

Adult Literacy and Capital Inflows in Nigeria: Investigating Institutional Quality Interaction Effect

Chidiogo J. Okpala*, Ebele S. Nwokoye, Queen C. Okeke

Department of Economics, Nnamdi Azikiwe University, Awka

*Corresponding Author

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ABSTRACT

Nigeria has not been able to move to high human development category with its HDI between 2020 and 2023 still remaining at 0.539. This has put Nigeria in the low human development index category as the 158 out of 189 countries ranked for 2020 and the 163 out of 193 countries ranked for 2023. The study examined adult literacy and capital inflows: investigating institutional quality interaction effect with specific objectives that examined the impact of capital inflows on adult literacy in Nigeria and analysed the impact of the interaction of institutional quality and capital inflows on adult literacy in Nigeria using data set that covered the period 1990 – 2023. To achieve this auto regressive distributed lag (ARDL) method was employed. The study found that the selected capital flows have significant impact on adult literacy rate in Nigeria during the period under study and that an interaction effect exists between institutional quality and external debts, remittances, and not with foreign aids on adult literacy (human development) in Nigeria. It therefore concludes that though institutional frameworks are present and complements the effect of capital inflows in human development in Nigeria, institutional frameworks has not been effective enough in averting the possible negative influence of capital inflows on human development in Nigeria, focusing specifically on adult literacy. The study recommends strategic and intentional investment of capital inflows in order to improve adult literacy rate (human development) by the government among others.

INTRODUCTION

Background to the study

Leading a long and healthy life, being able to gain knowledge and having enough means to be able to live a decent life are the most important aspects of human development. Therefore, access to resources, health and education are the key areas in human development. Suitable indicators have been developed to measure each of these aspects. (human development brief note). Education is believed to be the bedrock of any country's development. Adult literacy rate as one of the three indicators of human development measures the stock of literate persons with the adult population who are capable of using written words in daily life and to continue to learn. It covers the percentage of the population ranging from 15 years and above that can read and write (UNESCO) with the aim of empowering individuals with the knowledge and skills needed to improve their quality of life (www.un.org). The Federal government of Nigeria claims that the adult literacy rate is 69% as at 2023. When the right attention is given to education it will bridge human development gap, improve human capital and the development of the economy as a whole

Very often, people do not have the capability and freedom to make even basic choices. This prevents them from leading healthy lives, being able to get educated or to have the means to live a decent life. Building people's capabilities in the areas of health, education and access to resources is therefore, important in enlarging their choices. If people do not have capabilities in these areas, their choices also get limited. For

example, an uneducated child cannot make the choice to be a doctor because her choice has got limited by her lack of education. Similarly, very often poor people cannot choose to take medical treatment for disease because their choice is limited by their lack of resources.

A higher HDI shows that the human development is growing which suggests that there is positive increase in those educated, those that have access to medical care, access to drinking water, access to better living standard among other things, (UNDP 2020). Emphasis on human development is to ensure the growth of the economy at large. Expenditures on education may affect health and parental education may benefit children. Health expenditures may themselves affect the value of education. These links are important for understanding the potential range of benefits which accrue to expenditures on human development with particular focus on education through funds from capital inflows.

Capital inflow is a strong factor which affects human development in developing countries, (HDR, 2016; Chorn & Siek, 2017; Mezni & Djebali, 2022). Capital inflow brings with it the access to basic necessities of life by creating employment opportunities, higher wages, transfer of knowledge, and credit availability. Lack of capital inflow can be considered as a major factor influencing human development. Capital inflows will affect capital formation which is much needed for economic growth and development and is expected to influence human development in any economy.

It is undeniable that capital inflow is a crucial source of financial resources and holds the potential to play an important role in the promotion of rule of law, democratic governance and in turn economic development in any economy. In as much as capital inflow is beneficial especially to developing economies, some economies do not fully experience these advantages due to certain basic factors like poor utilization of capital inflow, bad governance, weak institutions, wasteful or misappropriation of the capital inflow, increase in debt burden problem. So as a result of these negative factors such as institutional quality influencing the capital inflow, they may end up not being as effective as expected on human development which means it will not impact on the economy positively as expected (Mohammed, 2021).

Improving access to education and harnessing its benefits are geared towards achieving improved human development, which is very critical for economies of the world, especially the developing ones. Capital inflow is very indispensable in engineering economic growth which will eventually speed up human development all things being equal. It is against this background that we are studying the effect of capital inflow on human development in Nigeria while looking at the interaction effect of quality of institutions on capital inflow in achieving improved human development which in this study is proxied through the two dimensions of human development index which are life expectancy and adult literacy rate. This study therefore, investigates the effect of some foreign capital inflows and some selected macroeconomic variables (inflation, trade openness and gross capital formation) on human development in Nigeria bearing in mind the possibility of institutional quality effect.

Statement of Problem

Human development is expected to be improved upon by the volume of funds that comes into any country especially the developing countries. Efforts have been made through various policies and programmes such as Structural Adjustment Programme (SAP) (1986), Universal Basic Education (UBE) (1999), National Economic Empowerment and Development Strategy (NEEDS) (2004), Transformation Agenda (2011), youth with innovation (YOU-Win) (2012), National Social Protection Policy (NSPP) programmes such as Tradermoni (2016), N-Power, etc; Economic Recovery Growth Plan (ERGP) (2017) and Renewed Hope Conditional Cash Transfer (2023) of President Tinubu among others with the aim of improving human development. Despite efforts made towards its improvement human development in Nigeria is still poor. According to UNDP (2020), Nigeria has not been able to move to high human development category with its HDI for 2020 at 0.539. This value is still same as at 2023 (World Development Indicators, 2023). This has put Nigeria in the low human development index category as the 158 out of 189 countries ranked for 2020 and the 163 out of 193 countries ranked for 2023.

Since human development focuses on achieving the Sustainable Development Goals (SDGs), it becomes important to interrogate the place of capital inflows on human development as proxied by adult literacy. More so, most studies used the human development index (HDI) as a measure of human development but this study used one of the components of HDI as this enables more specific interrogations, policy recommendations and policy applications. The study improves on Onwuteaka et al. (2023) by examining the interactional effect of institutional quality and capital inflows on adult literacy (human development) in Nigeria. Conducting a country specific study for the Nigerian economy would promote country specific policies that will be particular to the Nigerian economy.

Objectives of the Study

The broad objective of this study is to examine the impact of foreign capital inflows, institutional quality on human development in Nigeria. To achieve this, the study specifically seeks:

1. To examine the impact of capital inflows on adult literacy in Nigeria
2. To analyse the impact of the interaction of institutional quality and capital inflows on adult literacy in Nigeria

Research Hypotheses

The primary research hypotheses are stated below in null (H_0) and alternative (H_1)

1. H_0 : Capital inflow does not impact significantly on adult literacy in Nigeria

H_1 : Capital inflow impacts significantly on adult literacy in Nigeria

2. H_0 : There is no interaction effect of institutional quality and the capital inflows on adult literacy in Nigeria

H_1 : There is interaction effect of institutional quality and the capital inflows on adult literacy in Nigeria

LITERATURE REVIEW

Adult literacy: This has been defined as the ability to comprehend, assess, use and connect with written texts in order to participate in society and achieve ones goal (www.oecd.org). According to United Nations Development Programme (UNDP) adult literacy rate is the proportion or percentage of the adult population aged 15 years and above that is literate. Adult literacy happens to be one of the indicators of human development and as a result is the selected indicator for human development in this study.

Capital Inflow: Monogbe and Achugbu (2016), Anidiobu, Okolie, Onyia and Onwumere (2020) define capital flows as financial flows from resident entity of one country to another resident entity in another country. This resident entity may be an individual, company or a government. It is an increase in quantum of money moved from foreign sources to a country or region not only to achieve economic growth, but enhance overall macroeconomic performance of the country or region as well.

Institutional quality: Barbier and Burgess (2021) defines institutional quality as a term that shows how law, individual rights and the provision of government regulation and services operates within a country. A collapse in these attributes undermines and weakens the institutional framework supporting economic development, thereby making it difficult for development to take place as expected. Institutions are seen to be important especially in developing countries because they tend to provide the basic rules of human interaction for people in their utilization of scarce resources (Santarelli & Tran, 2020). Institutions or governance are so important that they may deform or boost the outcome of foreign capital of a country and its impact on economic interaction. Thus, this study controls for governance or institution's influence on adult literacy (human

development) by establishing the interactive effects of institutional quality and foreign capital inflow in Nigeria.

Review of basic theories:

Human capital theory: This theory proposes that education increases the productivity and earnings of individuals which shows that education is a critical investment (Ita, 2020). The increased productivity will bring a higher salary to the individual based on the idea that the wage of a person in a normal labor market will be determined by the worker's productivity. It then implies that people will invest in education to the point where the private benefits from education equal the private costs. However, if there were no available funds to invest in this human capital how could it achieve this expectation? Ita maintains that investment is not only crucial for individuals but it is also the key to the economic growth of a country following from Alfred Marshall's view that supports that the most valuable of all capital is that which is invested in human beings. Despite the criticism, this theory is relevant for this study as it points out the need for investment in human capital which is crucial for human development. Proponents of this theory also put forward that a nation's socio-economic development centers on continued investment in the education and health of its population and so opines that no country can overlook the importance of human capital development in socio-economic development, (Githaiga & Kilong'I, 2023).

Dual gap (two gap) theory: The two gap model supports the hypothesis of investment-limited growth based on the Harrod-Domar model which assumes a specific amount of investment to increase growth (Conchesta, 2008). This theory assumes that investment and development are restricted by level of either domestic savings or import purchase capacity. It assumes that capital inflow is important and vital in filling the savings gap and foreign exchange gap (Ozigbu, 2020). One of its assumptions is that the savings gap and the foreign-exchange gap are unequal in magnitude and that they are essentially independent. This theory is relevant as it provides a framework that shows that the development of any nation is a function of investment and that such investment requires domestic savings which is normally not sufficient to ensure that development takes place (Adedoyi, Babalola, Otegunri & Adeoti, 2016). It points out the need for investment into the economy in order to bridge existing gaps in the economy and create the needed vehicles for human development.

Empirical review

Shirazi, Mannap and Ali (2009) investigated the relationship between foreign aid and human capital development using time-series data for 1975 to 2006. The result showed a positive relationship between foreign aid and human development. Maku and Ajike (2015) examined the impact of financial and capital flow dimension of globalisation on human welfare in the Sub-Saharan Africa for the period 1980 - 2012. The feasible generalised least square (GLS) estimator was utilised to estimate the fixed and random effect panel regression models. The result revealed that foreign direct investment (FDI) significantly increased HDI, infant mortality rate, life expectancy, mean year of schooling, access to water, access to sanitation, and access to health services.

Sahoo and Sethi (2017) investigated the impact of foreign capital on economic development of India from 1990–1991 to 2013–2014. The study used cointegration and vector-error correction model (VECM) which helps to measure the long-run impact of independent variables on dependent variables. The study found that domestic investment has a positive and significant impact on economic development in this case public expenditure on education of India in the long run among others.

Gokmenoglu, Apinran and Taspinar (2018) analysed the impact of foreign direct investment (FDI) on the human development index (HDI) in Nigeria for the period of 1972–2013. Long run coefficients of models were estimated using the dynamic ordinary least squares (DOLS) approach. Using Johansen cointegration test their findings reveal a long-term relationship between FDI and human development indicators (i.e. life expectancy at birth, school enrollment, and gross national income per capita).

Ozigbo and Ewubare (2019) focused on examining how inflows of foreign aid (ODA) have helped in shaping the level of human capital formation with emphasis on investments in education and healthcare. The study used country-specific time series data over the period 1990-2017 and autoregressive distributive lag (ARDL) model. The study showed that the estimated ARDL models reveal that lagged values ODA exert significant positive impact on public investment in education in the short run. They also discovered that the contemporaneous value of ODA has positive relationship with public healthcare investment in the short run.

Igudia (2021) investigated the impact of external debt stock and debt servicing on human capital development (HCD) in Nigeria from 1960-2019. Employing ordinary least squares (OLS) regression technique the results revealed that external debt servicing has an inverse relationship with HCD whereas external debt stock has a significantly positive impact on HCD. All other variables in the model contributed to the increase in public spending on education and health.

Ali, Jehan and Sherbaz (2022) in investigating the impact of foreign capital flows on human development in 65 developing countries over the time period 1984-2014 used three indicators of human development namely: per capita income (PCI), Secondary School Enrollment (SSE) and Life Expectancy (LE) instead of Human Development Index (HDI). Two step system GMM estimation technique was employed. Result indicates that capital flows affects each indicator of human development in different manner. The study found that the impact of foreign capital varies with respect to the indicators of human development and the type of foreign capital being studied. Both FDI and FPI negatively affect per capita income and secondary school enrollment.

Mbang (2022) examined the links between net Foreign Direct Investment (FDI) inflows and welfare improvement in Cameroon to see whether FDI actually contributes to welfare improvement in Cameroon and to assess its impact on the selected variables. The study used secondary data sourced from the World Development Indicator (WDI) and the United Nations Development Program (UNDP) for the period 1995 to 2019 and estimated using auto-regressive distributed lagged model (ARDL). The study revealed that in the long run, the variables exp , inv and GDP influence positively the HDI.

Abu-Ismael and Ishak (2021) analysed the causal effect between institutions and the key human development indicators that inform the Human Development Index (HDI) and its disaggregated components, namely education, health and income indices. The study used annual data from 1996 to 2017 for 158 countries. The study shows that there is a unidirectional causality between institutions and human development in most cases among others.

Ali, Jehan and Sherbaz (2022) assessed the impact of foreign capital flows on human development by incorporating quality of institutions in 65 developing countries over the time period 1984-2014. The study used two step system GMM estimation technique. Findings from the study showed that capital flows affects each indicator of human development in different manner. The study found that the impact of foreign capital varies with respect to the indicators of human development and the type of foreign capital being studied.

Githaiga and Kilong'I (2023) investigated the moderating effect of institutional quality on the relationship between foreign capital flow and human capital development in sub-Saharan Africa. Using a sample of 34 countries in sub-Saharan Africa and data for 2009 to 2019, the study applied the system generalized method of moments (GMM) estimator as estimation technique. The study found a positive relationship between remittances, foreign direct investment (FDI), institutional quality and human capital development while Official development assistance (ODA) has a negative and significant effect on human capital development among others.

RESEARCH METHODS AND PROCEDURES

This study is anchored on the two gap theory and human capital theory. The two gap theory follows Chenery and Strout (1966) view which explained that to have a reasonable level of development, capital inflow is

needed to bridge the gap between savings and investment, it is the bridging of this gap that brings about human development

To achieve objective 1 the study adopts Monogbe and Achugbu (2016) model, which has been modified to have two equations:

$$HDI_t = f(BLT_t, MTL_t, FDI_t, HRT_t)$$

Where BLT= Bilateral creditors, MTL= Multilateral creditors, FDI= Foreign direct investment and HRT= Home remittances,

Adopting the model and adjusting it to fit the objective 1 we have

For objective 1: ADLTR= f (EXTD, FA, REM, PSE, GEE, GDPPC)

$$\ln ADLTR_t = \beta_0 + \beta_1 \ln EXTD_t + \beta_2 \ln FA_t + \beta_3 \ln REM_t + \beta_4 \ln PSE_t + \beta_5 \ln GEE_t + \beta_6 \ln GDPPC_t + U_t \quad (1)$$

β_0 to β_6 represents the slope or parameters of coefficient of the equation while U_t represents the error term.

Where ADLTR= Adult literacy, EXTD=External debt, FA=Foreign Aid, REM= Remittance, , PSE= Primary school enrollment, GEE= Government expenditure on education, GDPPC= Per capita income

To take into consideration the interaction effect for objectives 2, the study adopts the model from Mohammed (2021) given as $HDI = f(HDI_{it-1}, REM_{it}, INS_{it}, (Rem_{it} * INS_{it}))$

$$\ln HDI_{it-1} = \alpha_0 \ln HDI_{it-1} + \beta_1 REM_t + \beta_2 INS_t + \beta_3 (Rem_t * INS_t) + \theta X_t + \delta_i + \mu_t + \varepsilon_t \quad (2)$$

Transforming the above to fit our objectives 2 we have it thus:

$$\ln ADLTR_t = \alpha_0 \ln ADLTR_{it-1} + \beta_1 \ln EXTD_t + \beta_2 \ln FA_t + \beta_3 \ln REM_t + \beta_4 \ln GFCF_t + \beta_5 \ln INSTQ_t + \beta_6 \ln GEE_t + \beta_7 (EXTD_t * INSTQ_t) + \beta_8 (FA_t * INSTQ_t) + \beta_9 (REM_t * INSTQ_t) + U_t \quad (3)$$

Interaction of capital inflow with institutional variables would mean that If $\beta_i > 0$, it denotes that capital inflow and institutions are complementary (they interact), this would mean that institutions improve the positive effect of capital inflow on human development; if $\beta_i < 0$, it implies that capital inflow and institutions are substitutes (they don't interact), implying that the relationship between capital inflow and human development is not based on the institutional quality of the host country, it means capital inflows serve as a substitute in impacting human development when there are weak or imperfect institutions. When they are complementary it means they interact but when they are substitutes it means they don't interact.

Estimation Techniques and Procedures

To enable us estimate the specified equations for this quantitative research, the study applied the unit root tests which exposed the attributes and distributional pattern of the variables for this study. These are the pre-estimation techniques. The estimation technique used for analysis was the auto regressive distributed lag (ARDL).

Table 3.1: Table of A prior Expectation

Dependent Variable	Independent Variables	Expected Signs
ADLTR	EXTD	+ > 0 (positive)
	REM	+ > 0 (positive)
	FA	+ > 0 (positive)
	GEE	+ > 0 (positive)

ADLTR	PSE	+ > 0 (positive)
	GDPPC	+ > 0 (positive)
	EXTD	+ > 0 (positive)
	FA	+ > 0 (positive)
	REM	+ > 0 (positive)
	INSTQ	+ > 0 (positive)
	INSTQEXTD	- < 0 (negative)
	INSTQFA	- < 0 (negative)
	INSTQREM	- < 0 (negative)

Source: Researchers' Compilation (2024)

RESULT PRESENTATION AND DISCUSSION OF FINDINGS:

Unit Root Result

The results of the ADF and PP unit root results are as presented in the Table 4.1 below.

Table 4.1: Summary of ADF and PP Unit Root Test Results

Variable	ADF Critical value @ 5%	ADF Statistic	PP Critical value @ 5%	PP Statistic	Order of Integration
LEB	-2.95711	-4.95686	-2.95711	-3.54333	I (1)
ADLTR	-2.95711	-6.71608	-2.95711	-6.69368	I (1)
EXTB	-2.95711	-5.75782	-2.95711	-5.93998	I (1)
REM	-2.95711	-5.8451	-2.95711	-7.23638	I (1)
FA	-2.95402	-3.25598	-2.95402	-3.13656	I (0)
GFCF	-2.95711	-3.88708	-2.95711	-3.89257	I (1)
GDPPC	-2.95711	-4.10107	-2.95711	-4.0129	I (1)
GEH	-2.95711	-7.30022	-2.95711	-7.22459	I (1)
PSE	-2.95711	-4.54401	-2.95711	-4.65866	I (1)
GEE	-2.95711	-5.58794	-2.95711	-5.59871	I (1)
INSTQ	-3.56838	-4.314	-3.55297	-3.58267	I (0)
INSTQEXTD	-3.55776	-5.46499	-2.95711	-5.58704	I (1)
INSTQFA	-2.95402	-3.2429	-2.95402	-3.12726	I (0)
INSTQREM	-2.95711	-5.91057	-2.95711	-6.37138	I (1)

Source: Researchers' computation from EViews 10

Following the decision rule which is to reject null hypothesis if the ADF and PP statistic value exceeds the critical value at a chosen level of significance (in absolute terms), and accept stationarity when ADF and PP statistics is greater than criteria value, it can be observed from Table 4.1 that all the variables are stationary at first difference except foreign aid (FA), institutional quality (INSTQ) and the interaction of institutional quality and foreign aid (INSTQFA) which were stationary at level for both the ADF and PP unit root test. Having obtained a mixed order of both level and first difference, the ARDL F-Bound test was conducted as this meets the conditions under which the test could be applied.

Evaluation of Long Run and Short Run Estimates

To discuss the long-run and short-run estimation results, the study employs economic criterion, statistical criterion and econometric criterion.

Panel A: Long Run Estimates

Since the result established that a long-run relationship exists in the two equations, the ARDL model long-run form is used to determine the coefficients of the regression models. The estimated long-run coefficients are reported in the table 4.2 for equation 1 and Table 4.3 for equation 2

Table 4.2.: Summary of ARDL Long run result

Equation 1: dependent variable:- Adult literacy rate				
LNEXTD	-0.00476	0.060067	-0.07924	0.9378
LNREM	-0.10592	0.04567	-2.31922	0.0331
LNFA	0.066499	0.033539	1.982742	0.0638
LNPSE	0.443782	0.172643	2.570517	0.0199
LNGEE	0.022235	0.064923	0.34248	0.7362
LNGEH	-0.04517	0.051548	-0.87622	0.3931
LNGDPPC	0.401828	0.136303	2.94805	0.009

Source: Researchers' Computation from EViews 10

Equation one (Research Objective One)

The ARDL long-run result as in Table 4.2 indicates a negative impact of capital inflows such as external debt (EXTD) and remittance (REM) on also adult literacy in Nigeria. This implies that an increase in external debt and remittances by 1%, on average, decreases adult literacy by 0.005% and 0.106% respectively in the long run. Contrary, foreign aid (FA) which is also a capital inflow has a positive impact on adult literacy such that a 1% increase in foreign aid, increases adult literacy by 0.066% on average in the long run.

For the control variables included in the equation, primary school enrollment (PSE), gross domestic product per capita (GDPPC) and government expenditure on education (GEE) have a positive impact on adult literacy while that of government expenditure on health (GEH) has a negative impact on adult literacy (ADLTR). As such, 1% increase in the above listed control variables on average, increases adult literacy by 0.444% 0.402% and 0.022% respectively. Contrary, a 1% increase in government expenditure on health reduces adult literacy by 0.045% on average.

It can be observed that certain variables conformed to a prior expectation (foreign aid, primary school enrollment, gross domestic product per capita and government expenditure on education) while other variables such as external debt, remittances and government expenditure on health failed to conform. This observed counterintuitive relationship is prevalent in Nigeria given that increase in external debt attract high debt servicing as a result of funds not being channeled to productive investment; which is at the expense of pivotal sectors of human development such as education (adult literacy). For remittances, families receiving remittances most times decide to pursue immediate needs and businesses rather than focusing on long term investment in education. More so, the possible explanations for the inverse relationship between government expenditure on health and adult literacy can be attributed to the opportunity cost in fund allocation between both sectors. Hence, increase in government expenditure on health may deprive the education sector.

Table 4.3: Summary of ARDL Long run result

Equation 2: dependent variable:- Adult literacy rate				
LNEXTD	-0.39981	0.122576	-3.26172	0.0172
LNREM	-0.26449	0.111784	-2.36607	0.0558
LNFA	0.037095	0.118226	0.313763	0.7643

LNINSTQ	-0.74051	0.414253	-1.78757	0.1241
INSTQEXTD	0.001178	0.000473	2.489396	0.0472
INSTQREM	0.006596	0.004483	1.471221	0.1916
INSTQFA	-0.00077	0.000318	-2.41179	0.0524
LNGEE	0.263639	0.086339	3.053546	0.0224

Source: Researchers' Computation from EViews 10

Equation two (Research Objective Two)

The result of equation 2 presents the impact of the interaction of institutional quality and capital inflow on adult literacy in Nigeria in the long run. The result shows that while capital flows such as external debt (EXTD) and remittances (REM) have negative impact on adult literacy, foreign aid promotes adult literacy. Thus, a 1% increase in external debt and remittances reduces adult literacy by 0.3998% and 0.264% on average in the long run. However, a 1% increase in foreign aid (FA) increases adult literacy by 0.037% on average. Institutional quality also had a negative impact on adult literacy, such that a 1% increase in institutional quality decreases adult literacy by 0.74% on average.

To the primary interest of this equation, the result indicates that the interaction of institutional quality and capital inflow (INSTQEXTD and INSTQREM) have positive impact on adult literacy in Nigeria in the long run except for the interaction of institutional quality and foreign aid. Specifically, a 1% increase in the interaction of institutional quality and capital flows such as external debts and remittances implies a positive interaction which means that institutions improve the positive impact of external debts and remittances on life expectancy by 0.0012% and 0.0066% on average. Nevertheless, 1% increase in the interaction of institutional quality and foreign aid (INSTQFA) implies that foreign aid increases adult literacy by approximately 0.001% on average due to the presence of weak institutions in Nigeria.

From the regression analysis, it is observed that all variables conform to the a priori expectation of the study with the exception of external debt, remittances, institutional quality and the interaction of institutional quality and foreign aid (INSTQFA). The interaction of institutional quality and foreign aid on adult literacy suggests that foreign aid act as a substitute for influencing adult literacy as an aspect of human development in the presence of weak or flawed institutions. This correlation is distinctive to Nigeria, where public institutions, including the judiciary, civil offices and security agencies, have failed to fulfill their primary responsibilities in the best interests of the citizens. Consequently, there is a growing dependence on increased capital inflow in the form of foreign aid to compensate the institutional shortcomings in the economy.

Short Run Estimates (Error Correction Model)

Error correction modeling aims to align the extended behavior of cointegrated variables with their immediate responses, enabling dynamic analysis of errors.

Research Objective One

Table 4.4: Summary of Short Run Coefficients (Error Correction Regression)

Dependent variable: Adult Literacy

Equation 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.34602	0.204737	-6.57438	0
D(LNEXTD)	0.098105	0.037906	2.588085	0.0191
D(LNEXTD(-1))	0.197683	0.041299	4.786581	0.0002

D(LNEXTD(-2))	0.131207	0.042538	3.084434	0.0067
D(LNREM)	-0.05862	0.0149	-3.93414	0.0011
D(LNFA)	0.041905	0.021249	1.972154	0.0651
CointEq(-1)*	-1.11887	0.167808	-6.66758	0
R-squared	0.692783	Mean dependent var		0.018236
Adjusted R-squared	0.615979	S.D. dependent var		0.072967
S.E. of regression	0.045217	Akaike info criterion		-3.159
Sum squared resid	0.04907	Schwarz criterion		-2.8352
Log likelihood	55.96447	Hannan-Quinn criter.		-3.05345
F-statistic	9.020105	Durbin-Watson stat		1.988041
Prob(F-statistic)	0.000033			

Source: Researchers' Computation from EViews 10.

From Table 4.4, the R^2 is 0.69 which means that 69% of the variation in adult literacy is accounted for by the independent variables in the equation while about 31% of variation not accounted for can be attributed to variables not in the equation. This implies that the independent variables moderately explain the variation in adult literacy. The regression line has a negative intercept as presented by the constant (c) = -1.346. This means that if all the variables are held constant or fixed (zero), adult literacy in Nigeria will decrease by about 1.346% per annum.

Research Objective two

Table 4.5: Summary of Short Run Coefficients (Error Correction Regression)

Equation 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.433956	0.527543	10.3005	0
D(LNADLTR(-1))	-0.50968	0.101288	-5.03201	0.0024
D(LNEXTD)	-0.28741	0.061333	-4.68614	0.0034
D(LNREM)	-0.03558	0.024852	-1.43175	0.2022
D(LNREM(-1))	0.161447	0.023327	6.92095	0.0005
D(LNFA)	0.27985	0.03752	7.458729	0.0003
D(LNFA(-1))	0.278454	0.044542	6.251459	0.0008
D(LNINSTQ)	-0.2153	0.122176	-1.76222	0.1285
D(LNINSTQ(-1))	0.433772	0.099101	4.377085	0.0047
D(INSTQEXTD)	0.000524	0.00013	4.027298	0.0069
D(INSTQEXTD(-1))	-0.00013	6.09E-05	-2.10003	0.0805
D(INSTQREM)	0.000149	0.000797	0.186999	0.8578
D(INSTQREM(-1))	-0.00416	0.000755	-5.50624	0.0015
D(INSTQFA)	-0.00088	9.87E-05	-8.86254	0.0001
D(INSTQFA(-1))	-0.00027	8.43E-05	-3.24098	0.0177
D(LNGEE)	0.113915	0.019217	5.92776	0.001
D(LNGEE(-1))	-0.12182	0.017186	-7.08839	0.0004
CointEq(-1)*	-1.09482	0.106615	-10.2689	0
R-squared	0.946277	Mean dependent var		0.017666
Adjusted R-squared	0.881042	S.D. dependent var		0.071853

S.E. of regression	0.024782	Akaike info criterion	-4.25906
Sum squared resid	0.008598	Schwarz criterion	-3.43458
Log likelihood	86.14496	Hannan-Quinn criter.	-3.98577
F-statistic	14.50567	Durbin-Watson stat	2.423131
Prob(F-statistic)	0.000004		

Source: Researchers' Computation from EViews 10.

From Table 4.5, has its coefficient of determination as 0.95. This implies that about 95% of the variation in adult literacy is explained by the independent variables, while 5% of the variations not accounted for are explained by other variables not in the equation. The intercept is positively signed as presented by the constant (c) = 5.434. This means that if all the variables are held constant or fixed (zero), adult literacy in Nigeria will increase by about 5.434% annually which conforms to theoretical expectation as the intercept can either assume a positive or negative relationship. The lag value of adult literacy has a negative impact on the current level of adult literacy in Nigeria. This indicates that there are factors or trends over time that are negatively affecting adult literacy, and the impact of these factors persists into the present which can be traced to issues such as inadequate educational policies, lack of resources, socio-economic challenges, etc.

Statistical Criterion

The F-test

For objective 1, from the F-table, $F_{0.05(6, 26)} = 2.47$ (From F-table) F-table

F-statistics = 9.020105 (From Regression Result) F-calculated

Therefore, since the F-calculated > F-table, the study rejects H_0 and accept H_1 that the equation has goodness of fit and is statistically different from zero. In other words, there is a significant impact of the independent variables of the study (external debt, remittances, foreign aid, government expenditure on education, primary school enrollment, government expenditure on health and gross domestic product per capita) on the dependent (adult literacy).

For objective 2, , from the F-table, $F_{0.05(8 25)} = 2.34$ (From F-table) F-table

F-statistics = 14.505 (From Regression Result) F-calculated

Therefore, since the F-calculated > F-table, the study rejects H_0 and accepts H_1 that the equation has goodness of fit and is statistically different from zero. In other words, there is a significant impact of the independent variables of the study (external debt, remittance, foreign aid, institutional quality, government expenditure on education, interaction of institutional quality and external debt, interaction of institutional quality and remittances and interaction of institutional quality and foreign aid) on adult literacy.

Econometric Criterion

a) Test for Heteroscedasticity (Breusch- Pagan Godfrey)

The Heteroscedasticity test is conducted to ascertain if the variance of the error term is constant for all observations. Therefore, to confirm that the variance of the error term is constant, the Breusch- Pagan Godfrey heteroscedasticity test was adopted.

b) Autocorrelation Test:

The autocorrelation test is used to check if the error terms of different observations are correlated with each other which is against the assumptions of ordinary least squares (OLS). Autocorrelation is manifested by OLS

estimators which are not best linear unbiased estimates (BLUE). In this study, the Breusch-Godfrey Serial Correlation LM Test is used to detect the presence of autocorrelation in the short run of the two equations ahead of the Durbin-Watson test since it is more general and has no restrictions. These results are presented in the table below

Table 4.6

S/N	Test	F-Statistic	Probability
1	Serial Correlation Breusch- Godfrey Serial LM Test	0.038313	0.9625
	Equation 1	0.989903	0.3654
	Equation 2		
2	Heteroscedasticity	1.836282	0.1196
	Equation 1	2.744747	0.1055
	Equation 2		

The result of the diagnostic test in table 4.6 shows that the parameter estimates are robust. The serial correlation shows that it is not serially correlated, the homoscedastic test shows that it is homoscedastic in nature.

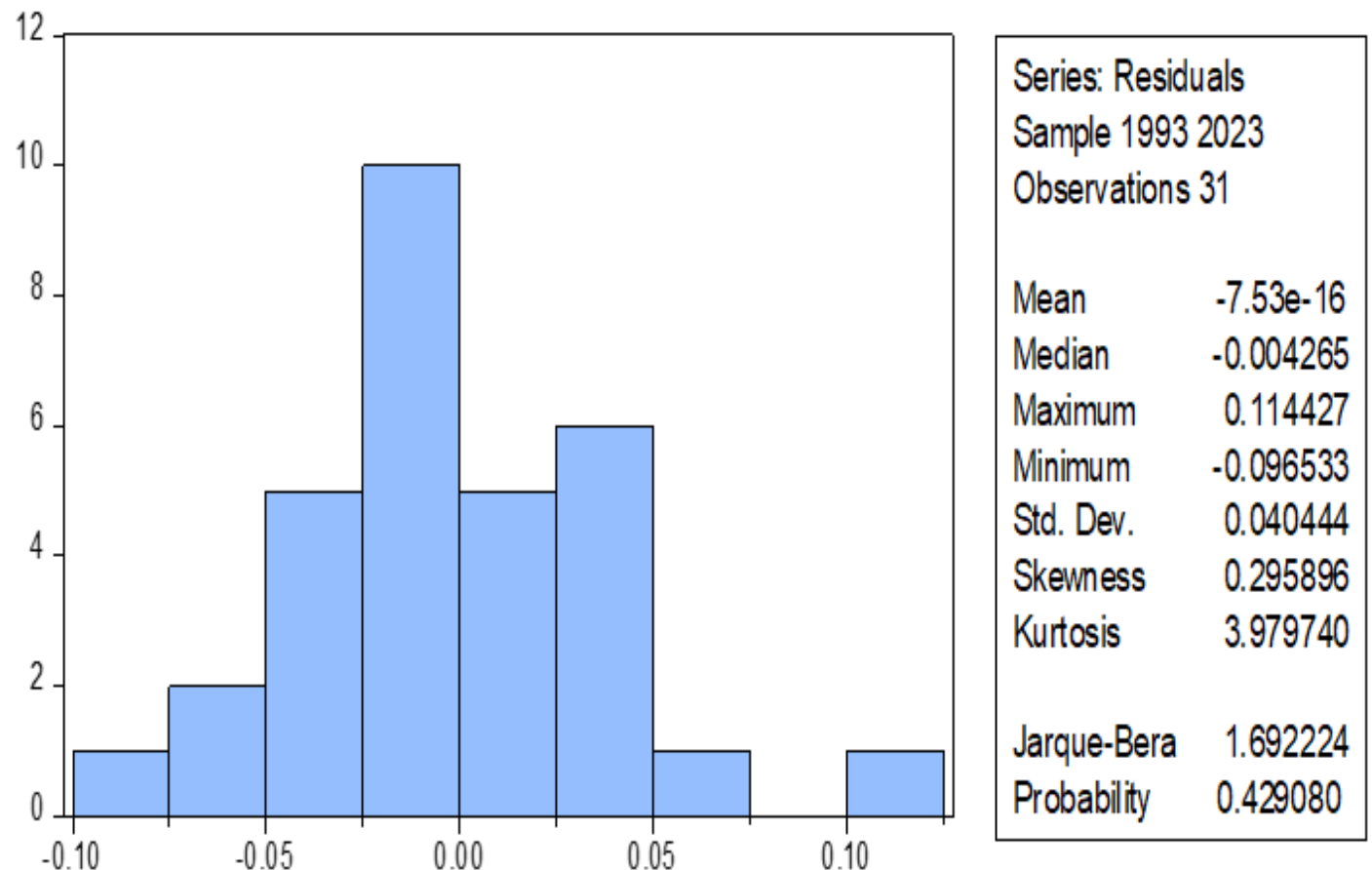
c) Normality Test

Hypothesis

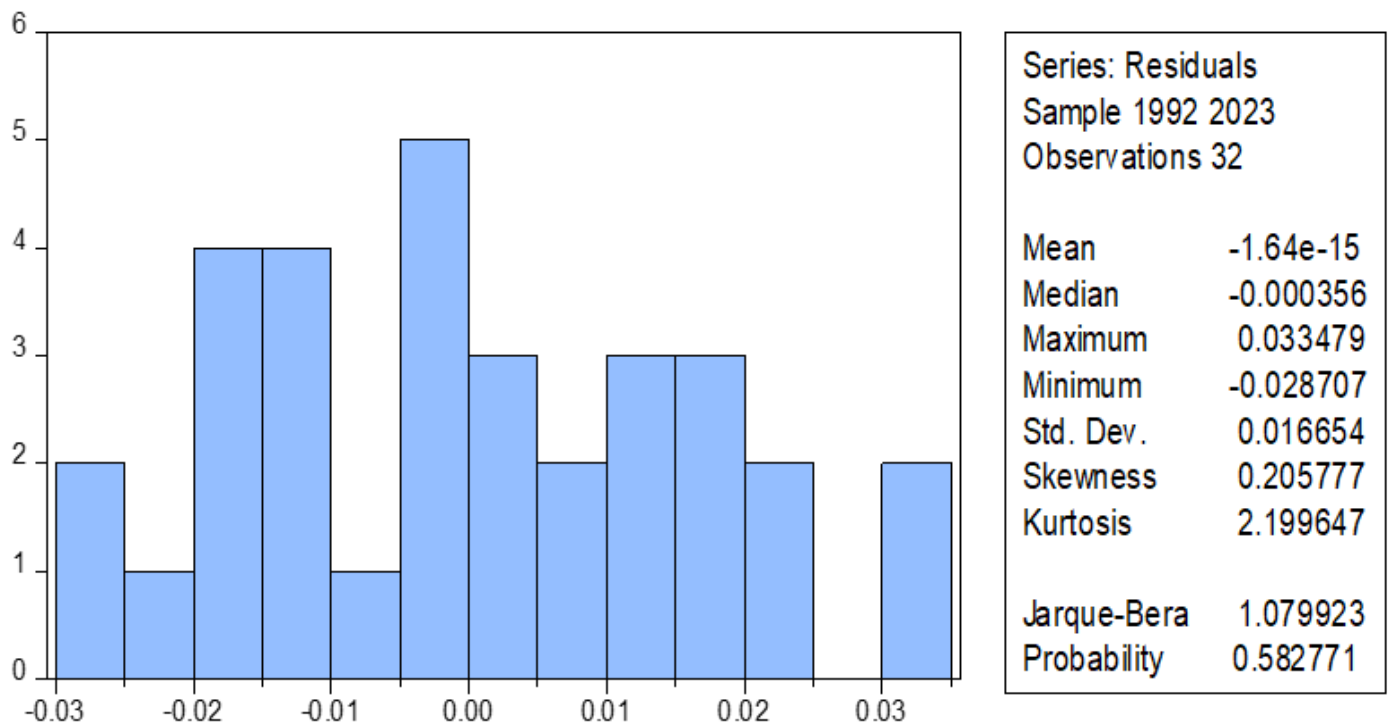
H_0 = residuals are normally distributed

H_1 = residuals are not normally distributed

Equation 1



Equation 2



Decision Rule: Since the probability value of the jarque-bera for the two equations are greater than 0.05, the study accepts the null hypothesis that the residuals are normally distributed and reject the alternate hypothesis that the residuals are not normally distributed.

Evaluation of Research Hypothesis.

This sub-section seeks to answer research hypothesis posed in chapter 1. In testing the working hypotheses, which partly satisfies the objectives of this study, the study employs a 5% level of significance.

Hypothesis one:

The first research hypothesis is evaluated using the t-statistics results for the selected capital inflows in both equation 1 and the results are presented in the Table 4.7 below. Therefore, the t-calculated value is compared to the t-critical value at a 5% significance level. If the t-calculated is greater than the t-tabulated, we accept that there is a significant impact of the capital flow on human development (adult literacy), otherwise, there is no significant impact of the capital inflow on human development.

Table 4.7: Summary of t-test for equation 1

Equation	Dependent Variable	Independent Variable	T-calculated	T-tabulated	Remark
1	Adult Literacy	External debts	-0.0792	2.056	Statistically Insignificant
		Remittance	-2.3192	2.056	Statistically Significant
		Foreign aid	1.9827	2.056	Statistical Insignificant

Source: Researches’ computation from EViews 10 and Snapshot

So the t-tabulated value for both equations is;

Degree of freedom (df) = n - k = 33 - 7 =26,

Therefore, the study's $t_{(0.025, 26)} = 2.056$ It is used in other to either reject or accept the null hypothesis, given the hypothesis statement below:

H_0 : The selected capital inflow variables do not impact significantly on adult literacy in Nigeria

H_1 : The selected capital inflow variables impact significantly on adult literacy in Nigeria

From Table 4.7, it can be seen that remittances with its calculated value of -2.3192 in equation 1 is greater than 2.056. Hence, remittances have a significant impact on adult literacy.

Decision Rule: Therefore, for equation 1 the study observed that only remittances have significant impact on adult literacy while foreign aid and external debt did not have significant impact, so we accept the null hypothesis that capital inflow does not have significant impact on adult literacy.

Hypothesis Two:

To evaluate hypotheses 2 based on the interaction of capital inflow with institutional variables, the study makes use of β_i which denotes the slope of the interaction of capital inflow with institutional variables.

If $\beta_i > 0$, it denotes that capital inflow and institutions are complementary (they interact).

if $\beta_i < 0$, it implies that capital inflow and institutions are substitutes (they don't interact).

Table 4.8: Summary of co-efficient for the interaction of capital flows and institutional quality in equation 2

Equation	Variable	Co-efficient	β_i	Prob	Remark
Equation 2	INSTQEXTD	0.001178	0	0.0472	Complementary (Interaction)
	INSTQREM	0.006596	0	0.1916	Complementary (Interaction)
	INSTQFA	-0.00077	0	0.0524	Substitutes (No interaction).

Source: Researches' computation from EViews 10 and Snapshot

Restating the second research hypothesis

H_0 : there is no interaction effect of institutional quality and the capital inflows on adult literacy in Nigeria

H_1 : there is interaction effect of institutional quality and the capital inflows on adult literacy in Nigeria.

From the provided ARDL long results for equation 2, the β_i which represent the interaction of institutional quality and any of the capital inflow variables (external debts, foreign aid and remittances) have their respective co-efficient 0.001178, 0.006596 and -0.000767; which are all greater than. Here, the interaction of institutional quality and capital inflow variables of external debts and remittances are greater than 0 while the interaction of institutional quality and foreign aid is less than 0. This implies that the relationship between capital inflow (external debts and remittances) and adult literacy (human development) is complemented by institutional quality of the recipient country (Nigeria) while the relationship between foreign aid and adult literacy is not based on the institutional quality of Nigeria. Thus, the presence of institutional quality enhances the impact of external debts and remittances on adult literacy (human development) in Nigeria while foreign aid substitute for the absence of institutional quality in Nigeria to enhance adult literacy (human development). On the other hand, the β_i which represents the interaction of institutional quality and any of the capital inflow variables (external debts, foreign aid and remittances) in equation 2, have their respective co-efficient as 0.001178, 0.006596 and -0.000767.

Decision Rule: This study finds that interaction of capital inflows and institutional quality are greater than 0 for adult literacy with the exception to the interaction of remittances and institutional quality. Since the

interaction of capital inflows and institutional quality are greater than 0 for adult literacy with exception to the interaction of foreign aid and institutional quality, the study rejects the null hypothesis and accepts the alternative hypothesis that the interaction of capital inflows and institutional quality has an impact on human development (adult literacy) in Nigeria during the period under study.

Discussion of findings:

Based on the first research objective, it was found that the selected capital flows have significant impact on human development in Nigeria during the period under study. Specifically with adult literacy as an indicator of human development, external debts and foreign aid had insignificant impact while only remittances had a significant impact. In addition, the direction of relationship with adult literacy was found to be consistent as external debt and remittances have negative impact while foreign aid has a positive impact on adult literacy in the long run. The results indicate that remittances has a strong role in influencing human development negatively which does not conform to economic expectation, however, empirical findings of Ali et al. (2022) align with this result as they also found a negative and significant impact of remittances on life expectancy in developing countries. More so, Asongu and Tchamyou (2019) revealed that foreign aid positively affected primary school enrollment and lifelong learning, with no significant effects on secondary and tertiary school enrollments in Africa which conform to the findings of this study on the impact of foreign aid on education indicator (adult literacy). Ali et al. (2022) also opined the significant influence of capital inflows on education and human development. In general, while Oloke et al. (2022) findings align with this study's findings as they conclude that foreign inflows into Nigeria have significant and negative relationship with human capital development, the findings of Onyekwelu (2022) which show positive and significant effects of capital inflows on human capital development in Nigeria contradicts the findings of this study on human development in Nigeria.

The results for the second research question indicates a discernible interaction between institutional quality and selected capital flows (external debts, remittances, and foreign aid) on adult literacy (human development) in Nigeria. This conclusion is drawn from the positive estimate of the interaction term between institutional quality and capital inflow for both adult literacy, revealing a positive relationship between institutions and capital inflows in shaping human development in Nigeria except for the interaction of institutional quality and foreign aid which was negative. These findings prove the existence of an interaction between capital inflows and institutional quality in influencing human development in Nigeria. This is because there exists several institutional frameworks manned with the responsibility to ensure that these capital inflows are used for the appropriate purpose of human development, however they must be given the necessary boosts and freedom to perform. These empirical findings align with theoretical expectations and some empirical studies, such as Adegboye et al. (2020) and Thi Cam Ha, Doan, Holmes, and Tran (2023), who establish a complementary interaction between foreign direct investment and institutional quality, enhancing human development in sub-Saharan Africa (SSA) countries. Ali et al. (2022) suggests a similar perspective but note that this interaction does not completely eliminate the adverse influence of capital flows, emphasizing the need for institutional reforms due to the inadequacy of existing institutional quality in developing countries. However, the exception found in this study in terms of the negative interaction between foreign aid and institutional quality on human development resonates with Githaiga and Kilong'1 (2021) observations which emphasized the role of foreign aid in the absence of key institutions for human development in sub-Saharan African countries.

In conclusion, the post-estimation tests concluded that the two equations in this study are reliable and fit prediction and policy implications. This is evident in the heteroscedasticity, serial correlation test and normality test which all had their probability values for the two equations greater than 0.05.

Policy Implication of Findings

The findings of this study carry substantial policy implications for human development in Nigeria. Specifically, the significant impact of capital inflow on adult literacy (human development) indicates that policy shifts on the utilization of capital inflows would bring about significant changes in human development.

However, the policy implication of this result highlights the minimal contribution of capital flow channeled to enhance education outcomes and the education sector in the Nigerian economy. Therefore, targeted interventions should consider capital inflows (remittances, foreign aid and external debts) as a measure to promote adult literacy (human development) in Nigeria.

Furthermore, the presence of the interaction effect of institutional quality and capital inflows on adult literacy (human development) implies that institutional quality are somewhat necessary to enhance the disbursement of capital inflows to enhance human development in Nigeria. However, the policy implication drawn from this finding is that the positive interaction fails to completely eliminate the adverse influence of the capital flows, which reflects inadequacy of existing institutional quality in Nigeria which supports the second findings of this study. Hence, there is need for more institutional reforms to improve the effectiveness of capital inflows in fostering adult literacy (human development) in Nigeria.

CONCLUSION AND RECOMMENDATIONS

For the first objective the study showed that remittance have a significant impact on adult literacy but not so for external debt and foreign aids. For the second objective the study found a positive interactional impact of institutional quality and capital inflows on human development in Nigeria, indicating that institutional quality enhances or complements the impact of capital inflows on human development looking at adult literacy. However, foreign aid did not show an interaction effect with institutional quality. This implies that foreign aid could substitute for institutions and affect adult literacy(human development) directly without the aid or role of institutions. In summary, the reliability of the two equations employed in this study for policy formulation and forecasting is affirmed through their successful passage of various econometric tests, including assessments for heteroscedasticity, serial correlation and normality test.

The study concludes that though institutional frameworks are present and complements the effect of capital inflows in adult literacy (human development) in Nigeria, institutional frameworks has not been effective enough in averting the possible negative influence of capital inflows on human development in Nigeria with a particular focus on adult literacy. Therefore, if the Nigerian government should diligently implement the recommendations provided in this study with patriotism and vigor, Nigeria has the potential to make significant advancements in human development via focus on adult literacy by enhancing the state of institutional quality which would better improve the effectiveness of capital inflows that will help to achieve this in the country. Policies that are specifically targeted at bridging institutional gaps and challenges such as giving autonomy to institutions, creating systems that are running irrespective of the persons involved and ensuring law and order, can complement capital inflows in promoting adult literacy (human development) in Nigeria.

RECOMMENDATIONS

Strategic and intentional investment of capital inflows in order to improve human development: The government should harness the remittances that come into the country to achieve more benefits with regards to education. They should give policies that encourage such inflows as they are significant. On the other hand they should intentionally supervise and appropriate the external debts and foreign aids that comes in to ensure that they impact on adult literacy as they are expected to as this will boost the general human development. Jointly, government at all levels through the Ministry of Budget and Planning should allocate an adequate proportion of capital inflows especially from foreign aid and external debts to the investment in health and education projects which would ultimately enhance human development in Nigeria.

The importance of Institutions should be more pronounced and its effectiveness ensured: Deducing from the findings the study also recommends that the role of institutions and how they ensure government effectiveness should be magnified the more so that agencies, the people and government will know that they are actually capable and vital to help them achieve greater results as regards improved human development. In particular foreign aids should not be left alone but be made to be more contributory to human development by support and interactions from institutions that are strong and are efficient.

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