HUMAN CAPITAL DEVELOPMENT AND POVERTY REDUCTION IN NIGERIA: A ROBUST LEAST SQUARE APPROACH

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Abstract

The impact of human capital development on poverty reduction is important, given its policy implications especially with respect to the developing countries particularly Nigeria. The paper examined the relationship between elements of human capital development and poverty alleviation in Nigeria, from 1981-2020. In specific terms, the effects of government expenditure on education, government expenditure on health, inequality and unemployment on poverty level, were examined. The paper makes use of time series data from secondary source, on Nigerian economy for the period 1981-2020, obtained primarily from the National Bureau of statistics and Central Bank of Nigeria (CBN,2021) Bulletin. The work used Robust Least Square Techniques, to determine whether the elements of human capital development had any effect on poverty index in Nigeria. The Robust Least Square Technique employed showed that a percentage increase in expenditure on education will reduce poverty by 1%. 1% increase in unemployment approximately gives a 1% increase in poverty. a percentage decrease in inequality, on the average, reduces poverty by 0.64 %. This is indicative that bridging the inequality gap is robust in reducing the level and depth of poverty in Nigeria. The paper therefore concluded that Human capital development has significant impact on poverty reduction in Nigeria. And recommended that government should invest more on education, health, skills acquisition and formulate policies that will reduce unemployment.

Keywords: Poverty reduction, Government expenditure, education, Health, Inequality, unemployment

Introduction

Nigeria is not free from the series of recent socio-economic challenges brazen out developing countries, particularly the sky-scraping level of poverty rate. Out of 187 countries, Nigeria is categorized as one of the lowest with human capital development ranking 153 with 47% HDI rate. This is an indication that poverty is somewhat startling in Nigeria and its prevalence has been evidenced in all the facets of the economy. Despite the various metrics attached to the measurements of poverty, the historical data continue to reveal persistence increase in the poverty rate till recent time. However, the threat posed by poverty against the wellbeing of mankind is not only pronounced in African region but Asian countries share the great part of it. For instance, it was reported by Nigerian National Bureau of Statistics in 2020 that estimated figure of more than 90 million people are lurch in abject poverty. Meanwhile, a good number of policies and programmes have been carved out, both in emerging and developing countries to reduce the staggering poverty incidence among the citizens (Anigbogu et al, 2014). Globally, one of the redefined poverty reduction programmes introduced after Millennium Development Goals (MDGs) is Sustainable Development Goals (SDGs) in 2015 and saddled with 17 goals. Regrettably, little or no significant improvement has been recorded since inception and the effectiveness of the programme to successfully reduce poverty in developing countries has been questionable by the researchers and debatable in the literature. A cursory look at the programmes revealed that the ineffectiveness of it resulted from lack of political will to implement various polices and misplaced policies priority in developing country like Nigeria. Anyanwu and Erhijakpor (2012) stated emphatically that the focus of policies towards curbing poverty rate is not designed properly and most of it were carried out fraudulently which leads to counterproductivity.

Based on the existing studies, it has been established that developed nations have given adequate attention to human capital development in a way to reduce poverty to barest minimum. However, the reverse is the case in developing countries where poverty is highly domiciled and the role of human capital development components on poverty reduction has been underscored in various studies. It was opined by Larocque (2006) that education and health are viable components of human capital development capable of enhancing productivity of an individual in a given country. Particularly, education at various stages and levels has been found to contribute massively to economic growth. Theoretical understanding is that if individual education and health is improved it will increase knowledge, income, and technological innovation and reduce poverty which in turns reflects on the productivity of a country (Larocque, 2006). This has led to the growing evidence linking the importance of human development capital components to developmental process and strategies in various countries.

In view of the above economic challenges facing developing countries like Nigeria, this current work tends to empirically ascertain the effectiveness of human capital development in poverty reduction strategies. The importance of human capital development cannot be underestimated because it enhances the capacity building of a nation which could shield Nigeria economy against any form of crises. The central aim of the study is to bridge the gap in the existing literature by investigating the influence of government expenditure on education, health and the effect of inequality and unemployment on poverty rate in Nigeria.

Literature Review

Conceptual review
Poverty:

There is no consensus on a standard definition of poverty despite its universality and the enormous literature on it (Laderchi, Saith, & Stewart, 2003). There are divergent views on its nature, how to determine whether it is rising or falling and the understanding of transition from being 'non-poor' into the poverty trap. According to Ekpe (2011), "poverty is general scarcity or the state of one who lacks a certain amount of material possessions or money." It is a concept with diverse aspects which includes social, economic, and political elements. Poverty has been described to either be temporary or extreme with relations to the concept of inequality.

Human Capital Development

Goetz and Hu (1996), human capital development refers to the process of acquiring and increasing the number of number of people who have the skills, education and experience which are critical for the economic and the political development of a country. Human capital development is therefore associated with investment in man and his development as a creative and productive resource. Human capital development is the process of further developing the productive capacity of human resources through investment in education or other means (Garavan, Morley, Gunnigle and Collins 2001). Institute of Personnel and Development defines human capital development as the systematic and continuing process of analysing an organisation's human capital needs under changing conditions and developing personnel policies to the longer-term effectiveness of the organisation.

Unemployment

Unemployment is a major factor contributing to poverty in Nigeria. There is a strong correlation between unemployment and poverty. When people are unemployed, their source of livelihood depletes over time. The cost of living becomes high and the standard of living goes down. There are many people in Nigeria who lack the opportunity of being employed. The formal unemployment rate in Nigeria as estimated by the World Bank in 2007 was 4.9 percent and Nigeria ranked 61st across the worlds countries (CIA Factbook).

Inequality

Inequality implies a concentration of a distribution, whether one is considering income, consumption or some other welfare indicators or attributes (Oyekale , Adeoti & Oyekale, 2007). There was an increase in income disparity after the economic growth which Nigeria experienced between 1965-1975, and this income inequality has increased the dimension of poverty in the country (Oluwatayo, 2008)

Theoretical Review

The Classical Theory of Human Capital

As one of the leading scholars in the classical economic thought, Adam Smith stands out a father of capitalism. In his contribution to the human nature and causes of wealth, he affirmed that an individual will discover talents during the course of acquiring educational knowledge. It was further accentuated that all the talents and knowledge form the large part of individual fortune. He discovered that there is a relationship between human capital and productivity. It was concluded by classical scholars that individuals hold the responsibility of achieving their destiny and decides whether to be poor or not based on their own decision. This linked to the concept of sub-culture poverty that implies lack of suitable role models will limit the extent an individual will change capabilities and attitudes. The theoretical assumption of this study depends on the classical thought that individual choices on education and human capital leads to poverty over time or otherwise. This is why human capital is important and quality education, standard health care and many other components become vital in poverty reduction strategy.

Empirical Review

The relationship between human capital development and poverty reduction has received little attention in the literature. However, the few studies have drawn mixed findings regarding the influence and implications of human capital development on poverty rate in Nigeria. For instance, the study conducted by Apergis and Katsaiti, 2018; Sachs and Warner, 1997; among others agreed that human capital development is a workable indicator to reduce poverty level. On the contrary, Bulte et al., 2005; Ross, 2003; Goderis and Malone, 2011; Asaleye et al., 2018, had divergent views and concluded that human capital development does not reduce poverty rate.

In United Kingdom, Goderis and Malone (2011) assessed the relationship between living standards, poverty and inequality. The study concluded that increased inequality in income leads to high poverty rate in UK. In 2010, Leibbrandt, Finn and Woolard, studied various polices attached to income inequality and poverty reduction in South Africa. It was revealed in the study that poverty level and inequality in South Africa was triggered by the unprecedented migration from rural areas to cities. The study carried out by Mehmood and Sadiq (2010) to ascertain the relationship between government expenditure and poverty was analyzed using co-integration in Nigeria. The result of the investigation confirmed the fact that the relationship exists.

For developing and transitioning economies, Baldacci et al. (2003) investigated the relationship between public spending on health and education and a number of other socioeconomic factors, including poverty. In order to demonstrate how government spending affects social factors, the study estimated a latent variable model. They came to the conclusion that public spending was a significant factor in reducing poverty. The paper's estimation of the social production function represented a more suitable methodology. Their findings demonstrated that public investment has a beneficial impact on raising the social status of the general population. In some rural areas of developing and transitioning economies, there is a correlation between high public spending and poverty that some experts have questioned. Some other measures that will enhance the efficiency of public spending have been suggested by the few researchers.

The research done by Kayode (2012), evaluated the potential to increase the effectiveness of public spending on the primary and secondary education sectors, looking at the shaky relationship between improved access to resources and academic achievement. The study found that adopting best practices will significantly increase public expenditure efficiency based on cross-country statistics. In Uganda, the relationship between budgetary support for education and enrolment rates was examined by Ablo and Reinikka in 1998. They came to the conclusion that where institutions or their supervision were weak, budget allocations might not matter. They also demonstrated that, in order to improve school performance, a balanced pattern of public spending was more crucial than just increasing budget allocation. The effects of education and public spending on health and education are reduction in poverty.

The decision to invest in human capital was examined in a study by Brown and Park (2002) in rural China to determine the impact of poverty on educational quality. They demonstrated that credit restrictions had a negative correlation with educational investments and that wealth had a favorable relationship with students' academic results. They also demonstrated how early dropout was decreased by empowering women and how academically underachieving girls were more likely to quit school. Similar to this, one of the key factors influencing education spending was school quality. We have noted from the earlier research that there have not been many studies looking at the connection between governmental spending and poverty levels.

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A recent study conducted by Apergis and Katsaiti (2018) employing a global panel of nations to examine the connection between poverty and the resource curse found out that lack of access to energy resources make poverty worse worldwide. Similar to this, the Resource Curse theory emphasized how natural resources act as a barrier to development (Sachs and Warner, 1995). While researchers like Bravo-Ortega and De Gregorio (2005) noted that one of the causes of the Resource Curse Hypothesis is a low rate of investment in human capital. In order to continue growth and development, Gylfason, Herbertsson, and Zoega (1999) and Gylfason (2000) both emphasized that one of the main avenues for transferring natural resources is through human capital. Also, the nexus among human capital, inequality and natural resources was investigated by Goderis and Malone (2011). They came into conclusion that in order to improve sustainable growth through natural resources, human capital will be a critical factor to consider.

Methodology

Secondary data was used for this work and the major source of the data is the Central Bank of Nigeria Statistical Bulletin over the period of 1981 – 2020. NPI describes the national poverty index variable which is the dependent variable, GEE is government expenditure on education, GHE is government expenditure on health, GINI which defined the income inequality within the country, UNE measured the unemployment, LEB is life expectancy at birth and LSEM is self-employment. The study employed the Robust Least Square (RLS) approach in estimating the relationship between human capital development and poverty reduction in Nigeria.

The *a priori* expectations for the explanatory variables in the present study are as follows
$\beta_1 < 0, \beta_2 < 0, \beta_3 > 0, \beta_4 > 0, \beta_5 < 0$. It is expected that as government increases its expenditure on education, health *ceteris paribus* the index of poverty will be resolved decreasingly and likewise if life expectancy is well supported by evidence of good living and employment, poverty incidence reduces and hence this links to better standard of living

Result and Interpretation

Table 1: Presentation of descriptive statistics

	NPI	GEE	GHE	GINI	LEB	LSEM	UNE
Mean	3.98	3.27	2.78	3.78	3.89	4.45	2.09
Median	3.99	3.92	3.01	3.76	3.89	4.46	2.21
Stddev	0.13	2.35	2.18	0.12	0.06	0.04	0.72
Skewness	-0.37	-0.27	0.03	0.30	-0.15	-0.29	-0.26
Kurtosis	2.55	1.63	1.38	2.32	1.92	1.48	1.62
J-B Prob	0.55	0.16	0.11	0.51	0.37	0.21	0.18
Observation	38	40	40	39	38	29	38

Source: Author's computation

The descriptive statistics on table 1 shows the statistical trend of the variables employed in this study. From the statistics, the mean value of self-employment variable is highest (4.45). The self-employment observed is taken to be the percentage of self-employment in total employment representing skills acquisition during the period under study. This implies that given the state of persistence unemployment, people tend to acquire more skills that can make them fit for employment under their control. This invariably has the tendency to reduce unemployment in the system particularly if there are varying supports from the policy makers. Unemployment variable is lowest (2.09) as seen. This however does not remove the fact that there is pervasive unemployment in the system. The poverty index, the measure of poverty has the next highest average value (3.98) indicating the extent of poverty in the nation and this supported by the inequality measure, the Gini index which on the average gives 3.78. Human capital indices –education expenditure and health expenditure come with average values of 3.27 and 2.78 respectively.

Table 2: Unit Root Test

Presentation of unit root test results

Variable	Test Eqn	Test Method	Prob.	Decision	Order of Integration
GHE	None	ADF	0.00	Stationary	I(1)
GEE	Constant, linear trend	ADF	0.04	Stationary	I(0)
GINI	Constant linear trend	ADF	0.05	Stationary	I(1)
LEB	None	ADF	0.00	Stationary	I(2)
NPI	None	ADF	0.00	Stationary	I(1)
SEM	None	ADF	0.00	Stationary	I(0)
UNE	None	ADF	0.00	Stationary	I(0)

Source: Author’s computation

The unit root test was conducted as a pre-estimation test before the main analysis is carried out. This helps to understand the nature of the variables employed in terms of suitability for analysis to avoid spurious or nonsensical results. So far from Table 2, all the variables employed are stationary but with different order of integration. Government expenditure on education, self-employment, and unemployment are integrated in their levels and thus they are I (0). Government expenditure on health, Gini coefficient and national poverty index are integrated of order 1 and are thus I(1). However, life expectancy at birth is integrated of order 2 but because it is an important variable in the analysis, it is retained in the model

Table 3: Robust Least Square Technique (M-estimation)

Estimation results: Dep. Variable: NPI

Variable	Coefficient	Std error	Prob.
C	-6.53	4.36	0.13
GHE	0.01	0.03	0.79
GEE	-0.01	0.01	0.24
GINI	0.64	0.07	0.00
LEB	0.97	0.75	0.20
LSEM	0.97	0.47	0.04
UNE	0.01	0.02	0.67
R-squared	0.69		
Adj R-squared	0.59		
AC	34.24		
SC	48.85		

Source: Author's computation

The estimation technique employed is the robust least square technique. The robust least square is not affected by the assumptions of the ordinary least square method. Poverty index as a measure of poverty is the dependent variable as shown on table 3. The independent variables are government expenditure on health, government expenditure on education, Gini coefficient measuring inequality, life expectancy at birth, self-employment and unemployment. Expenditure on education which is a key human capital indicator, however related negatively with poverty during the period under review. A 1% increase in expenditure on education decreases poverty by 1%. This is an indication that focusing more on education increases human development in terms of skills and thus gives rise to quality influence in the society which subsequently reduces poverty. This assertion supports (Orajaka & Okoli 2018) in their findings that education expenditure lowered poverty. Therefore, the hypothesis that says there is no significant relationship between government expenditure on education and poverty in Nigeria was rejected while the alternative was accepted which says there is significant relationship between government expenditure on education and poverty in Nigeria

Government expenditure on health positively relate with poverty index during the period of the analysis. By implication, as government spent more on health issues, poverty rises. Precisely a 1% increase in expenditure on health gives rise to about 1% rise in poverty implying an equal percent increase. It is however expected that increasing spending on health care facilities would reduce poverty through engaging in active labour force for high productivity.

The reason here could be attributed to wrong placement of spending pattern in form of diversification and corruption. Inequality measured by the Gini coefficient maintained a significant positive (0.64) relationship with poverty during the given period. Inequality is an unequal distribution of resources in nation and tends to skew development towards a subset of the population. As inequality rises as shown in the results, poverty also increases since resources are taken away from the poor to the non-poor.

Unemployment as an economic catastrophe is seen to give a positive relationship with poverty. Unemployment is pervasive in Nigeria and is a major cause of rising poverty in the nation. The results show that a 1% increase in unemployment approximately gives a 1% increase in poverty. This consequently brings about various yearnings that poverty need be reduced through creation of jobs and equal distribution of resources. According to Baker (1979), the causes of poverty appear interrelated and complex for example in the Caribbean countries due to factors including negative and unstable growth, macroeconomic instability and reduction in quality of social services. This cannot generate employment sufficient enough to reduce poverty.

Life expectancy and self-employment maintained positive relationships with poverty in the same period but significant in the former. For the life expectancy, if there is pervasive unemployment in the system, it leads to acute shortage of productions leading to low aggregate demand and hence increasing poverty. If households still remain poor, it is expected that poverty rises even as life expectancy rises. The self-employment variable effect on poverty is an indication that self-employed is not up to the required level that can substantially increase welfare. The adjusted coefficient of determination shows that about 59% of the variation in poverty is explained by the explanatory variables discussed above. And as such about 41% of the variation remains unexplained. This is an indication that the explanatory variables have a fairly high explanatory power. The Akaike Information Criterion and the Schwarz Criterion have positive coefficients.

The standard deviation shows the spread of the variables and so far, only the life expectancy variable has the highest spread of about (0.75).

Discussion of Result

The result on table 3 above revealed that, the coefficient of Government Expenditure on Education (GEE) is negative (-0.01), indicating negative relationship between Poverty and government expenditure on education in Nigeria during the 1981-2020, and this is in line with *a priori* expectation. The finding implies that government expenditure on education increases as poverty decline. This support Amire (2020) which reveals that expenditure on education exhibit positive relationship on the dependent variable (Poverty Alleviation), this means that increasing government spending on education translates to increases in poverty alleviation.

The analysis shows that government expenditure on health is positively related to poverty index during the period of the analysis. By implication, as government spent more on health, poverty increases. Precisely a 1% increase in expenditure on health gives rise to about 1% rise in poverty implying an equal percent increase. It is however contradicting *a priori* expectation that increasing spending on health care facilities would reduce poverty through engaging in active labour force for high productivity. This makes the study accept the second hypothesis that says government expenditure on health has no significant effect on poverty in Nigeria. Implication is that despite the increase in allocation to health sector, it is impossible to reduce poverty except certain economic conditions are put in place. This study therefore resounds the opinion of Cashin, Mauro and Sahay (2001) that policies that promote greater improvement in life expectancy should not be necessarily based on stimulating economic growth alone, but should be policies that would benefit the poorer segment of its population. Better health can be seen as a factor that contributes to poverty reduction via some “trickle-down” mechanism.

From the above table, the analysis shows that there is positive relationship between inequality and poverty in Nigeria. As inequality increases poverty increases vice versa. This is in conformity with *a priori* expectation that says there is positive relationship between inequality and poverty in Nigeria. The study is also in line with Krokeyi and Obayori (2020), inequality is positively and significantly related with poverty level. Any percentage increase in inequality will cause poverty level to rise significantly. The results showed that unemployment had positive relationships with poverty in the Nigerian economy within the period under review. The implication is that as unemployment increased, poverty will also increase in the Nigerian economy. This also affirms *a priori* expectation for the study.

Conclusion

Poverty has a long existing history in developing countries, Nigeria inclusive. This has been the reason most countries clamours for policy capable of reducing the pervasive high level of poverty. This is informed by the various policy frameworks including the Millennium Development Goals and Sustainable Development Goals. Such policy frameworks have so far not been able to give the direction through which poverty alleviation can be attained. Worst case scenarios are the worsening conditions of indicators of poverty alleviation measures such as effective human development. Quality education, quality health care, infrastructural facilities, access to sanitation and water are absolutely inadequate. These undoubtedly will increase life expectancy and thus productivity which ultimately reduce poverty. Adequate knowledge gained through quality education can help improve production quality which raises market demand, income and subsequently reduces poverty. Unfortunately, irregularities in educational system have not paved way for sustained increase in human capital development. Yet inequality has begun to rise which further demonstrated high poverty level. The findings from the estimation made in this study further buttress the fact that human capital development indicators have been effective in lowering poverty in Nigeria. Expenditure on education even though gave an expected result, spending on education has not been adequate to improve human capital development and lower poverty. Spending on health gave another reverse effect. As spending on health rose, poverty still increases which showed clearly some improper diversification. The widening inequality gap shows increasing level of poverty in Nigeria. Unemployment, an economic catastrophe has never in a way favoured poverty reduction strategies.

Recommendations

Nigeria is a complex society with diverse ethnic groups and with variations in opinions. For sixty years, the economy still battles with abject poverty levels to the extent that various policies capable of reducing poverty levels have been inefficient due to poor implementation and /or pervasive high level of corruption. To attain some low levels of poverty if not eradicating it completely, policy makers should ensure that

i. there should be a policy that would narrow the inequality gap through equal distribution of resources and opportunities.

ii. job creation be a main target and made public for every qualified individual to be involved. This will reduce the unemployment level, increase aggregate demand and lower poverty in Nigeria

iii. educational facilities should be provided at all levels to have easy access to learning opportunities for both formal and informal types. This will also to many extent increase knowledges and technical know for better productivity in Nigeria

iv. health sectors should not be left behind. Adequate health care facilities and accessibility should be made to exist. Sound health leads to longevity, high level of productivity and low level of poverty

v. skill acquisition should be well supported. This should be through making available investible funds. The trader money established in the past is a welcoming development but should be all inclusive and should not be rationed or skewed to the rich. This will allow the poor with investment initiatives to be encouraged and be more effective in his investment career.

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