1.97	3.18
10%		1.70	2.83

Source: Author's computation

4.5. ARDL Long-run and Short-run Estimates

After establishing existence of long-term relationship between the variables through the bound test, Table 9 displays the ARDL's short- and long-term dynamic estimation findings. The statistically negative and significant value of ECT(-1) at 5%, confirms a strong long-run correlation between human capital and the explanatory variables. Additionally, the findings indicate that adjustments toward equilibrium are swift and significant in response to shocks. Hence, the convergence rate to the equilibrium state after a shock and the relative significance of long-term versus short-run dynamics are reflected.

The short-run dynamic result shows a positive relationship between human capital and democratic accountability (DEM). According to the result, democracy plays a crucial role in enhancing human development. This contradicts Bekana's (2019), which suggests an indirect correlation between democracy and human capital, and supports Nwokoye et al. (2020), who found positive correlation between democracy and the human development index. The government stability coefficient is positive but insignificant. However, the GST lag 1 coefficient is negatively significant, showing that high level of government instability dissuades investment in human capital, which can further exacerbate low-quality human capital.

Unsurprisingly, the coefficient of corruption (COR) is significantly negative at 5%. This shows that corruption hampers human development through fund embezzlement and misappropriation, thereby impeding efforts to provide healthcare, education, and other social

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services. The result corroborates the work of Emara (2020), Fagbemi et al. (2022). Furthermore, both LOGEMP and LOGPCGDP are positively significant at a 1% level, respectively, suggesting that a 1% increase in employment generation and per capita GDP can significantly enhance human capital development in Nigeria and vice versa. The positive coefficient of government spending (LOGPSP) indicates that government involvement in providing quality education, healthcare facilities, and other social services is crucial for enhancing human quality. The negative and significant coefficients of LOGPOV suggest that poverty hinders human capital development. The enhancement of people's wellbeing and living standards is crucial for their development and capability, especially when they have access to quality education and healthcare services. The result supports the previous research by Okunmadewa et al. (2005), Akpomuvie (2010), Olopade et al. (2019), and Wong and Gomes (2014).

The long-term coefficients of government stability and democratic accountability for human capital are found to be positively significant. This result supports Tebaldi and Mohan (2009), Shuaibu and Oladayo (2016), ESWA (2021), and Ouedraogo et al. (2022), who found that institutions play a significant role in boosting quality human capital. The estimated long-term coefficient of COR is negative and significant. This is evidence that COR retards quality human capital. This finding is consistent with previous research by Chiekezie et al. (2016), and Yaroson et al. (2017), who also found a negative relationship between corruption and human capital development. It suggests that efforts to reduce corruption are crucial for improving the quality of human capital in a country. The positive correlation between real per capita GDP and the human development index highlights the importance of economic prosperity in fostering overall well-being and quality of life for individuals within a society. The study suggests that a 1% increase in a country's growth rate can boost human capital in the long run. On the other hand, low per capita income hinders quality human development through poor education, healthcare, poor nutrition, and other necessities, resulting in poor human capital formation. The study supports the research of Nwokoye et al. (2020), and Fagbemi et al. (2022), which suggests that economic growth enhances human capital formation.

Additionally, the estimated long-run coefficient of LOGPSP indicates a significant positive influence on HC, demonstrating that public spending on essential services is crucial for human capital development because educated individuals have better access to healthcare services, better food, and better opportunities. This result suggests that poor funding of education in Nigeria over the years has contributed significantly to the country's low human capital index. This highlights the importance of investing in education as a means to improve human capital and overall development. By increasing funding for education in Nigeria, policymakers can potentially boost the country's human capital index and promote economic growth in the long run. This finding corroborates the work of Becker (2010), Ifejika (2017), and Nwokoye et al. (2020). The study indicates that employment creation significantly contributes to the development of human capital, with a positive statistically significant coefficient of 5%. The statistically significant negative coefficient of poverty headcount at 5%

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indicates that reducing poverty levels can improve human capital in Nigeria. The results corroborate the findings of Okunmadewa et al., (2005), Olopade et al. (2019).

Table 9. Short- and long-run estimated results

Short-run Estimated Coefficients				
Dependent Variable: Human Capital				
Variable	Coefficient	Std.Error	t-Statistic	Prob.
D(DEM)	0.0115**	0.0047	2.4103	0.0262
D(GST)	0.0025	0.0020	1.2456	0.2280
D(GST(-1))	-0.0066***	0.0020	-3.2185	0.0045
D(COR)	-0.0183**	0.0101	-1.8058	0.0868
D(LOGEMP)	0.3705***	0.0560	6.6142	0.0000
D(LOGPOV)	-0.0291**	0.0164	-1.7697	0.0928
D(LOGPCGDP)	0.0285***	0.0090	3.1634	0.0051
D(LOGPSP)	0.0023	0.0055	0.4326	0.6702
ECT(-1)	-0.2447**	0.0913	-2.6801	0.0148
Long-run Estimated Coefficients				
DEM	0.0640**	0.0218	2.9335	0.0085
GST	0.0185	0.0114	1.6228	0.1211
COR	-0.0749**	0.0412	-1.8175	0.0849
LOGEMP	0.2611**	0.0708	3.6851	0.0016
LOGPOV	-0.1191**	0.0422	-2.8207	0.0109
LOGPCGDP	0.1166***	0.0352	3.3071	0.0037
LOGPSP	0.0097	0.0213	0.4595	0.6511

Note: ARDL Selected Model: ARDL (1, 1, 2, 0, 1, 0, 0, 0) based on AIC lag length criterion. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$ indicates 10%, 5%, and 1%, significant levels, respectively.

Source: Author's compilation

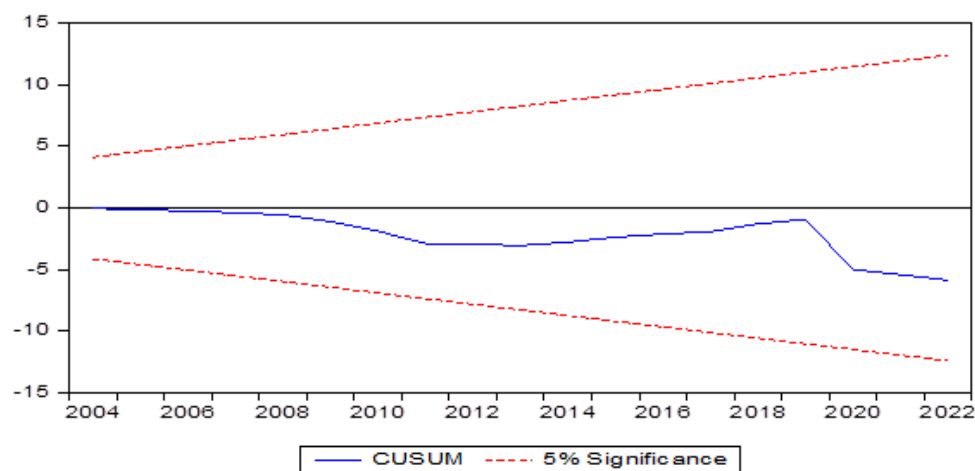
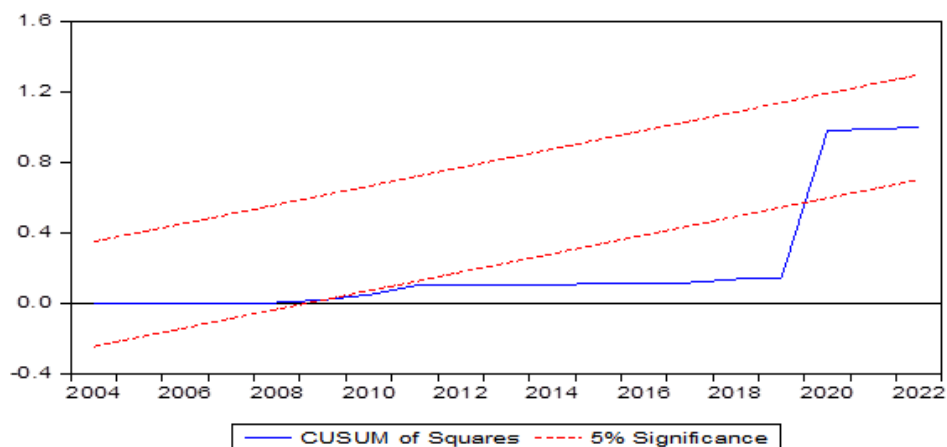
4.6. Post estimation: Diagnostic and Stability Tests

The diagnostic test results in Table 10 show the absence of residual serial correlation in the model except in column 3. The Jarque-Bera normality test shows that the model is normally distributed. The Breusch-Godfrey (BG) serial correlation and Breusch-Pagan-Godfrey (BPG) heteroscedasticity test suggest the presence of serial correlation and heteroscedasticity. The Ramsey RESET test shows the correct specification of the model. In addition to the diagnostic tests, the stability of the model was verified via cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) based on recursive estimates as presented in Figure 1 and 2, respectively. These tests validate the model's stability as the critical line lies within the critical bounds of a 5% level of significance as the case of CUSUM. Figure 2 shows a disequilibrium in the model and thereafter adjusts quickly to the path of equilibrium.

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	F-statistics	Prob.
Jarque Bera Normality Test	0.055	0.972
BG Serial correlation LM test	5.0527	0.019
Ramsey RESET test	0.1703	0.6846
BPG Heteroscedasticity test (prob. Chi ²)	2.0654	0.0797

*Note: BG stands for Breusch-Godfrey test and BPG means Breusch-Pagan-Godfrey.**Source: Author's compilation***Figure 1. Stability test result (Cumulative Sum)****Figure 2. Stability test result (Cumulative Sum of Square)**

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5. Conclusion and Policy Implication

This article contributes to the body of study on the relationship between institutions and human capital development. Three measures of institutional variables—government stability, corruption and democratic accountability sourced from the ICRG are used. The study employs the ARDL techniques to analyze the short run and long run nexus between human capital index and the explanatory variables between 1990 and 2022. Outcomes from the study revealed that strong democratic accountability, government stability, per capita GDP, employment generation, and government spending on essential sectors are all critical for human capital development. Whereas high rates of poverty and corruption have deleterious effects on quality human capital. The findings support the intuition that robust institutions have a significant impact in enhancing quality human capital through improved healthcare, education, human capabilities, poverty reduction, employment opportunities, and security (UNESCWA, 2021). Moreover, strong institutions can significantly impact the economy, fostering a conducive environment for human productivity and prosperity (Tridico, 2005, 2007).

However, based on the findings, democratic accountability, a stable political environment, improved per capita income, and high employment generation are imperatives for enhancing quality human capital, hence the need for structural and institutional reform that guarantees quality human capital. The development of quality human capital should begin at the household level by eradicating family poverty through quality education, healthcare services, and inclusive growth (Becker, 2010). Besides, the Nigerian government must reform its service delivery methods and ensure accountability in human development policies and programs, particularly targeting grassroots citizens. The allocation of resources to both the education and health sectors should be subjected to checks and balances to ensure equitable distribution. In addition, the government should increase funding for essential sectors that enhance human capability and development. Lastly, to achieve high-quality human capital in Nigeria, it is crucial to address the human capital gap by reducing unemployment and increasing per capita GDP.

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