

# Institutional Quality, Human Capital Development and Poverty Level in Nigeria (1981-2021)

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## ABSTRACT

This study examined the interactive effects of institutional quality and various component of human capital development on poverty level in Nigeria between the periods of 1981 to 2020. Employing the autoregressive distributed lag (ARDL) bound testing method of co-integration. The results reveal noteworthy patterns. Firstly, when assessing the impact of institutional quality (PCA\_INQ) on its own, it is observed to show a positive and statistically significant relationship on poverty levels, both in short run and long run at p-value of 5% and 10% respectively. However, the situation changes when institutional quality is interacted with variables representing various component of human capital development. Specifically, the interaction terms such as the interaction of institutional quality with capital expenditure on education (INQ\*CEE), the interaction of institutional quality with recurrent expenditure on education (INQ\*REE), interaction of institutional quality with capital health expenditure (INQ\*CHE), and interaction of institutional quality with recurrent health expenditure (INQ\*RHE) revealed no statistically significant effects on poverty levels in both the short and long run, except for interaction of institutional quality with recurrent health expenditure (INQ\*RHE) which shows a significant effect on poverty only in the short run. The results affirmed that both education and health human capital development proxy by their disaggregated expenditures on both sectors and institutional quality has the potential to mitigate poverty levels in Nigeria over both short and long periods. However, it is essential to note that these expected effects have not yet fully materialized. Furthermore, the study also establishes that physical capital contribute positively to economic growth in Nigeria both in short-run and long-run.

In conclusion, this study has revealed the important of considering the interactive effects of institutional quality and various components of human capital development in the context of poverty level in both short run and long run.

**Keywords:** Institutional Quality, Human Capital Development and Poverty

## INTRODUCTION

Poverty is a big challenge facing almost all countries today (Okoli, 2016); It is of serious economic issue for all nations of the world. It appears in different categories such as low income, limited access to healthcare and educations, scarcity of food and good water supply, inadequate housing and service, violent and unhealthy environment, little or no social protection mechanism, fewer job opportunities e.t.c. (Akinbode, 2013; Akaakohol & Aye, 2014; World Bank 2015; Gaurav, 2018). Although no country, not even the most industrialized nations, can report non-existence of even a tiny element of poverty in her economy; But poverty looks like a principal feature of sub-saharan Africa continent (Anigbogu, Onwuteaka, Anyanwu, & Okoli, 2014). For instance, in Nigeria about 42.5% of populates are in abject poverty while about 25% of populates are being vulnerable to poverty (World Poverty Clock, 2018; NBS, 2020).

However, at the heart of alleviating poverty and achieving sustainable economic development which is the

ultimate goal of any government administration is human capital development and institutional quality, as no nation can develop beyond the quality of her citizen (Gyimah & Wilson, 2005, Emmanuel, 2014; UNDP, 2019). The function of human capital as one of the factor inputs that brings about economic growth and poverty reduction has made it gain substantial interest among authors like Mankiw, Romer and Weil (1992; 2002); Schultz (1961); Solow and Swan (1956); e.t.c who had shown and affirmed the importance of human capital to grow the economy in their endogenous growth model. And by extension, studies by Jackson et al (2016), Bhukuth, Roumane & Terrary (2018), Olapade, Ododua, Oladosun & Aboloye (2019), Oluchukwu, Hyacinth, Vincent & David (2020) e.t.c. has also revealed the importance of human capital development in reducing the level of poverty in their various studies.

Furthermore, recognizing the importance of improving human capital emerges as a pivotal step toward achieving the national developmental objectives, foremost among them being the reduction of poverty levels (Olapade et al 2021). Therefore, the Nigerian government has made some serious moves by formulating various policies and strategies to create access to education and healthcare and also sign some treaties. Examples of such policies and treaties are Free Universal Basic Education, Health for all (Primary Healthcare Scheme), and the Abuja declaration of 15% budgetary allocation to the health sector, among others. This is because health is wealth and knowledge is power; hence no nation may progress beyond their schooling and health level of her populates (Emmanuel, 2014; UNDP, 2019). However, in spite of the acclaimed government moves to improve on the state of human capital development in achieving sustainable development, the human capital index of the country is still ranked among the lowest dangling around 0.45, 0.46, 0.49, 0.53 and 0.54 between 2003, 2005, 2009, 2015 and 2019 respectively; so also the poverty rate is ranked thus 148, 154, 157, 158 and 161 over the same period (WBHCI, 2020).

### Statement of Problem

The few empirical studies available on human capital development and poverty have presented varying empirical outcomes ranging from positive, negative, and or at best-mixed results. E.g Jackson et al (2016), Bhukuth et al (2018), Olapade *et al* (2019), Oluchukwu et al (2020) revealed that human capital development has negative effects on poverty (i.e., reduces poverty) in the long run. While on the contrary, studies by Edeh et al (2019) and Mela (2016) found that human capital development does not reduce poverty. Antonio (2021), Chikelu (2016), Ilesanmi and Lasis (2015) only established a link between human capital development and poverty, but did not provide any evidence to support this claim, even in stating the direction of the relationship whether the relationship is negative or positive. However, Dennis and Mark (2018), Adekoya (2018), and Adeyemi (2018) revealed mixed results on impact that education and health human capital had on poverty alleviation in Nigeria. While, Aballa and Norashidah (2021); Zhenshan (2019) showed that when a threshold is exceeded, investment in human capital through out-of-pocket medical expenses will increase poverty.

However, the divergence in the research findings of the previous researchers indicates that there is still a gap to be filled to contribute to the ongoing argument on the topic. Hence, this research built on the works of previous researchers by being more inclusive to include poverty as an independent variable and institutional quality as a mediating variable. Therefore, given the importance of poverty and institutional quality to this study, this study applied a method of principal component analysis on three variables (such as Gross National Income per-capital, final consumption expenditure and total agriculture, forestry and fishing value added; all at the current US\$.) to proxy poverty. Similar procedure was conducted on democracy accountability, socioeconomic conditions, and control of corruption to generate a robust institutional quality index; and after this an analysis was performed to examining the interactive effects of institutional quality with human capital development components on poverty level in Nigeria. This study is unique because no known study has been done in this regards.

Meanwhile, this study decides to incorporate institutional quality in order to serve as a mediating variable

that complement the economy system to reduce poverty and achieve inclusive growth. This was necessitated given the significance of institutional quality as a vital element in development process including human development and poverty reduction in a country (Barrett and Graddy, 2000; Giorgi 2017, Alhassan and Kilishi, 2019).

### Objectives of the Study

The broad objective of this research is to assess the effects of human capital development components on poverty level in Nigeria (1981-2021) while the specific objective is to examine the interactive effects of institutional quality with the components of human capital development on poverty level in Nigeria.

## LITERATURE REVIEW

### Theoretical Review

#### The Second Romer Model

In the paper released in 1990, Romer takes a unique method to explaining technological advancement. In his 1986 essay, he saw knowledge as a component of total capital  $K$  and linked technical development to arise in the capital/labor ratio. This time, Romer's focus was on the research workers' product of knowledge. This paradigm believes that labor is supplemented by technical knowledge, resulting in higher productivity.

As an example, consider the following production function:

$$Y = K^\alpha (AL)^{1-\alpha} \dots \quad 1$$

As a result,  $(AL)$  stands for a knowledge-adjusted force. In addition, the approach recognizes that researchers generate technological knowledge. In its simplest state, this is as follows:

$$\Delta A = \frac{\delta A}{\delta t} = \delta H A_A \quad 14$$

Where  $HA$  denotes human capital of research employees  $\partial$ , is a parameter; it is apparent that the more researchers, the more fresh ideas that would be generated, and the current stock of knowledge "A" would grow (i.e., the more fresh innovative ideas are produced, which is the effect of externalities).

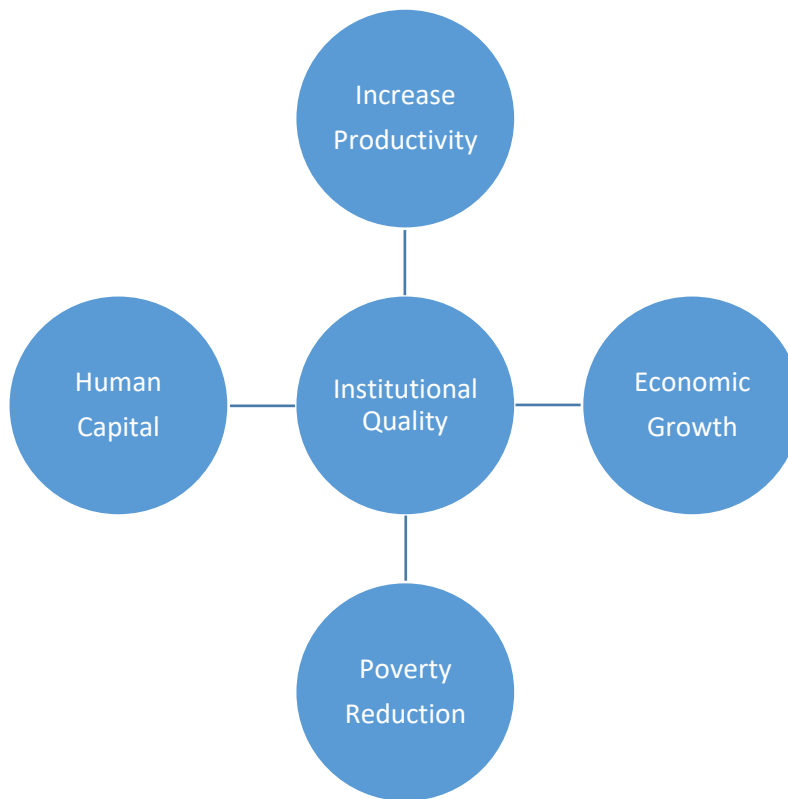
According to Equation 14, economies with a higher overall stock of human capital expand quicker (Romer, 1990, p.599). It's worth noting that, contrasting the first Romer's model with the second model which acknowledges the relevance of human capital in the growth of an economy.

### Keynesian Theory of Poverty

Keynes (1936) proposed this theory following their assumption that not only market distortion but also underdevelopment in its multidimensional nature causes poverty. According to Keynesian economists, an individual's degree of productivity is determined by an unequal starting endowment of ability, skills, and capital. Hence, the prevalence of poverty in the Keynesian perspective is conceived as the misfortune of certain minorities who are out of work, cannot work, or are not expected to work, although they wish to do so. It, therefore, follows that government needs to intervene by providing some expenditure packages that fine-tune the economy through the stimulation of aggregate demand. Thus, a high level of human capital development via improved health status and education tends to reduce the incidences of poverty through

public sector intervention. This indicates that the intervention of the public sector through increased expenditure component in the education and healthcare sectors is imperative for poverty reduction.

### Conceptual Framework



**Figure 1. Link between Human Capital, Institutional Quality and Poverty Reduction Adapted from; (Nurkse, 1953 & Abdul Talib et al, 2016)**

The diagram in figure 1 is like a vicious cycle with government variable at the central as intervening mechanism that fix up any shortcomings in the economy for the smooth running of the economic system. Hence a rise in human capital development through government investments in education, health, training, and migration or exposure that boost the efficiency of an individual in an economy would lead to increase in aggregate productivities causing economic growth which would lead to a rise in the share of labour in the economy through factor price effects and when this is coupled with appropriate policy would consequently leads to poverty reduction.

### Empirical Literature

Bhukuth et al (2018) conducted a similar study, which looked at a basic theoretical model of cooperative organizations that may improve their members' human capital by effectively managing all of their resources. The study found that increased human capital had influence on household wealth and consumption, and that cooperatives can assist developing nations reduce poverty. Alhassan and Kilishi (2019) investigate the elements that determine the quality of African economic institutions through empirical research. The Hausman–Taylor instrumental variable estimator of panel regression was applied for a sample of 43 Sub-Sahara African countries from 1995 to 2017. According to the study, the creation and persistence of weak economic institutions in Africa is the consequence of design rather than coincidence. That is, faulty political institutions are more likely to produce and sustain deficient economic institutions than cultural diversity or geographic characteristics.

To contribute to the discussion, Rashid *et al.* (2018) investigated the effects of Human Capital and Governance on poverty. The study covers 44 developing countries and spans the years 2004 to 2017. Using the Generalized Method of Moments, the panel data was utilized to estimate Econometric outcomes (GMM). According to the findings, human capital and high-technology exports are important causes of poverty reduction in emerging countries. Furthermore, total governance in emerging countries reduces poverty in addition to political, institutional, and economic governance. The effects of trade openness and gross fixed capital formation are statistically insignificant. Savings for the depletion of natural resources, on the other hand, is considered as a source of poverty in developing countries. Duerrenberger and Warning (2018) investigated how enrolment in publicly supported higher education institutions impacts years of schooling at various degrees of corruption. The study first confirms that corruption has a negative correlation with projected years of schooling, using data from 88 developing nations. Second, researchers discovered a relationship between corruption and the kind of higher education funding in a country: in low-corruption nations, the proportion of public higher education enrollment increases projected years of schooling, whereas in high-corruption countries, it reduces. . Acemoglu *et al.* (2014) looked at the link between institutions, human capital, and development. The results suggest that when the focus is on historically established variations in human capital and the influence of institutions is controlled for, the impact of institutions on long-run development is strong.

Abdalla and Norashidah (2021) used macroeconomic data from 145 countries from 2000 to 2017 to explore the link between out-of-pocket medical expenses and poverty. The researchers employed a dynamic panel threshold approach that accounts for threshold regressor's endogeneity (out-of-pocket medical expenses). The findings confirmed the validity of the calculated threshold models, demonstrating that out-of-pocket medical expenses intensified poverty beyond the tipping point, which was around 29%. When heterogeneity in the sample was accounted for, the data revealed that the estimated threshold varied with larger values for the poor and lower-middle-income groups compared to the high-income group. Hence, out-of-pocket medical expenses had a negligible beneficial influence on poverty reduction for lower-income groups below the point; but, above the limit, it resulted in a greater degree of poverty. In the same vein Olabisi *et al* (2020) examine the link between poverty, inequality and economic growth in Nigeria from 1980 to 2018. The study employed the autoregressive distributed lag (ARDL) method of estimation. The finding revealed that short run result for absolute poverty revealed a negative and significant relationship with the economic growth; while its long run result also revealed negative but it was insignificant. They suggested that an increase in economic growth in the country will reduce the level of poverty among the citizens by the proportion of it co-efficient.

Ologbenla (2020) looks on the effects of institutional quality and human capital on the ECOWAS industrial sector's growth. Panel data analysis was used in this study. According to the findings, the ECOWAS' human capital and institutional quality have not greatly aided industrial growth. However, the findings reveal that macroeconomic variables like inflation and currency rates have the greatest impact on ECOWAS industrial sector growth. In Nigeria, Gideon *et al* (2020) investigated the links between institutional quality and inclusive growth as assessed by real GDP per person employed (RGDPE). Annual secondary time series data from 1998 to 2017 were used to verify co-integration using an Autoregressive Distributed Lag (ARDL) Bounds testing technique. Institutional quality has a considerable impact on inclusive growth in Nigeria, according to the study.

Ilesanmi and Lasisi (2015) looked at the relationship between governmental policies, human capital development, and poverty alleviation in Nigeria. The study looked into the policies of various Nigerian government administrations and how they have influenced inequality and poverty levels in the country. According to the research, insufficient implementation mechanisms were a major cause of policy failure, leading to high poverty and inequality. Also, Ayodeji and Adebayo (2015) investigate the link between government policies, human capital development, poverty, and the reduction of inequality. The research

looked at the policies of several Nigerian regimes and how they influenced inequality and poverty levels in the country. The research was conducted using a theoretical technique. The report concludes that, as admirable as some of these policies and programs were the earnestness with which they were established, as well as their inadequate execution mechanisms were the primary causes of their failure, resulting in a high degree of poverty and inequality in society. Akanbi (2015) investigates the link between governance, physical infrastructure, and poverty in Sub-Saharan Africa experimentally. The estimates were made using two-stage least squares (TSLS) estimation techniques on a panel of 19 sub-Saharan African nations from 1990 to 2010. The findings of the estimations show that governance and infrastructure are important predictors of poverty in the region. Furthermore, the study finds that, after adjusting for GDP and other characteristics throughout the area, a sustainable level of poverty may be achieved at a specific governance and infrastructure grade. Therefore, nations with superior governance and infrastructure ratings will have lower poverty levels, and as physical infrastructure and governance improve, poverty levels tend to converge.

Olapade et al (2019) also looked at the interplay between human capital variables and poverty mitigation among OPEC states. The research work employed a panel completely modified least-squares analysis, and it found that the components of human capital development confirm a long-term positive effect on poverty alleviation among OPEC members. Very similar to this is a study by Ugochukwu and Okoli (2018) which looked at how investing in human capital affects poverty in Nigeria. Improving human capital stock through public investment on agriculture, healthcare, education, skill acquisition, and small-scale companies is statistically significant in decreasing poverty in Nigeria; this outcome was according to the study, using the Ordinary Least Square (OLS) procedure.

Similarly, Okoroafor *et al* (2018) considered the link between human capital development and poverty reduction in Nigeria between 1970 and 2016. In addition to cross-sectional data from 365 participants in northern Nigeria (Kogi and Niger states and Abuja FCT), a Linear Probability Model (LPM) Regression method was also employed. In the north-central states, the analysis found a negative connection between investment, education spending, and health-care spending and poverty reduction. The findings also revealed that in Nigeria's north-central state, there is a positive and substantial link between GDP and poverty reduction. Edeh et al (2019) also used time series data between 1999 and 2017 to study the influence of education outlay on poverty mitigation in Nigeria. The results of the research work using the ordinary least square regression approach indicated that education spending contributes nothing to the alleviation of poverty throughout the study period. Adeyemi et al (2018) also looked into the efficacy of investment in human capital on poverty mitigation in Nigeria. A log-linear regression model based on Solow's neoclassical growth theory and the Cobb-Douglas production function was adopted in the study. The outcomes of the analysis disclosed that government investment in education and the unemployment rate both have a significant impact on the incidence of poverty in Nigeria. Government expenditure on health, on the other hand, has a negative but insignificant inelastic impact on the incidence of poverty in Nigeria.

Furthermore, between 1990 and 2016, Dennis and Mark (2018) likewise explored the connection between human capital development and poverty reduction in Nigeria. In addition to ADF unit root and Johansen-Juselius co-integration, the study utilized a completely modified Least Squares and Granger causality test. Primary school enrolment, secondary school enrolment and public healthcare investment all decreased poverty considerably, according to the findings. Private healthcare spending, on the other hand, has a negligible impact on poverty levels. Furthermore, the Granger causality result displayed a bi-directional causation between the explanatory factors and poverty levels. Also, from 1995 to 2017, Adekoya (2018) inspected the link between various aspects of human capital development and poverty mitigation in Nigeria. Granger causality test and vector error correction method were used in this work (VECM). The findings reveal no unidirectional or bidirectional causation between government spending on education and

healthcare, infant mortality, gross enrolment ratio, and per-capita income, while unidirectional causality was found for literacy rate, life expectancy, and per capita income.

## METHODOLOGY

### Theoretical Framework

This research work is based on Mankiw, Romer, and Weil's (1992; 2000) labor augmented theoretical framework and also the Keynesian theory of poverty. The labour augmented theory of Mankiw, Romer, and Weil's (1992; 2000) accommodated human capital as an independent element of production into the so called augmented Cobb- Douglas production function of an endogenous theory. Economic growth (increase productivity), according to this theory is as a result of accumulation of physical capital and labor force expansion, as well as the external element of technical advancement. While, the Keynesian theory of poverty (1936) proposed that the state needs to intervene in the economy by providing some expenditure packages that fine-tune the economy through the stimulation of aggregate demand.

Therefore, the following is the general process for human capital augmented Cobb-Douglas production:

$$Y_t = K_t^\alpha H_t^\beta (AL)_t^{1-\alpha-\beta} \quad \alpha < 0, \beta > 0, \alpha + \beta < 1 \quad 3.1$$

If we log-transformed equation 3.1, we have:

$$\text{Log } Y_t = \alpha \text{log } K_t + \beta \text{log } H_t + (1-\alpha-\beta) \text{log } (AL)_t + e_t \dots \quad 3.2$$

Now we can substitute the variables of this research study into equation 3.2. Hence, we have Poverty captured by log Y, Gross Fixed Capital (GFC) is measured by log K, Human Capital Components is measured by log H, and it is represented by Capital and Recurring Spending on Education and Health, while effective Labour force is measured by log AL<sub>t</sub>. At the same time the error term is measured by e<sub>t</sub>.

**N.B: All the variables are in logarithm form,**

Hence, equation 3.2 can be shortening thus:

$$\text{Log } POV = f(\text{log } GCF + \text{log } HCD + \text{log } LAB) \dots \quad 3.3$$

The following are the apriori expectations:  $\alpha_1, \beta_1, \beta_2, \dots, \beta_6 > 0$ . This indicates that poverty should have a negative functional connection with the components of human capital development. At the same time, n and g may be positive or negative since they reflect intercept values that could be positive or negative depending on whether all exogenous variables are zero.

Equation 3.3 could be further expanded to accommodate additional variables for the components of human capital development. Thus, we have the following;

$$\text{log } POV = f(\text{log } GCF, \text{log } CHE, \text{log } RHE, \text{log } CEE, \text{log } REE, \text{log } LAB, \text{log } INQ) \dots 3.4$$

Where; POV stands for poverty, GCF for gross capital formation, CHE for capital health expenditure, RHE for recurrent health expenditure, CEE for capital education expenditure, REE for recurrent education expenditure, LAB for Labour force.

If we interact the variable of institutional quality (INQ) with the variables of human capital development in

equation 3.4, then equation 3.4 can be transformed to become thus;

$$\text{LogPOV} = \alpha_0 + \beta_1 \text{LogGCF} + \beta_2 \text{LogINQ} * \text{CHE} + \beta_3 \text{Log INQ} * \text{RHE} + \beta_4 \text{Log INQ} * \text{CEE} + \beta_5 \text{Log INQ} * \text{REE} + \beta_6 \text{LogLAB} + \varepsilon_t \dots \quad 3.5$$

**Model Specification to Examine the Interactive Effects of Human Capital Development Components and Institutional Quality on Poverty in Nigeria;**

$$\begin{aligned} \Delta \log \text{POV}_t = & \beta_0 + \lambda_1 \log \text{POV}_{t-1} + \lambda_2 \log \text{GCF}_{t-1} + \lambda_3 \log \text{CHE}_{t-1} + \lambda_4 \log \text{RHE}_{t-1} + \lambda_5 \log \text{CEE}_{t-1} + \lambda_6 \log \text{REE}_{t-1} + \lambda_3 (\log \text{CHE}_{t-1} * \log \text{INQ}_{t-1}) + \lambda_4 (\log \text{RHE}_{t-1} * \log \text{INQ}_{t-1}) + \\ & \lambda_5 (\log \text{CEE}_{t-1} * \log \text{INQ}_{t-1}) + \lambda_6 (\log \text{REE}_{t-1} * \log \text{INQ}_{t-1}) + \lambda_7 \log \text{LAB}_{t-1} + \sum_{i=1}^n \beta_1 \Delta \log \text{POV}_{t-1} + \sum_{i=0}^n \beta_2 \Delta \log \text{GCF}_{t-1} + \left( \sum_{i=0}^n \beta_3 \Delta \log \text{CHE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \left( \sum_{i=0}^n \beta_4 \Delta \log \text{RHE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \\ & \left( \sum_{i=0}^n \beta_5 \Delta \log \text{CEE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \left( \sum_{i=0}^n \beta_6 \Delta \log \text{REE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \sum_{i=0}^n \beta_7 \Delta \log \text{LAB}_{t-1} + \beta_8 t + \varepsilon_t \dots \dots \dots 3.9 \end{aligned}$$

The subsequent step would be to calculate the error correction mode that shows the dynamic parameters in the short term (adjustment parameters that measure correction speed to long-run equilibrium after a short-run disturbance). The ECM is calculated thus:

$$\begin{aligned} \Delta \log \text{POV}_t = & \beta_0 + \sum_{i=1}^n \beta_1 \Delta \log \text{POV}_{t-1} + \sum_{i=0}^n \beta_2 \Delta \log \text{GCF}_{t-1} + \sum_{i=0}^n \beta_3 \log \text{CHE}_{t-1} + \sum_{i=0}^n \beta_4 \log \text{RHE}_{t-1} + \sum_{i=0}^n \beta_5 \log \text{CEE}_{t-1} + \sum_{i=0}^n \beta_6 \log \text{REE}_{t-1} + \left( \sum_{i=0}^n \beta_3 \Delta \log \text{CHE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \\ & \left( \sum_{i=0}^n \beta_4 \Delta \log \text{RHE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \left( \sum_{i=0}^n \beta_5 \Delta \log \text{CEE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \left( \sum_{i=0}^n \beta_6 \Delta \log \text{REE}_{t-1} * \sum_{i=0}^n \beta_i \Delta \log \text{INQ}_{t-1} \right) + \sum_{i=0}^n \beta_7 \Delta \log \text{LAB}_{t-1} + \beta_8 t + \partial \text{ECT}_{t-1} + \ell_t \dots \dots 3.10 \end{aligned}$$

Where,

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$  and  $\beta_8$  = Coefficients illustrate the model's short-term dynamics.

$\text{ECT}_{t-1}$  = Error correction term which is lagged by one period.

$\varepsilon_t$  = vector of error terms; (n-g) represents the optimum lag length of each variable in the autoregressive process. While;

$\delta$  Represents Error correction parameter which measures the rate of adjustment leading up to long-term equilibrium.

The Error Correction Term (ECT) was calculated using the long-run model's coefficients, which were acquired by standardizing the equation. A normality test, serial correlation test, misspecification test, and heteroscedasticity test would be performed after the long and short-run models were estimated to ensure the model's robustness. Microfit 4.1 and E views 9 statistical programs was used to analyze the models in equations (3.6), (3.7), and (3.8), as well as to execute the diagnostic exams conducted before and after estimation.

**Source of data**

To acquire values for the variables in the model, this research made use of time series secondary data. World Bank indicators year 2021 publication, Central Bank of Nigeria, and National Bureau of Statistics the year 2021 publication were used to obtain data on poverty, disaggregated health and education spending, gross fixed capital formation, labor force participation respectively. While, International Country Risk Guide Indicator was used to collect data on institutional quality.



## RESULT AND DISCUSSION

### The Interactive Effects of Institutional Quality with the Components of Human Capital Development on Poverty Level in Nigeria (1981-2021).

This section examines the interactive effects of institutional quality with the components of human capital development on poverty level in Nigeria. To fulfill the goal of the section, the author firstly analyzed the descriptive characteristics of the variables, after then conducted the unit root and co-integration tests of the time series variables.

**Table 4.1: Unit Root Check**

**Unit Root Test Results for Interactive Effects of Institutional Quality with the Components of Human Capital Development on Poverty Level in Nigeria (1981-2021).: Using Augmented Dickey-Fuller**

Variables	ADF Test		
	Level	First Diff	Status
logPCA_POV	3.8262	-3.2235	
	[0.0064]*	[0.0263]*	I(0)
logGFCF	0.1942	-4.0813	
	[0.9685]	[0.0031]*	I(1)
logLAB	-1.0148	-5.4255	
	[0.7385]	[0.0001]*	I(1)
logINQ*CEE	-11.582	-5.1155	
	[0.0000]*	[0.0000]*	0
logINQ*CHE	-0.0413	-5.0895	
	[0.9480]	[0.0002]*	-1
logINQ*REE	-3.7734	-0.2622	
	[0.0069]*	[0.9212]	0
log INQ*RHE	-1.3785	-2.9962	
	[0.5811]	[0.0453]*	-1

**Source: Author’s Computation, 2023**

*Note 1: PCA\_POV, GFCF, LAB, INQ\*CEE, INQ\*CHE, INQ\*REE and INQ\*RHE, represent poverty level, gross fixed capital formation, labour force participation, interactive effects of institutional quality on capital expenditure on education, capital expenditure on health,, recurrent expenditure on education and recurrent expenditure on health respectively.*

*Note 2: Values in the square bracket [] are the probability values; (\*) depicts significance at 1percent level, (\*\*) depicts significance at 5percent level, while (\*\*\*) depicts significance at 10percent level.*

### ARDL bound test Result

ARDL bound test is utilized to check for co-integration or long-run relationship among variables. Therresults of the ARDL bounds testing approach is shown in table 4.4 below.

**Table 4.2: Bound Test Result**

Null Hypothesis: No long-run relationships exist		
Variables	F-Statistics	Co-integration
F log(PCA_POV/PCA_INQ,GFCF,LAB,INQ*CEE, INQ*REE,INQ*CHE,INQ*RHE)	10.4141	Co-integration
Critical Value	Lower Bound	Upper Bound
1%	11.79	9.81
5%	8.21	9.8
10%	6.58	8.21

**Source: Author’s computation, 2023**

*Note: The lag length k=8 was selected based on the Schwarz criterion (SC).*

Table 4.4 depicts the result of bound check and threshold values offer by Pesaran et al. (2001). The F-statistic is then compared to the threshold boundaries with unconstrained intercept and no trend at a 5% level of significance (Upper bound is 9.8 and Lower bound is 8.21). However, the F-statistic (10.4141) is higher than the upper bound (9.8), implying that there is a proof to reject the null hypothesis that the variables have no long-term association. As a result, the alternative hypothesis that there is a long-term link between the interacted variables, poverty level and other variables like gross fixed capital formation and labor force participation rate is accepted.

**The Result of the ARDL**

The ARDL Result for the Interactive effects of Institutional Quality with Human Capital Development on Poverty Level. Hence, since there is co-integration among the variables, the estimated result of ECM is presented below;

Dependent Variable: PCA_POV		ARDL(1, 0, 1, 0, 0, 1, 1, 0, 0, 0, 1, 0)	
Variable	Coefficient	t-Statistic	Prob.
D log(PCA_INQ)	0.060004	2.123385	0.0452**
D log(LAB)	-0.02601	-0.913490	0.3709
D log(GFCF)	0.000000	5.050553	0.0000*
D log(CEE)	-0.00197	-1.90277	0.0702***
D log(INQ*CEE)	0.000510	0.758383	0.4563
D log(CHE)	0.002657	0.698767	0.4920
D log(INQ*CHE)	-0.00047	-0.213	0.8333
D log(REE)	0.011602	2.910918	0.0081*
D(log INQ*REE)	0.003244	0.904224	0.3757
D log(RHE)	-0.01769	-3.31909	0.0031*
D log(INQ*RHE)	-0.009450	-1.954530	0.0635***
Coint Eq(-1)	-0.17453	-3.1778	0.0044*

Long Run Coefficients			
Variable	Coefficient	t-Statistic	Prob.
log PCA_ INQ	0.343797	1.924683	0.0673***
log LAB	0.102699	0.66181	0.515
log GFCF	0	3.661274	0.0014*
log CEE	-0.0113	-1.68938	0.1053
log INQ*CEE	0.00485	1.131116	0.2702
log CHE	0.054419	2.075005	0.0499**
log INQ*CHE	-0.00269	-0.21485	0.8319
log REE	0.066472	2.135526	0.0441**
log INQ*REE	0.018585	0.897641	0.3791
log RHE	-0.11972	-2.08068	0.0493**
log INQ*RHE	-0.05415	-1.53151	0.1399
R <sup>2</sup>	0.9982		
Adj R <sup>2</sup>	0.9969		
F-Statis	764.063		0.0000

Diagnostic Statistic Check		
Test	Value	P-value
X <sup>2</sup> Serial	5.0218	0.0250
X <sup>2</sup> ARCH	3.1043	0.0781

**Source: Author’s Computation, 2023**

Notes 1: \* Statistical significance at 1percent level; \*\* Statistical significance at 5percent level; and \*\*\* significance at 10percent.

Note 2; PCA\_POV, GFCF, LAB, INQ\*CEE, INQ\*CHE, INQ\*REE, INQ\*RHE, represent poverty level, gross fixed capital formation, labour force participation, interactive effects of institutional quality on capital expenditure on education, capital expenditure on health,, recurrent expenditure on education and recurrent expenditure on health respectively.

**DISCUSSION OF RESULTS**

The coefficient result for the institutional quality (PCA\_INQ) on its own showed a significant impact on poverty level both in short run and long run at p-value of 5% and 10% respectively. This is in agreement with the research finding of (Gideon et al, 2020; Rashid et al 2018; Akanbi, 2015; Acemoglu et al 2014; Tebaldi and Mohan, 2010) which conclude that institutional quality had a significant effect on inclusive growth in Nigeria. Also, the components of human capital development (CEE, REE, CHE, and RHE) on their own showed a significant impact on poverty level both in short run and long run at p-value of 5% and 10% respectively. However, interacting the variable of institutional quality with variables of human capital development depicts another thing else. For examples INQ\*CEE, INQ\*REE, INQ\*CHE and INQ\*RHE shows no significant effects on poverty level both on short run and long run, except for INQ\*RHE which

shows a significant effect on poverty at 10% p-value in the short run while the long run result was insignificant. This is in line with the research finding of Ologbenla (2020) which concluded that both human capital and institutional quality in the ECOWAS have not supported industrial growth significantly.

In addition, the insignificant result of the research finding of the interactive effects of institutional quality with the variable of human capital on the poverty level in Nigeria further explained the research conclusion of (Duerrenberger, and Warning 2018; Ilesanmi and Lasis 2015 & Ayodeji and Adebayo 2015) which says that “as laudable as some of government policies and programmes would have been, the insincerity of their establishment, misappropriation of public fund and poor implementation mechanism by the government were the main cause of the policy failures, leading to poverty and inequality,”

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study empirically investigates the interactive effects of institutional quality with the components of human capital development on poverty level in Nigeria; using the time series data from 1981 to 2021. The study found that institutional quality and human capital development on their own had a positive effect in reducing poverty level in Nigeria but when these variables were interacted together the outcome was something else (i.e unexpected). This shows that institutional quality is weak in Nigeria and thereby hampered human capital development to have its full expected effects in alleviating poverty level in the country.

However, there is no denying the fact that good education and health care are the most effective ways to develop human resources and transform any country. This may have led Mankiw et al. (1992, 2002) to assert that what boosts productivity is an “endogenous” factor, which is thought to be linked to the knowledge and behavior of those in charge of accumulating physical capital.

Therefore, given the outcome of this work; the authors gave the following recommendations:

1. Government should strengthen the weak institutional quality that exist in the country
2. The issue of corruption, misappropriation and the embezzlement of public fund should be seriously dealt with
3. Government should make a conscious effort to invest in human capital development through education, healthcare and skill sets, particularly the 21<sup>st</sup> century skill sets.
4. Government should also strengthen institutions that widen democratic space, civil liberty and the participation of citizen in the development agenda of a country.

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